MENTAL HEALTH IN THE AUSTRALIAN DEFENCE FORCE

2010 ADF Mental Health Prevalence and Wellbeing Study

REPORT







THE UNIVERSITY of ADELAIDE

VICE CHIEF OF THE DEFENCE FORCE

KEY FINDINGS

The 2010 ADF Mental Health Prevalence and Wellbeing Study is the first comprehensive investigation of the mental health of an ADF serving population. The study is an outcome of the ADF Mental Health Reform Program, which commenced in the middle of 2009, and will form the basis for the development of the next generation of the ADF Mental Health and Wellbeing Strategy.

The study examined the prevalence rates of the most common mental disorders, the optimal cut-offs for relevant mental health measures, and the impact of occupational stressors. ADF prevalence rates were compared to an Australian sample matched for age, sex and employment. Nearly 49% of ADF current serving members participated in the study between April 2010 and January 2011. The key findings from the study are summarised below.

Mental health status

- Prevalence of mental disorders was similar to the Australian community sample, but profiles of specific disorders in the ADF varied.
- ADF lifetime prevalence rates were higher, while experience of mental disorder in the previous 12 months was similar.
- Twenty-two per cent of the ADF population (11,016), or one in five, experienced a mental disorder in the previous 12 months.
- Approximately 6.8% (760) of this number experienced more than one mental disorder at the same time.

Anxiety disorders

- Anxiety disorders were the most common mental disorder type in the ADF, with higher prevalence among females.
- Post-traumatic stress disorder was the most prevalent anxiety disorder, with highest rates among ADF males.
- Anxiety disorders were less prevalent for officers than for all other ranks.

Affective (mood) disorders

- ADF males experienced higher rates of affective disorders than the Australian community sample. This was mostly accounted for by the experience of depressive episodes.
- Officers were as likely as other ranks to experience affective disorders.

Alcohol disorders (dependence and harmful use)

- Alcohol disorders were significantly lower in the ADF, with most of the disorders in males in the 18–27 age group.
- Younger ADF females (aged 18–27) had much lower rates of alcohol disorders than their community counterparts.

- There were no significant differences in rates of alcohol dependence disorder between Navy, Army and Air Force.
- Navy and Army were significantly more likely than Air Force to experience alcohol harmful use disorder.
- There was no significant difference between ranks in the rate of alcohol disorders.

Suicidality (ideation, planning, attempting)

- ADF personnel reported thinking of committing suicide and making a suicide plan at a higher rate than the Australian community sample.
- The number of suicide attempts was not significantly greater than in the general community.
- The number of reported deaths by suicide in the ADF was lower than in the general community.

Mental health screening

- Optimal cut-off values were identified for three key mental health instruments (K10, PCL and AUDIT) to better detect mental disorders and monitor trends in the ADF.

Deployment

- Forty-three per cent of ADF members reported multiple deployments, 19% reported only one and 39% had never been deployed.
- Deployed personnel did not report greater rates of mental disorder than those who had not been deployed.
- Those with deployment experience were 10% more likely to seek care for mental health or family problems.

Help seeking

- In the previous 12 months, 17.9% of ADF members sought help for stress, emotional, mental health or family problems.
- Being treated differently (27.6%) and harm to career (26.9%) were the highest rated perceived stigmas.
- The highest rated barrier to seeking help was concern it would reduce deployability (36.9%).

Impact on work

- ADF members reported more partial rather than total days out of role due to psychological distress compared to the Australian community sample.
- Panic attacks, depressive episodes, specific phobias and post-traumatic stress disorders accounted for the greatest number of days out of role.

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FOREWORD

Over the past decade, the ADF has successfully and continuously maintained its high tempo of operations. We should individually and collectively take pride in the knowledge that ADF personnel have been deployed around the world on diverse missions, including combat operations in the Middle East, as well as responding to natural disasters, conducting border protection operations and assisting communities in remote regions.

Within the current ADF workforce almost half have been deployed multiple times, and in a 12-month period up to 12,000 members of the ADF will be in the operational deployment cycle – that is, preparing, deploying or transitioning home. This high operational tempo not only exposes ADF personnel to a range of occupational risks and hazards, but also places significant pressure on their families and ADF support systems.

The 2010 ADF Mental Health Prevalence and Wellbeing Study is a major deliverable of the ADF Mental Health Reform Program, as it provides the foundation for the next generation of the ADF mental health strategy and future evaluation of mental health interventions and services.

The study shows us that the 12-month rate of mental disorder in the ADF is very similar to that of a matched sample from the Australian community, but that the ADF has a different profile which reflects the unique demands of service. The results indicate a need for targeted programs to respond to post-traumatic stress and depression. The data have also provided important information on how to further enhance mental health literacy, address stigma and break down barriers to seeking care.

Once thoroughly analysed, the data will help us understand a range of occupational issues such as the impact of social support, health risk behaviours, and quality of life and family relationships. This further analysis will take place over the next 12 months.

My thanks go to every serving member who took the time to complete the survey, answering at times intensely personal questions. I applaud you for your willingness to assist in improving mental health and wellbeing in the ADF. Your contribution will help us to improve services for yourselves, your mates and all serving personnel.

I would also like to thank the research teams who collaborated with Joint Health Command and the experts who assisted in the development and analysis of the survey.

This landmark study into Australian military mental health reflects Defence's ongoing commitment to the development of a comprehensive approach to improving the mental fitness of ADF personnel. It will inform our health service development and planning for comprehensive, coordinated and customised care into the future.

Air Marshal Mark Binskin, AO
Vice Chief of the Defence Force
October 2011

GUIDE TO THE REPORT

This report contains a preliminary analysis of the data from the 2010 ADF Mental Health Prevalence and Wellbeing Study. It will be followed by a series of detailed analyses and papers addressing priorities for Defence.

The study had three goals – to establish the baseline prevalence of mental disorder, to refine current mental health detection methods and to investigate the specific occupational stressors that influence mental health. The three main sections of the report reflect these goals.

The **executive summary** outlines the high-level findings from the study and discusses the trends that were considered in the development of the 2011 ADF Mental Health and Wellbeing Strategy, as well as indicating directions for future research. A version of the executive summary was separately published as the *Executive report* on the study (October 2011).

Section 1 discusses the prevalence of mental disorders in the ADF. It first provides a comparison between the serving ADF population and a sample from the 2007 ABS National Mental Health and Wellbeing Survey, adjusted for age, sex and employment status, for any 12-month ICD-10 affective, anxiety and alcohol disorder, as well as 12-month suicidality and co-morbidity. It then summarises the specific ICD-10 disorders that make up these categories, as well as their associated demographic predictors – sex, rank, Service and deployment status – together with the levels of impairment and rates of uptake of treatment. Finally, there is a discussion of the comparative prevalence rates of mental disorders in other international military samples.

Section 2 looks at the detection of mental disorders in the ADF. It begins by summarising the current mental health screening instruments used by the ADF to detect mental disorders. It then gives an overview of self-reported psychological distress, post-traumatic stress disorder and alcohol consumption as measured by these instruments, including demographic predictors. The psychometric performance of these instruments is then examined to determine potential clinical and optimal diagnostic cut-offs for currently serving ADF members.

Section 3 explores occupational mental health issues. It summarises five of the potential 17 occupational risk and protective factors assessed in the study. Initial analysis is presented of the contribution of multiple deployments and traumatic stress to mental disorders. Finally, this section reviews willingness to seek care, and the stigma and barriers to seeking care limiting this process, among ADF members.

Each section concludes with a summary of specific proposals for further analyses and a list of references.

The **annexes** to the report provide further background information about the study and its conduct. Annex A outlines the methodology used for the study. Annex B contains detailed data tables underlying the findings presented in the body of the report. Annex C contains the questionnaire used for the survey.

At the end of the report are a list of abbreviations and acronyms and a glossary.

CONTENTS

ACKNOWLEDGMENTS

This study was only possible through the participation of ADF personnel and the support of Defence leadership, but in particular General David Hurley, Air Marshall Mark Binskin, and Major General Paul Alexander.

The study was a collaboration between the Centre for Traumatic Stress Studies of the University of Adelaide and the Directorate of Strategic and Operational Mental Health in the Mental Health, Psychology and Rehabilitation Branch of Joint Health Command.

Data for the study came from the Military Health Outcomes Program and is a combined data set including:

- the Health and Wellbeing Survey conducted by the Centre for Traumatic Stress Studies and the Directorate of Strategic and Operational Mental Health
- the Middle East Area of Operations (MEAO) Census and Prospective Survey conducted by the Centre for Military and Veterans' Health.

Completion of the study was the result of the combined work of a large team of academic and ADF military and civilian personnel. This study relied on significant efforts to ensure close team work, good stakeholder relationships and innovative and practical ideas to maximise participation. The efforts of Dr Alan Verhagen and Ms Maxine Baban are particularly acknowledged in this area. Key individuals and groups that made this research a reality include:

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Newspoll

EXECUTIVE SUMMARY

Background

Research into warlike service has often occurred after the actual conflict. The 2010 ADF Mental Health Prevalence and Wellbeing Study that forms the basis for this report was conducted at a time when Australia had been involved in warlike service for more than a decade and currently had soldiers deployed in combat. This means the findings are directly applicable not only to current ADF policy and programs but also to the service planning required to meet the future needs of currently serving ADF members after their military service ends.

As summarised in Table ES.1, the study had three goals – to establish the baseline prevalence of mental disorder, to refine current mental health detection methods and to investigate the specific occupational stressors that influence mental health.

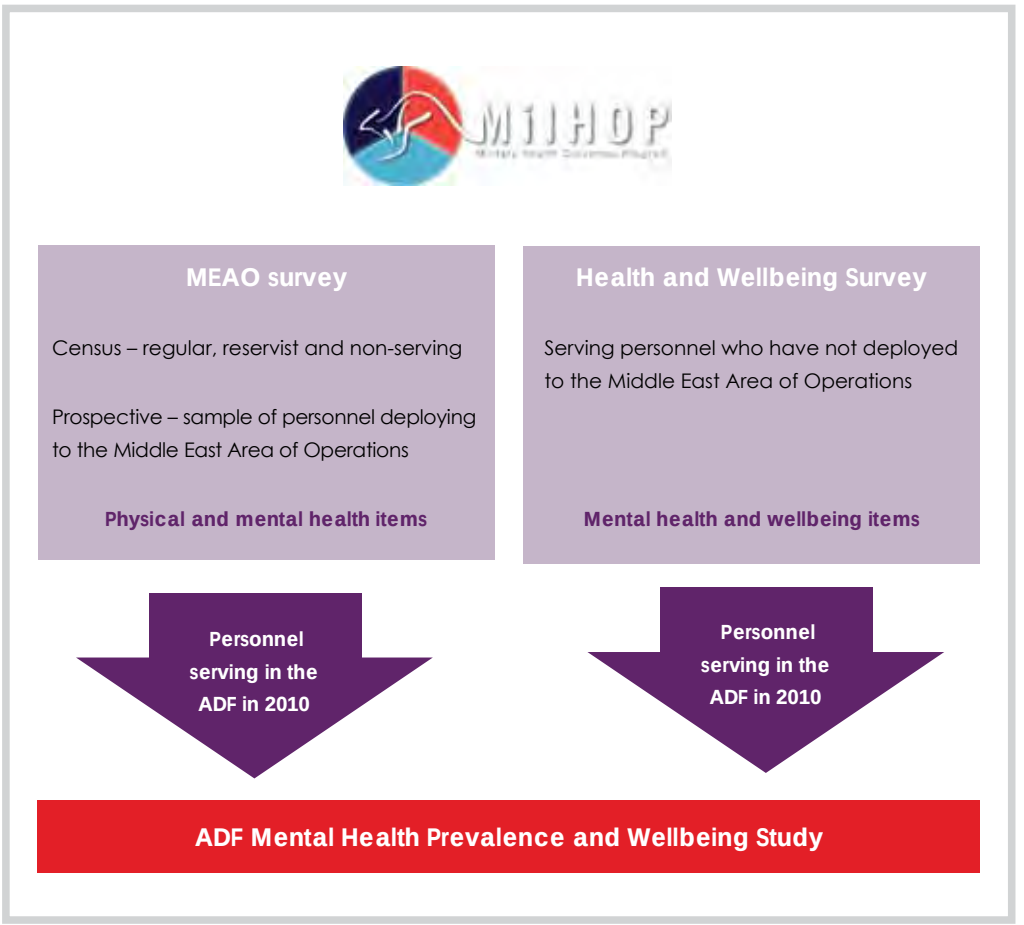
Table ES.1: *Study goals and report sections*

<table>
<tr><th colspan="2">Study goals</th><th colspan="2">Report sections</th></tr>
<tr><td colspan="2">Prevalence – Establish ADF baseline prevalence rates of mental disorders in order to target mental health services and identify high-risk groups</td><td colspan="2">Section 1 – Provides a summary of the 12-month prevalence of mental disorder in the ADF and identifies subgroups that warrant more investigation</td></tr>
<tr><td colspan="2">Detection – Refine methods for detecting mental disorders in ADF populations</td><td colspan="2">Section 2 – Examines the performance of mental health instruments currently used in the ADF</td></tr>
<tr><td colspan="2">Occupational issues – Explore the impact of occupational stressors on the mental health and wellbeing of the ADF population</td><td colspan="2">Section 3 – Explores selected occupational issues of relevance to the mental health strategy</td></tr>
<tr><td>Predictive factors</td><td>Wellbeing outcomes</td><td>Predictive factors</td><td>Wellbeing outcomes</td></tr>
<tr><td>Deployment history</td><td>Help seeking</td><td>Deployment history</td><td>Help seeking</td></tr>
<tr><td>Trauma exposure</td><td>Resilience</td><td>Trauma exposure</td><td></td></tr>
<tr><td>Level of social support</td><td>Physical health</td><td>Stigma and barriers to care</td><td></td></tr>
<tr><td>Bullying</td><td>Mild traumatic brain injury</td><td></td><td></td></tr>
<tr><td>Recognition of service</td><td>Sleep and anger</td><td></td><td></td></tr>
<tr><td>Stigma and barriers to care</td><td>Family relationship</td><td></td><td></td></tr>
<tr><td>Dietary supplements</td><td>Support networks</td><td></td><td></td></tr>
<tr><td>Caffeine and tobacco use</td><td>Quality of life</td><td></td><td></td></tr>
</table>

Methodology

Joint Health Command determined that the most efficient way to achieve the goals of the Mental Health Prevalence and Wellbeing Study was to combine it with the existing Deployment Health Surveillance Program studies into the impact of deployment to the Middle East Area of Operations (MEAO) to form the Military Health Outcomes Program (see Figure ES.1). The MEAO surveys were conducted by the Centre for Military and Veterans' Health, while the Health and Wellbeing Survey was a collaboration between the Directorate of Strategic and Operational Mental Health and the Centre for Traumatic Stress Studies at the University of Adelaide. The target population for the current study was all regular ADF personnel who were serving in 2010 (N=50,049).

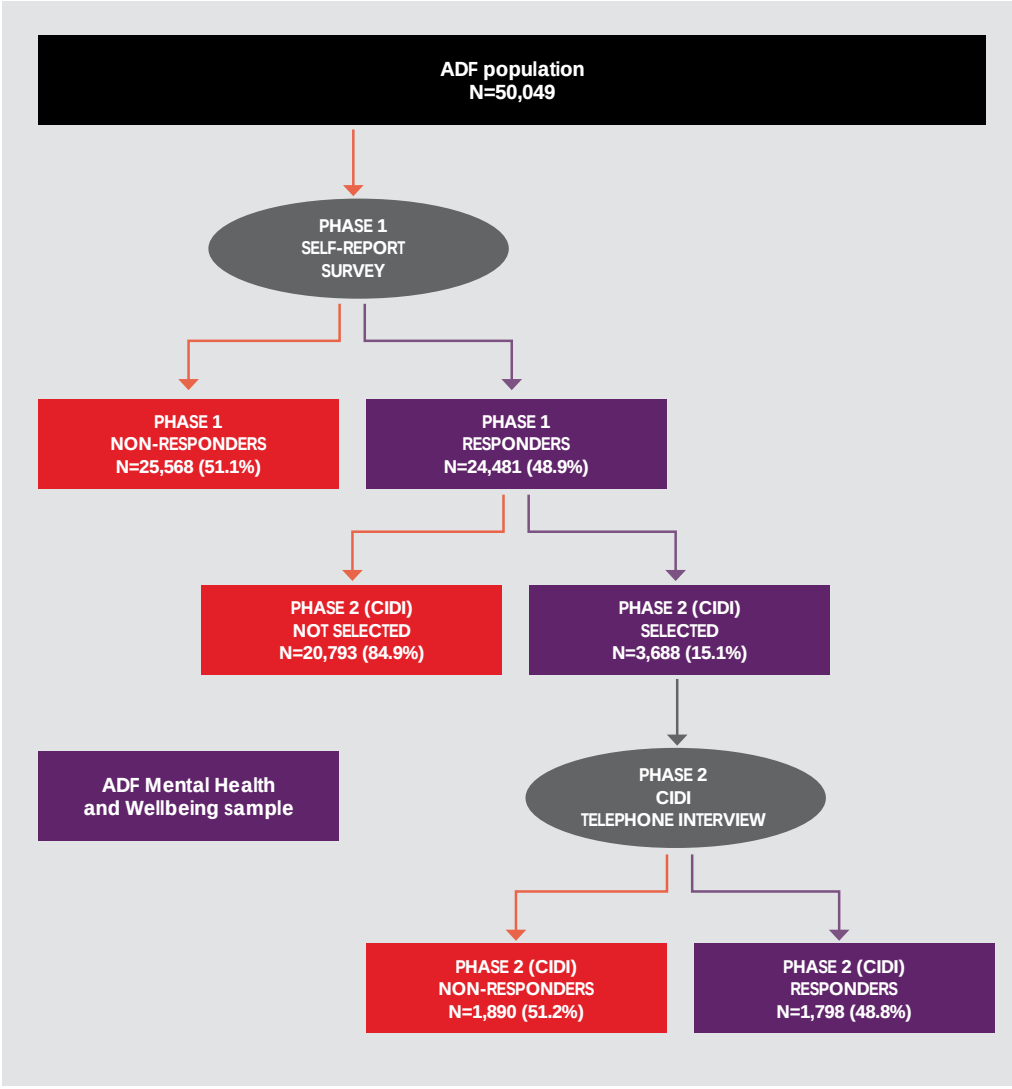
Figure ES.1: *Data sources for the Mental Health Prevalence and Wellbeing Study*



Mental disorder prevalence estimates were obtained using a two-phase design (see Figure ES.2). In the first phase, ADF personnel were surveyed using a self-report screening questionnaire. In the second phase, a subset of these respondents were interviewed, with priority given to ADF members who were identified as being more likely to have a mental health problem based on their Phase 1 screening questionnaire. As the ADF population characteristics are known (that is, sex, Service, medical employment

classification status and deployment history), it was possible to compare personnel who responded to the survey with personnel who did not. This allowed weighting of the data to provide estimates of prevalence that are representative of the entire serving regular ADF.

Figure ES.2: *Flowchart of participation in the Mental Health Prevalence and Wellbeing Study*



As at 31 January 2011, 52.5% (26,281) of ADF personnel had agreed to participate in Phase 1 of the study, 8.6% (4,293) had declined, and 38.9% (19,475) had not responded. The breakdown of individuals with enough data to be included in the report is summarised in Table ES.2. The data in the study do not include reservists or ex-serving personnel – information on the mental health of these groups will only become available with the publication of the MEAO Census Study in mid-2012.

In the second phase, a sample of 1,798 ADF personnel who had completed the self-report questionnaire and agreed to further follow-up were telephoned and asked to take part in a structured diagnostic interview, specifically, the World Mental Health Survey Initiative version of the World Health Organization's Composite International Diagnostic Interview (CIDI), version 3.0. This sample of personnel was selected on the basis of their sex, Service and scores on the self-report measures, including low, medium and high scores, which allowed weighting in proportion to the entire ADF population.

Table ES.2: *Response rates by Service for the Mental Health Prevalence and Wellbeing Study*

	Population	Respondents	Rate
Total ADF	50,049	24,481	48.9%
Navy	11,612	5,392	46.4%
Army	25,356	11,429	45.1%
Air Force	13,081	7,660	58.6%

Note: 52.5% of the ADF consented to participate but only 48.9% provided usable data.

The characteristics of respondents in Phase 1 included:

- Sex – consistent with the ADF population, the sample was predominantly male (84.1%, versus 15.9% for females), although ADF females were more likely to respond than ADF males.
- Service – 22% of survey respondents were Navy, 46.7% were Army and 31.3% were Air Force. When the different Services were compared, Air Force personnel were most likely to respond and Army personnel were least likely.
- Age – the response rates were lower in the younger age groups. This was particularly notable among those aged between 18 and 27.
- Marital status – ADF personnel who were married were more likely to respond: 77.1% of the respondents were married in contrast to 62.9% of the overall ADF who were married.
- Medical employment classification (MEC) – ADF personnel who were classified as MEC 1 were slightly under-represented in the respondent group (61.1%) compared to the total ADF population (65.6%) classified as MEC 1. ADF personnel who were MEC 2 and MEC 3 were slightly over-represented.
- Rank – ADF personnel in other ranks had a significantly lower response rate. Only 19.7% of other ranks responded, compared to 31.4% of other ranks across the ADF. In contrast, non-commissioned officers were more likely to respond.
- Deployment and education – neither had much impact on the response rates.

The weighting process allowed for differences in demographic characteristics to be adjusted for, allowing estimates to be calculated for the entire ADF population. The two stages in the weighting process, combined with the 48.9% response rate and oversampling of high scorers, enabled the study to provide valid estimates of prevalence that minimise the chance of random error and hence provide confidence that the estimates are accurate.

The CIDI is a best-practice tool for determining mental disorder prevalence rates and was used in the 2007 ABS National Survey of Mental Health and Wellbeing. A mental disorder is the existence of a clinically recognisable set of symptoms or behaviours associated, in most cases, with distress and with interference with personal functioning.

The World Health Organization's International Classification of Diseases system (ICD-10) was used for the definition and the study focused on the three most common types of mental disorder, specifically:

- affective disorders (depressive episodes, dysthymia and bipolar affective disorder)
- anxiety disorders (panic attacks, panic disorder, post-traumatic stress disorder, obsessive-compulsive disorder, generalised anxiety disorder, specific phobia, social phobia and agoraphobia)
- alcohol disorders (alcohol harmful use and alcohol dependence).

Prevalence of mental disorders in the ADF

Comparison with the Australian community

In order to interpret and fully understand the rates of mental disorders reported in the ADF, normative mental health data on the Australian community were obtained from the Australian Bureau of Statistics. These data, derived from the 2007 ABS National Survey of Mental Health and Wellbeing, were adjusted to match the demographic characteristics of the currently serving ADF population (for age, sex and employment status). This allowed a direct comparison to be made between the estimated prevalence of mental disorders in the serving ADF population and the Australian community sample.

Table ES.3 gives an overview of the lifetime and 12-month prevalence of mental disorders in the ADF compared to the Australian community. Lifetime prevalence is the estimated proportion of personnel to have experienced one or more mental disorders in their lifetime, whereas 12-month prevalence describes the estimated proportion of personnel to have experienced one or more mental disorders in the previous year.

Table ES.3: *Estimated prevalence of lifetime and 12-month mental disorders in the ADF, compared to ABS sample matched by age, sex and employment status*

	Lifetime prevalence		12-month prevalence	
	ABS %	ADF %	ABS %	ADF %
Any affective disorder	**14.0**	**20.8***	**5.9**	**9.5***
Any anxiety disorder	23.1	27.0	12.6	14.8
Any alcohol disorder	32.9	35.7	**8.3**	**5.2***
Any mental disorder	**49.3**	**54.1***	20.7	22.0

* Significantly different from the ABS study.

More than half of the ADF (54.1%) had experienced an anxiety, affective or alcohol disorder at some stage in their lifetime, which is a significantly higher rate than that among the Australian community (49.3%). This level of mental illness in the ADF suggests that, despite the fact that the ADF is a selected and trained population that generally has better access to health care (the 'healthy worker effect'), this population is affected by a range of stress factors caused by the nature of their work.

In the 12 months before the interview, one in five of the ADF population, or 22%, had experienced a mental disorder, a rate that is not significantly different from that of the Australian community. Anxiety disorders were the most common mental disorders in the ADF but were not significantly higher than in the Australian community. The prevalence of affective disorders was significantly greater in the ADF compared to the Australian community and the prevalence of alcohol disorders was significantly lower.

The study revealed that an estimated 11,016 ADF members met diagnostic criteria for any mental disorder in the previous 12 months. Of these individuals, 7,420 had an anxiety disorder, 4,757 had an affective disorder and 2,590 had an alcohol disorder, noting that some would have had co-morbid disorders.

Sex-related prevalence compared to the Australian community

Overall, males in the ADF showed the largest deviation from the Australian community. They had a significantly greater prevalence of affective disorders and significantly lower prevalence of alcohol disorders (Table ES.4). ADF females were not significantly different from females in the Australian community, other than having a lower prevalence of alcohol disorders.

Table ES.4: *Estimated prevalence of 12-month mental disorders by sex, ADF and ABS data*

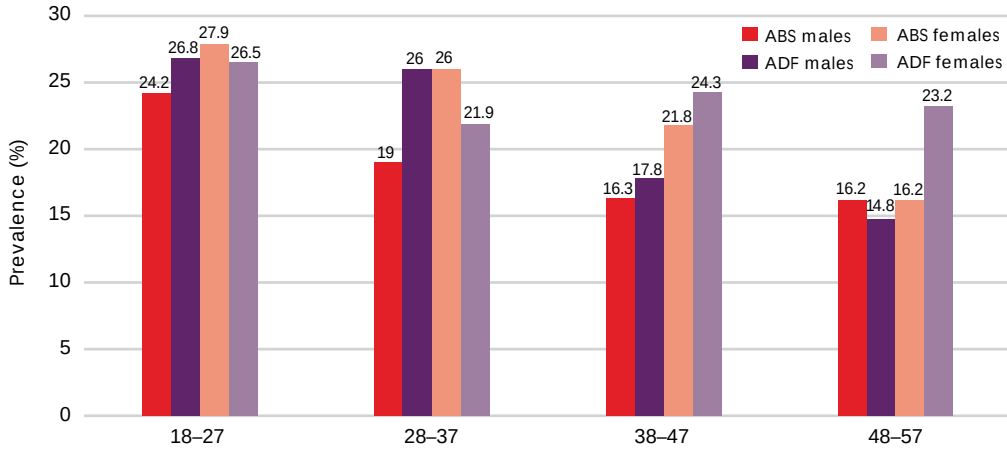
	Males		Females	
	ABS %	ADF %	ABS %	ADF %
Any affective disorder	**5.7**	**9.4***	7.3	10.2
Any anxiety disorder	11.5	14.2	19.9	18.8
Any alcohol disorder	**8.8**	**5.6***	**5.1**	**2.2***
Any mental disorder	20.0	21.7	25.6	24.1

* Significantly different from the ABS study.

Age-related prevalence compared to the Australian community

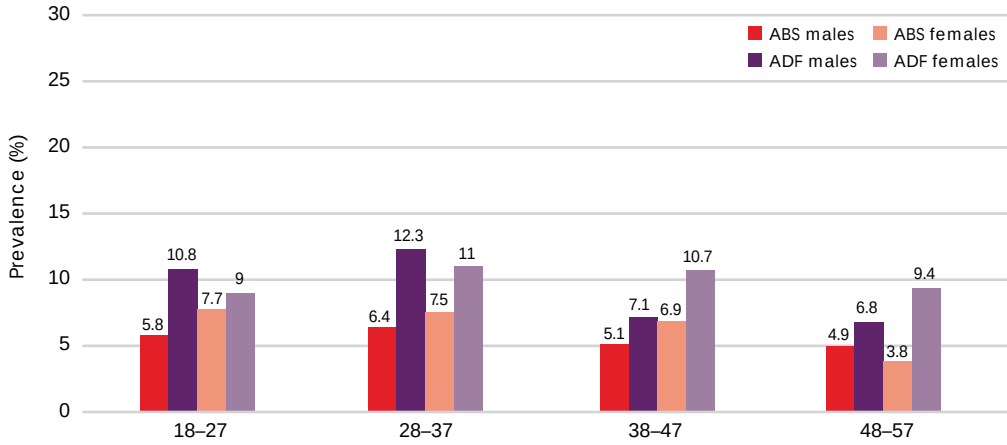
A challenge for the broader community has been the rate of mental disorders among youth. An examination of the interrelationship between age and each of the mental disorder groups – for both the ABS and ADF data – revealed that, as in the general population, mental disorders in the ADF were most common in the 18–37 age range. (The ADF does not have sufficient numbers of males – and has even fewer females – in the 58 and over age brackets for accurate estimates of prevalence for this group to be provided.)

Figure ES.3: *Estimated prevalence of 12-month mental disorders by age and sex, ADF and ABS data*



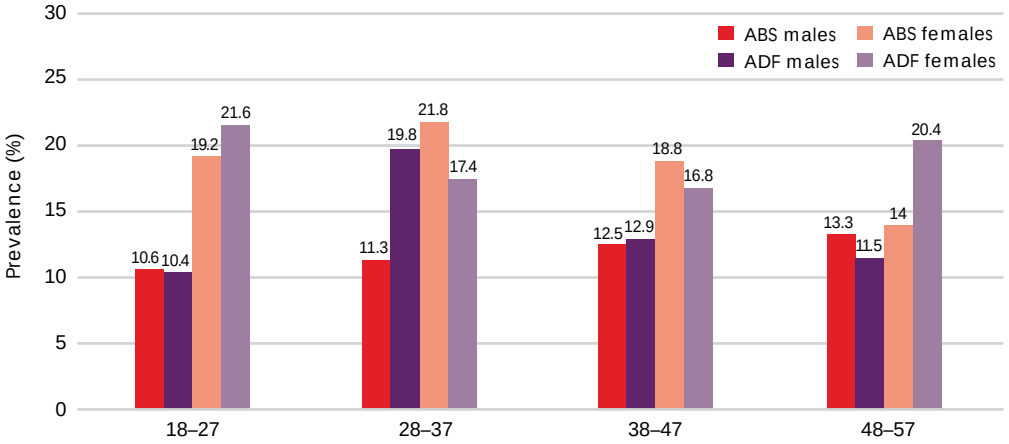
In both the ADF and the ABS data, there was a general trend for the rates of any 12-month mental disorder to be highest in the 18–27 age group (Figure ES.3) and then decline across the age bands in all groups. Noteworthy, however, is the fact that there was a steady decrease in mental disorders in males in the general community as people age, which was not reflected in the ADF population.

Figure ES.4: *Estimated prevalence of 12-month affective disorders by age and sex, ADF and ABS data*



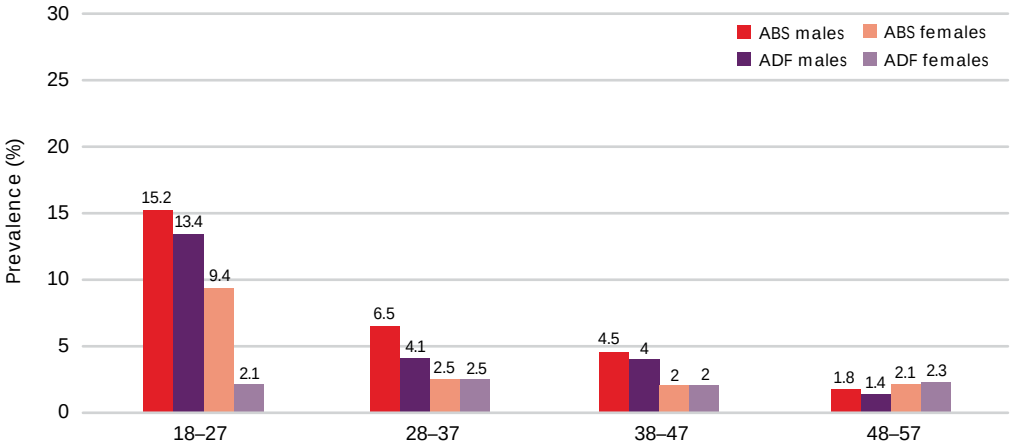
As was highlighted in Table ES.3, the ADF had significantly higher rates of affective disorders. These higher rates may be explained by the high ADF numbers in the 18–27 and 28–37 age groups, as shown in Figure ES.4. This effect was apparent for both males and females. These age-related trends indicate that interventions for affective disorders in the ADF need to take account of the relative youth of this group and recognise the needs of female ADF members throughout their careers.

Figure ES.5: *Estimated prevalence of 12-month anxiety disorders by age and sex, ADF and ABS data*



As summarised in Figure ES.5, the pattern for any anxiety disorder was similar to the pattern for affective disorders, especially for males, with the majority of disorders in males in the 28–37 age groups.

Figure ES.6: *Estimated prevalence of 12-month alcohol disorders by age and sex, ADF and ABS data*

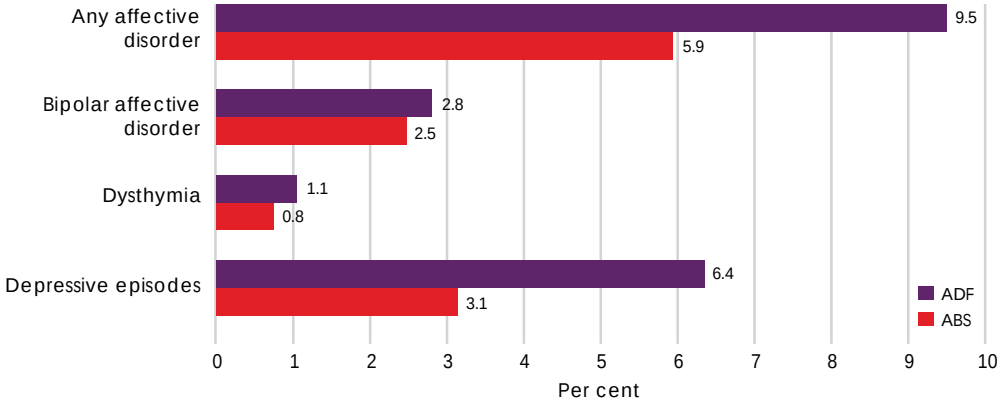


Alcohol disorders, by contrast, showed a unique pattern of prevalence across all age groups, with the highest prevalence of disorder in ADF males apparent in the 18–27 age group (Figure ES.6). Females had consistently lower disorder rates across all age groups.

Categories of mental disorder in the ADF population compared to the Australian community

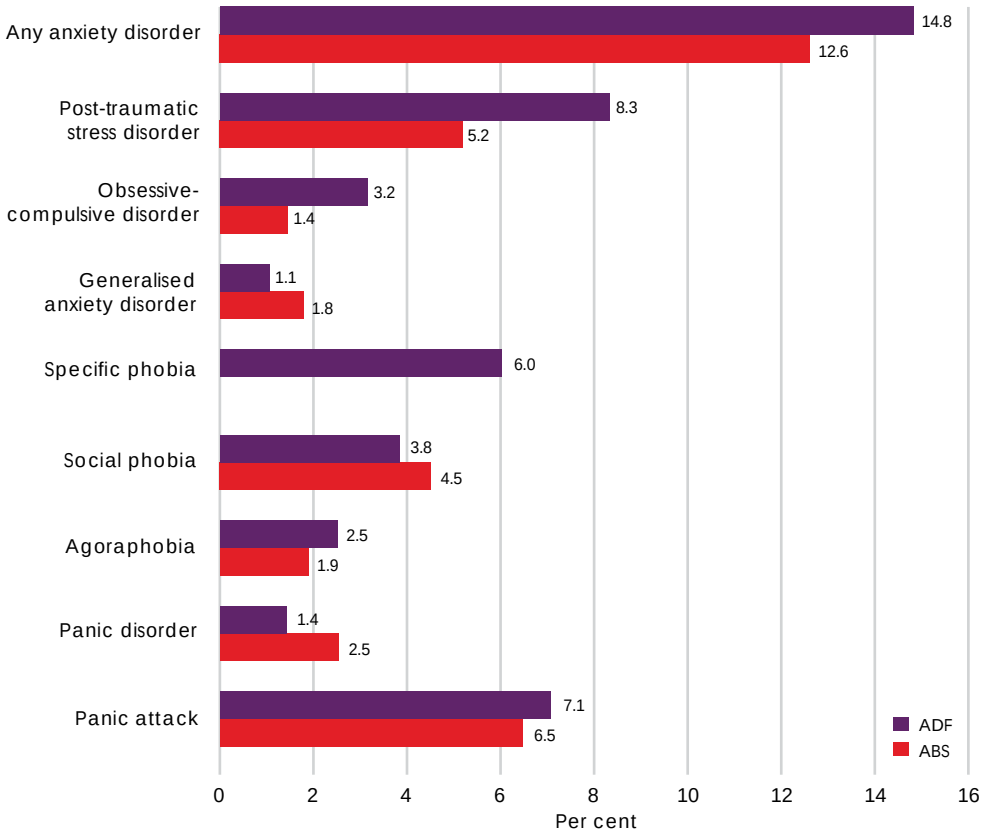
While the overall rates of mental disorders in the ADF were similar to those in the ABS study, there was a significant difference in the profile of mental disorders.

Figure ES.7: *Estimated prevalence of 12-month affective disorders, ADF and ABS data*



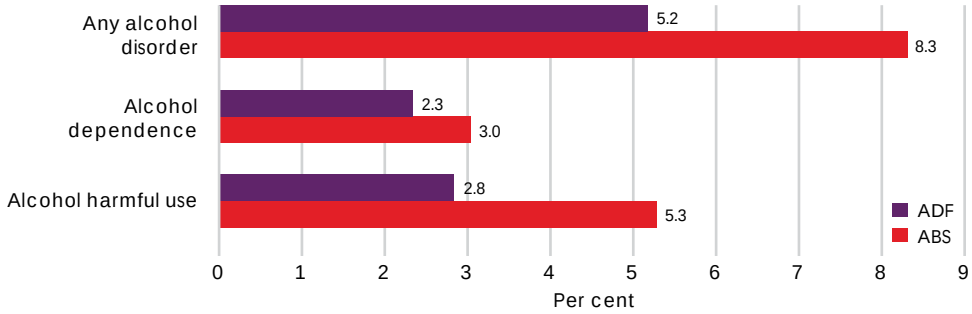
As summarised in Figure ES.7, affective disorders in the ADF were associated with the largest deviation from the Australian community. Depressive episodes in both male and female ADF personnel (6.0% and 8.7% respectively) were significantly higher than the general community rates (2.9% and 4.4%). There were no significant differences, however, between ADF males and females in the prevalence of affective disorders.

Figure ES.8: *Estimated prevalence of 12-month anxiety disorders, ADF and ABS data*



The most common disorders in the ADF were anxiety disorders, and post-traumatic stress disorder was the most prevalent anxiety disorder (see Figure ES.8). The primary difference between the ADF and the general community was the significantly higher rates of post-traumatic stress disorder in ADF males (8.1% versus 4.6%) and significantly lower rates of panic disorder in the ADF (1.2% versus 2.5%). As in the general community, further analysis has shown that female ADF personnel rated higher than male ADF personnel on anxiety disorders and were significantly more likely to have panic attacks, panic disorder, social phobia or a specific phobia. (The ABS study did not ask about social phobia and this was not included in the calculation of any anxiety disorder.)

Figure ES.9: *Estimated prevalence of 12-month alcohol disorders, ADF and ABS data*



The prevalence of alcohol disorders in the ADF was significantly lower than for the community (see Figure ES.9). Further analysis has shown that both male and female personnel in the ADF had significantly lower rates of alcohol harmful use disorder compared to the general community (males 3.1% versus 5.5%, females 1.3% versus 3.7%). Furthermore, ADF females were significantly less likely to have an alcohol disorder, specifically alcohol dependence disorder, than ADF males.

Suicidality in the ADF compared to the Australian community

The issue of suicidal behaviour and completed suicide is one of major concern to command in the ADF and one that arouses considerable public concern as well. The ADF monitors the rate of completed suicides; the actual rate of suicide in the ADF is lower than in the general population when matched for age and sex.

There is a gradation of severity of suicidality in the ADF, ranging from those with suicidal ideation (3.9%) through to those making a plan (1.1%) and those actually attempting suicide (0.4%). The prevalence of suicidal ideation and making a suicide plan was significantly higher in the ADF compared to the Australian community, with the rate of suicidality in the ADF being more than double that in the general community (Table ES.5). This is possibly a function of the higher level of affective disorders and of post-traumatic stress disorder. These findings suggest that the comprehensive initiatives on literacy and suicide prevention currently being implemented in Defence may, in fact, be having a positive impact. That is, although ADF members are more symptomatic and more likely to express suicidal ideation than people in the general community, they are only equally likely to attempt suicide and less likely to complete the act.

Table ES.5: *Estimated prevalence of 12-month suicidality, by sex, ADF and ABS data*

	Males		Females		Total	
	ABS %	ADF %	ABS %	ADF %	ABS %	ADF %
Felt so low that you thought about committing suicide	**1.5**	**3.7***	**2.8**	**5.1***	**1.7**	**3.9***
Made a suicide plan	**0.3**	**1.1***	**0.5**	**1.2***	**0.4**	**1.1***
Attempted suicide	0.3	0.4	0.4	0.5	0.3	0.4
Any suicidality	**1.6**	**3.8***	**2.8**	**5.1***	**1.8**	**4.0***

* Significantly different from the ABS study.

In the study, steps were taken to contact the participants who were reporting suicidal ideation to facilitate their access to care, in recognition of Defence's responsibility to them. A priority identified from the study is better characterisation of those individuals with mental disorders who are at risk of suicidal ideation so that intervention programs and risk assessments can be better targeted.

Impact on the ADF workforce compared to the Australian community

ADF personnel reported significantly more partial, rather than total, days out of role due to psychological distress than the general Australian community (see Table ES.6).

The data indicated that mental disorders had an impact on the ability of personnel to work, not only in terms of absenteeism but also in the number of days when they were unable to fully and adequately perform while at work. Individuals with affective disorders, for example, reported an average of 23 days off in a year due to the disorder. This loss not only reduces the member's wellbeing but is a significant drain on the capability and resources of the ADF.

The means reported in Table ES.6, however, did not take account of the prevalence of an individual disorder in the ADF and how this might modify the relative contribution to the days out of role for the ADF. In other words, a disorder with a high prevalence, even if it is associated with relatively minor disability, is likely to be of particular importance to the loss of productivity and preparedness in the Defence environment. Hence, major depressive disorder, which had a total prevalence of 6.4%, and panic attacks, which had a prevalence of 10%, are likely to be of particular importance as determinants of the number of days out of role.

On this basis, the percentage of days out of role in the previous four weeks when an individual was unable to work because of psychological distress was calculated for all of the affective, anxiety and alcohol disorders respectively. The burden of the affective disorders, 41.1%, was very similar to that of the anxiety disorders, 42.9%. In other words, the total days out of role in the previous four weeks were accounted for equally by depressive and anxiety disorders and were higher than the burden for any alcohol disorder (at 7.1%). The highest ranked disorders were panic attacks (32.7%), depressive episodes (32.4%), specific phobia (28.4) and post-traumatic stress disorder (24%).

When any mental disorder was considered, 61.8% of the total days unable to work due to psychological distress was attributable to a definable psychiatric disorder. Importantly, 38.2% represented days out of role for non-specific symptomatology.

This highlights the importance of acute distress in the absence of a diagnosis as a source of disability as well as diagnosable disorders.

The same issues arose when the total number of days of work cut-down and the prevalence of a disorder, as well as the severity of a disability in terms of days cut-down, were considered.

Any anxiety disorder was higher (at 33.4%) than any affective disorder (26%). This suggests that anxiety disorders have a more pervasive impact above and beyond days completely unable to function in the workplace. The three highest ranked disorders were panic attacks (21.9%), depressive episodes (20.2%) and post-traumatic stress disorder (19.6%). Again, alcohol disorders only accounted for 7.2% of total days cut-down due to psychological distress.

These findings also potentially indicate that there are a significant number of members in the ADF with a disabling disorder who are not known to command or are not receiving care. These figures highlight the need to address stigma and barriers to care, which create a major risk to the organisation. Further work will also be done to determine the economic cost to Defence and the impact on readiness and capability.

Table ES.6: *Impact of mental disorders on work in the previous month, ADF and ABS data*

ICD-10 disorder	Days totally unable to work		Days had to cut down on work	
	ABS mean	ADF mean	ABS mean	ADF mean
Any affective disorder	2.7	1.9	2.4	3.6
Any anxiety disorder	2.3	1.3	2.0	2.9
Any alcohol disorder	0.9	0.6	1.6	1.8
Any mental disorder	1.5	1.2	**1.7**	**2.6***

* Significantly different from the ABS study.

Mental disorder prevalence in targeted subgroups of ADF personnel

Demographic subgroups in the ADF that might require tailored or targeted mental illness prevention and treatment programs were identified in the study for further investigation. The categories analysed for this report were Service, rank and deployment status.

Rank

Military ranks were grouped into three categories: other ranks (private to corporal equivalents), non-commissioned officers (sergeant to warrant officer equivalents) and officers (lieutenant to general equivalents). The prevalence of any mental disorder in other ranks was 29.5%, non-commissioned officers 19.7% and officers 16.6% (see Table ES.7).

Table ES.7: *Estimated prevalence of 12-month mental disorders in the ADF, by rank*

	Other ranks	Non-commissioned officers	Officers
Any affective disorder	2,082 (13.3%)	1,847 (8.3%)	828 (6.9%)
Any anxiety disorder	2,846 (18.1%)	3,332 (14.9%)	1,242 (10.3%)
Any alcohol disorder	1,266 (8.1%)	849 (3.8%)	475 (3.9%)
Any mental disorder*	4,624 (29.5%)	4,400 (19.7%)	1,993 (16.6%)

* 'Any mental disorder' is not a total, as a person can have more than one estimated disorder.

There was no difference in rank in relation to affective or alcohol disorders. Anxiety disorders, however, were significantly less prevalent among officers than all other ranks. Further analysis indicated that there was very little difference between ranks on specific affective disorders, other than for bipolar affective disorder, with other ranks seven times more likely to meet criteria for these disorders than officers. Both non-commissioned officers and other ranks were significantly more likely to be diagnosed with an anxiety disorder when compared to officers and had significantly higher rates of panic attacks and agoraphobia. Non-commissioned officers were also twice as likely as officers to be diagnosed with social phobia. Other ranks were twice as likely as officers to have post-traumatic stress disorder.

Single Services

The prevalence figures in this report represent a significant burden of disorder that needs to be addressed. This burden affects not only the operational capability of the ADF but also the wellbeing of Service personnel and their families. As summarised in Table ES.8, there was a significant incidence of disorder across all three single Services.

Table ES.8: *Estimated prevalence of 12-month mental disorders in the ADF, by single Service*

	Navy	Army	Air Force
Any affective disorder	1,224 (10.5%)	2,693 (10.6%)	840 (6.4%)
Any anxiety disorder	1,638 (14.1%)	4,377 (17.3%)	1,405 (10.7%)
Any alcohol disorder	886 (7.6%)	1,417 (5.6%)	287 (2.2%)
Any mental disorder*	2,845 (24.5%)	6,196 (24.4%)	1,975 (15.1%)

* 'Any mental disorder' is not a total, a person can have more than one estimated disorder.

Further analysis revealed that Army personnel were significantly more likely than Air Force personnel to have an affective disorder but no single category of disorder was more prevalent. The significant deviation for affective disorders from the general community was for depressive episodes, with each Service statistically as likely to report a disorder (Navy 7.7%, Army 6.4%, Air Force 5%).

The Army was significantly more likely to report anxiety disorders than the Air Force, but the only specific disorder that was significantly higher in the Army compared to the Air Force was agoraphobia. The most prevalent anxiety disorder in the ADF was post-traumatic stress disorder, with each Service statistically as likely to report it (Navy 7.7%, Army 9.7%, Air Force 6.2%).

Navy members tended to have higher rates of alcohol disorders, followed by Army and then Air Force. Navy personnel were five times more likely and Army more than three times more likely to meet the criteria for alcohol harmful use than Air Force (Navy 4.6%, Army 3%, Air Force 0.9%).

Deployed versus non-deployed

Forty-three per cent of ADF members reported multiple deployments, 19% reported only one deployment, and the remaining 39% of personnel had never been deployed. Overall, there was very little difference in the prevalence of mental disorders between personnel who had been on deployment and those who had never been deployed. The only significant difference was that personnel who had been deployed were four times more likely to have had obsessive-compulsive disorder in the previous year.

As this was an unexpected finding, a further analysis – where deployment type was categorised as warlike or non-warlike – was conducted, which again did not reveal any difference. This may be due to the fact that the initial analysis of the impact of deployment was only possible at the ADF population level, which may mask risk groups that have a higher rate of mental disorders. For example, combat engineers and aviation personnel deployed to the Middle East Area of Operations may have had high trauma exposure and therefore be at greater risk of developing mental disorders.

Due to the potential level of trauma exposure on deployment, it was anticipated that the deployed sample would have higher rates of mental disorders. The fact that they were the same in the study is an issue that needs to be explored further. It may be that the ADF personnel who have been deployed are a healthier population or it may be that disorders do not emerge until personnel leave the Services. Initial results suggest, however, that the significant resources invested by the ADF in a comprehensive operational mental health support system may be effective in prevention and early intervention for mental disorders resulting from exposure to occupational stressors on operations.

Mental health co-morbidity and treatment in the ADF

Co-morbidity

Among the 22% of ADF members with a mental disorder, 15.2% had only one class of disorder (that is, anxiety, affective or alcohol), 6.1% had two and 0.7% had three.

Figure ES.10: *Co-morbidity of affective, anxiety and alcohol disorders in the ADF*

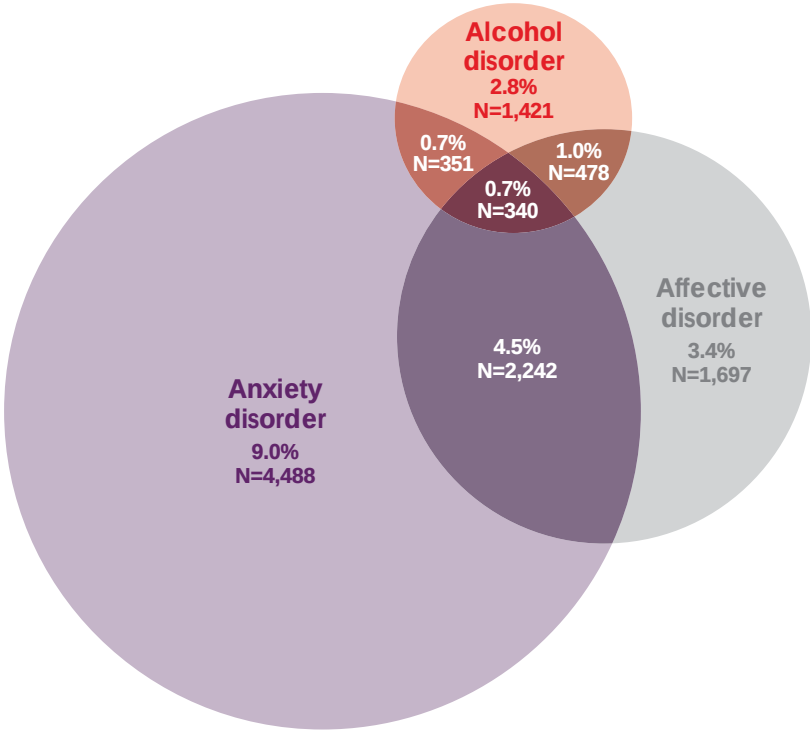


Figure ES.10 shows the overlap among members with one or more mental disorders. For example, of the estimated 2,590 personnel with an alcohol disorder, 1,169 or 45% also had an anxiety and/or affective disorder. Thus, a member presenting with one disorder had a high likelihood of having other disorders. All individuals should therefore be comprehensively assessed by a mental health professional, regardless of their reason for presentation.

Treatment of mental disorders

For those with a diagnosed mental disorder in the ADF, treatment rates varied across disorders. For example, half of those with the most prevalent anxiety disorders – post-traumatic stress disorder and panic disorder – reported receiving any form of treatment in the previous 12 months, and 15% of members with an alcohol disorder received professional treatment (see Table ES.9).

Table ES.9: *Percentage of ADF members receiving professional treatment*

ICD-10 disorder	Received professional treatment in previous 12 months		
	Yes (%)	No (%)	Don't know/refused (%)
Generalised anxiety	75.6	24.4	0
Depressive episodes	65.2	34.8	0
Post-traumatic stress	50.2	48.9	0.8
Panic disorder	48.3	51.7	0
Agoraphobia	46.3	53.7	0
Social phobia	25.2	74.8	0
Any alcohol disorder	14.8	85.2	0
Specific phobia	12.3	87.7	0
Obsessive-compulsive	11.7	85.3	3.0

Detecting mental disorders in the ADF

There are three instruments used both in the clinical setting and in screening to detect mental health issues, as well as to monitor mental health trends in the ADF:

- **Kessler Psychological Distress Scale 10 (K10)**, used to assess and monitor depressive and anxiety symptomatology
- **Posttraumatic Stress Disorder Checklist (PCL)**, used to provide an assessment of self-reported post-traumatic stress symptomatology
- **Alcohol Use Disorders Identification Test (AUDIT)**, used to assess and monitor alcohol consumption.

Analysis of these measures in the Mental Health Prevalence and Wellbeing Study indicated similar trends between the self-report data and the diagnostic clinical interviews. The ADF reported significantly higher levels of moderate to very high psychological distress in comparison to the general community. Personnel who had been deployed were less likely to report psychological distress, more likely to report post-traumatic symptoms and as likely to report alcohol use as personnel who had not been deployed.

Analysis was conducted to determine ADF-specific clinical cut-offs for the self-report screening instruments used by the ADF so that the maximum number of personnel could be identified for early intervention and levels of disorders could be accurately monitored. As a result of this analysis, two sets of cut-offs were determined:

- the optimal screening cut-off, which is the value that maximises the sum of the sensitivity and specificity (the proportion of those with and without the disease who are correctly classified), and should be used to identify individuals who might need care
- the optimal epidemiological cut-off, which is the value that brings the number of false positives and false negatives closest together, thereby counterbalancing these sources of error most accurately. This cut-off would therefore give the closest estimate of the true prevalence of 30-day ICD-10 disorder as measured by the CIDI and should be used to monitor disorder trends.

On the standard K10 cut-off of 20 that is currently used in Defence for clinical screens, the K10 performs better at predicting 30-day affective disorder than 30-day anxiety disorder. Psychometric analysis of the K10 indicates that the optimal screening cut-off for affective disorder is 19 and for anxiety disorder 17. Therefore, in order to most effectively capture both disorders, the conservative cut-off of 17 should be used.

To determine epidemiological 'caseness' or an indicator of the level of diagnosable disorders in the population, a more stringent cut-off needs to be applied in order to reduce the incidence of false diagnosis. For this purpose, in the ADF population a cut-off of 25 needs to be applied. This would provide the most accurate estimate of the number of personnel with either a current anxiety or affective disorder.

The original recommended cut-off for the PCL was 50 but, as a result of both ADF and US research, this has been modified to 30 in the ADF operational screening environment. This cut-off indicates the requirement for referral to a psychologist. Psychometric analysis of the PCL indicates that the optimal screening cut-off for clinical assessment of potential post-traumatic stress disorder is 29, while 53 provides the most accurate estimate of the number of personnel with diagnosable post-traumatic stress disorder.

The analysis for the AUDIT found that the optimal cut-off for detecting any alcohol disorder is 8, which matches the World Health Organization recommendation. Psychometric analysis of the AUDIT indicates that the optimal screening cut-off for alcohol harmful use is 8 and for alcohol dependence 9. Therefore, in order to most effectively capture both disorders, the conservative cut-off of 8 should be used, while a cut-off of 20 provides the most accurate estimate of the number of personnel with either alcohol harmful use or alcohol dependence.

Table ES.10: *Recommended cut-offs to detect current mental health trends in the ADF*

	Outcome	Optimal screening cut-off	Optimal epidemiological cut-off
K10	Current anxiety or depression	17	25
PCL	Current post-traumatic stress disorder	29	53
AUDIT	Current alcohol harmful use and dependence	8	20

The psychometric cut-offs summarised in Table ES.10 provide a basis for the development of mental health policy and screening guidelines in Defence. A number of factors need to be taken into account when determining the final cut-offs that will be used by the ADF, including what is socially, financially and ethically acceptable to the ADF. The psychometrically determined cut-offs, for example, have been calculated from a sample where the respondents were completing de-identified surveys and may need to be lowered to deal with the impact of potential under-reporting when surveys are used in a health care setting.

Exploring occupational mental health issues

Help seeking in the ADF

Considering the rates of disorder identified in the ADF population, it is important to understand the patterns of care utilisation and what individuals experience as barriers to seeking care. Typically, individuals will not seek care due to either negative perceptions or organisational barriers. The findings in this report in relation to help seeking, stigma and barriers to care are derived from a weighted subpopulation of ADF personnel who only completed the Health and Wellbeing Survey, that is, those individuals who had not been deployed to the MEAO (N=30,848, non-MEAO sample).

Almost one in five members of this group (17.9%) reported having sought help for a stress-related, emotional, mental health or family problem in the previous 12 months. Female personnel were more likely to have sought help than males. Non-commissioned officers and other ranks were significantly more likely to have sought help than officers.

Deployment history was also a significant predictor of help seeking. Those who had been deployed were 10% more likely to have sought help than those who had never been deployed. In relation to Service differences, there was no difference for men, but Air Force females were more like to have sought help than their Army and Navy counterparts.

The relationship between help seeking and psychological distress was the strongest finding. ADF members with high levels of psychological distress (measured using the K10) were more than 10 times more likely to have sought help in the previous 12 months than those with low levels of psychological distress.

Stigma and barriers to care

Research indicates that two main factors contribute to the low uptake of mental health care: the fear of stigma and perceived barriers to care. Stigma is a negative attitude resulting from the acceptance and internalisation of 'prejudice or negative stereotyping', while barriers to care are the organisational, procedural or administrative aspects of access to mental health care that may preclude or reduce access to mental health treatment and support. Barriers may include issues associated with confidentiality, anonymity and confidence in mental health service providers. These are influenced to varying degrees by internalised stigmas about access to care and the consequences of asking for help.

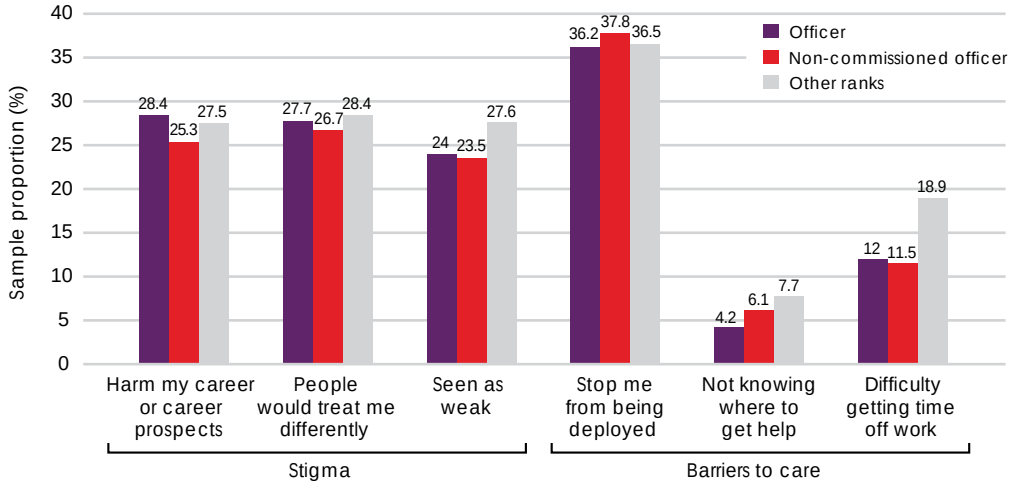
Among the respondents, the highest rated barrier to personnel seeking help for a stress-related, emotional, mental health or family problem in the ADF was the concern that seeking help would reduce their deployability (36.9%), whereas the highest perceived stigma was that people would treat them differently (27.6%) and that seeking care would harm their careers (26.9%) (see Table ES.11).

Table ES.11: *Estimated prevalence of stigma and barriers to care*

	ADF (%)	Males (%)	Females (%)
Stop me from being deployed	36.9	37.0	36.0
People would treat me differently	27.6	27.6	27.8
Harm my career or career prospects	26.9	26.9	27.2
Would be seen as weak	25.3	25.2	25.6
Difficulty getting time off work	14.7	14.7	14.5
Not knowing where to get help	6.3	6.5	5.4

When significant differences on the demographic variables were explored, the only significant difference for sex was that ADF females were 21% more likely than males to know where to get help.

Figure ES.11: *Estimated prevalence of stigma and barriers to care, by rank*



As summarised in Figure ES.11, most personnel indicated that they knew where to seek care, while other ranks were the most likely to indicate barriers, including not knowing where to seek care or being concerned that they would not be able to get time off work. Officers, on the other hand, were significantly more likely to indicate stigma, because it would harm their career and people would treat them differently. Other ranks were the most likely to indicate they would be seen as weak.

Army was consistently more likely to record both stigma and barriers to care items compared to the Air Force. When compared to Air Force personnel, Army personnel were:

- 40% more likely to indicate concerns that help seeking would stop them being deployed
- 29% less likely to know where to seek care
- 21% more likely to be concerned about getting time off work
- 16% more likely to have concerns about help seeking harming their career
- 14% more likely to be concerned that people would treat them differently
- 30% more likely to indicate they would be seen as weak.

When compared to Air Force personnel, Navy personnel were:

- 21% more likely to indicate that seeking care would stop them being deployed
- 32% more likely to indicate they would have difficulty getting time off work
- 21% more likely to be concerned about help seeking harming their career.

Personnel who had been deployed were 25% more likely to indicate that seeking care would stop them being deployed, 15% more likely to indicate that it would harm their career and 12% more likely to indicate that they would be seen as weak.

As well as these barriers to care, initial analysis of the data showed a strong positive relationship between perceived psychological distress and willingness to seek help. There also appeared to be a relationship between impact on functioning and whether a member had had treatment in the previous 12 months. This relationship suggests that, as well as barriers to care, the member needs to be able to recognise that they have a problem and be willing to admit it is detrimental to their functioning before they will seek care.

Within the study, 932 of the 11,018 ADF personnel estimated to have a mental disorder received a CIDI interview (both as part of the prevalence estimation and duty-of-care interviews). A cohort of personnel who have experienced a mental disorder has therefore been identified. This provides Defence with a unique opportunity to conduct a specific research program on pathways to care. This research would investigate issues of barriers to care and utilisation of treatment services.

Mental health and multiple deployments

Among all ADF members, an estimated 43% reported having been deployed multiple times, 19% reported having been deployed only once, and the remaining 39% had never been deployed. Army had the highest incidence of multiple deployments at 46%, followed by Navy with 41%. Air Force had the lowest frequency of multiple deployments at 36%. Navy, at 11%, had the highest proportion of personnel reporting six or more deployments.

Analysis of the data has not revealed a significant relationship between the number of deployments and mental health symptoms. There is a trend, however, that indicates greater levels of traumatic symptomatology with each deployment. The data show a strong direct relationship between lifetime trauma exposure and mental health symptoms. While more detailed analysis will be needed, it is likely that – consistent with the international literature – the number of deployments is not as predictive as the level of trauma or combat exposure for the level of negative mental health outcomes.

Mental health reform in the ADF

One in five of the ADF population had experienced a mental disorder in the previous 12 months, which was similar to the rate in the Australian community. Over half of the ADF had experienced an anxiety, affective or alcohol disorder at some stage in their lifetime, which was significantly higher than the Australian community rate. The incidence and prevalence of mental disorders suggests that any healthy worker effects in Defence appear to be counterbalanced by the impact of occupational stressors.

In terms of affective, anxiety and alcohol disorders, the ADF and the Australian community face similar challenges. The most common disorders in the ADF were anxiety disorders; as in the general community, post-traumatic stress disorder was the most prevalent of these. Affective disorders were associated with the largest deviation from the Australian community, with the prevalence of affective disorders in males in the ADF significantly higher than in the community. Although the rates of anxiety disorders were similar in the ADF to those in the community, the incidence of alcohol disorders was significantly lower across both sexes.

The study's data indicated specific cultural differences between the Services that need to be explored further. Army personnel were significantly more likely to have had an affective, anxiety or alcohol disorder than Air Force personnel, and were also significantly more likely to endorse stigma and barriers to care items. Navy members were more likely than Air Force to have an alcohol disorder and were more likely to report concerns about getting time off work, their career or deployability.

Overall, there was very little difference in the prevalence of mental disorders between personnel who had been on operational deployment and those who had never been deployed. This result suggests that the significant resources invested by the ADF in a comprehensive operational mental health support system may be effective in prevention and early intervention for mental disorders resulting from exposure to occupational stressors on operations. This conclusion is further supported by the fact that personnel who had been deployed were more likely to seek care than personnel who had never been deployed.

The data from the study provide a comprehensive baseline for future monitoring of mental health trends and have important implications for the further development of the ADF mental health and wellbeing strategy and service delivery model.

The ADF Mental Health Reform Program

Mental health and wellbeing in a military environment is unique. The military is an occupation where personnel are selected, trained and prepared to face adverse, stressful and potentially traumatising situations. To meet these demands, an approach that focuses on strengthening resilience and enabling recovery is essential.

A military occupational mental health and wellbeing approach has been adopted by the Mental Health, Psychology and Rehabilitation Branch within Joint Health Command. This approach provides a framework for developing interventions and research programs to meet the demands of military service. In order to meet the aims of strengthening resilience and enabling recovery in this approach, all those involved – command, the individual and the health care system – need to share responsibility.

In July 2009, Defence introduced a comprehensive four-year Mental Health Reform Program to implement the occupational military mental health and wellbeing model in Defence. The program addresses the recommendations of the Dunt Review (*Mental health in the ADF and transition to discharge*, February 2009). The 52 recommendations of the review are being implemented through the achievement of 10 goals:

1 Enhancing the mental health workforce
2 Improving mental health governance and service delivery
3 Improving mental health policy
4 Improving mental health training

5 Prevention strategies
6 Enhanced research and surveillance
7 Address mental health rehabilitation
8 Improve transition services
9 Support family engagement in the mental health care of ADF members
10 Improve facilities.

The results of the Mental Health Prevalence and Wellbeing Study will assist senior leaders in the departments of Defence, Veterans' Affairs, and Health and Ageing to target further work, especially in the areas of surveillance, detection, prevention, early intervention and treatment.

Implications for prevention in the ADF

Strong leadership behaviours are essential to destigmatise mental health problems and break down barriers to care. The current mental health peer program, which is being developed within the ADF, needs to be expanded into a **comprehensive peer support network**, including a leaders' version for the promotional training continuum. This would ensure that leaders at all levels are able to identify and manage occupational stressors that affect mental health and wellbeing and be advocates for members with disorders.

The fact that 3.9% of the ADF had contemplated suicide within the previous year, with 1.1% having made a plan, is indicative of the significance of this issue to the ADF. However, the finding that this did not translate into significantly higher rates of suicide needs to be explored and supports the investment Defence is making by evaluating the current **ADF Suicide Prevention Program**.

The finding that rates of alcohol disorder in the ADF were no higher than in the general community reinforces the investment Defence has made in the ADF Alcohol, Tobacco and Other Drug Program, as well as the recent development of the **ADF Alcohol Management Strategy**.

The BattleSMART and **resilience-building programs** need to be further refined to meet the type of occupation stress identified, especially trauma exposure, and to better address the more prevalent mental health outcomes. Cognitive and behavioural strategies to address depressive and post-traumatic symptoms should be a priority.

Analysis of the data did not reveal a significant relationship between the number of deployments and mental health symptoms. There is, however, a trend indicating greater levels of traumatic symptomatology with each deployment. The data show a strong direct relationship between lifetime trauma exposure and mental health symptoms. While more detailed analysis will be needed, these initial findings suggest that, while the risk of post-trauma symptomatology increases with the number of deployments, the most significant risk factor is the level of actual combat or trauma exposure, which supports the requirement for additional **interventions for high-risk groups**.

Post-traumatic stress disorder is the most prevalent of the anxiety disorders observed in the ADF and is an issue for all three Services. The rollout of Army's *Dents in the Soul* DVD on the disorder, which aims to demystify it and encourage help seeking to secure early intervention, should continue and consideration should be given to **mental health literacy initiatives** for the other two Services and for other disorders.

Implications for early intervention

It is estimated that one in five ADF members has a mental disorder. As in the general community, the workload and health services required to meet this need are substantial. One strategy for early intervention would be to **upskill general duties medical officers** in detection and brief intervention, as they are likely to have routine contact with ADF personnel.

Analysis of the data has allowed psychometric determination of the optimal clinical cut-offs for ADF mental health screening instruments. Work now needs to be done to determine the **most ethical and cost-efficient cut-offs** for the ADF environment so that policy and processes can be updated.

The current **ADF screening programs** designed to detect personnel for early intervention could be further strengthened by ensuring that they provide an opportunity for early and single-session brief interventions. The ADF conducts mental health screening for all personnel in the deployment cycle. However, to ensure that personnel who are not deploying are regularly assessed, it is proposed that an annual mental health screen be considered.

The majority of personnel indicated they knew where to seek care and that they would be able to get time off work. This provides support for the range of current **mental health literacy programs**. The data indicate, however, that further work could be done in targeting specific messages to the different ranks in the ADF in relation to both stigma and barriers to care.

Junior ranks would benefit from greater reinforcement of the fact they will be supported to seek care, while messages to officers need to address stigma. Officers were the least likely to seek help for a mental health condition but the most likely to report negative stigma associated with seeking care – they felt that help seeking would harm their career or that others would treat them differently. These findings suggest that any **communications strategy** to encourage help seeking among officers needs to target this population through specific messages.

Defence should continue to develop and implement **options for e-mental health training** as a strategy to address concerns about stigma and barriers to care that is targeted to the ADF population. Such approaches have been demonstrated to be effective in delivering mental health information and improving access to care.

Co-morbidity outcomes, especially in relation to alcohol, suggest that commanders need more training to understand the relationship between mental disorders and antisocial behaviours – such as acts of aggression, disinhibition and drink driving – that may indicate underlying problems. **Revised policy** should therefore ensure that personnel in the disciplinary system are considered for a mental health assessment.

Analysis of self-reported psychological distress and post-traumatic symptomatology highlight the spectrum of severity of symptoms in the ADF, including high levels of mild and moderate symptomatology. Research indicates the significant risk of progression from a mild to a more severe disorder. So there is potential benefit in the development of **early intervention treatment programs** for ADF members who are experiencing only moderate symptoms. The study also found that there is significant work impairment even at a moderate level of distress in the ADF population. This issue is of particular relevance in those returning from deployment, where there is a risk of delayed onset disorders, particularly post-traumatic stress disorder.

Implications for service delivery and treatment

The estimate that one in five ADF members has a mental health disorder indicates the requirement for Defence to prioritise **enhancement of the ADF mental health service delivery model** within the mental health reform process. As in the general community, the workload and health services required to meet this need are substantial.

Forty-one per cent of those with an affective disorder reported severe or very severe impact associated with their symptoms. For the ADF, this means that **enhanced treatment within the employment setting** would be beneficial in terms of the productivity gained.

One strategy to improve services is investment in **e-mental health approaches to treatment**, especially to address the needs among the young adult ADF population and those with affective disorders. These approaches are cost-effective and have the potential to provide far more flexible access to care at times that would better suit ADF personnel.

The patterns of prevalence across sex, rank and Service for alcohol disorder are different to the patterns observed for affective and anxiety disorders (that is, alcohol is a particular issue for younger personnel, whereas depression and anxiety occur in a number of age ranges). This indicates that alcohol consumption is not simply a measure of psychological disturbance and that intervention strategies for alcohol problems need to target binge drinking as well as long-term alcohol disorders. It gives support to the investment Defence has made in **regionally based outpatient treatment programs**.

There is a requirement for further **upskilling of health providers**, as all Defence health personnel need to have the skills to deal with mental health problems and illness. For example, there is a significant rate of suicidal ideation in the ADF, which has the potential to lead to more serious suicidal behaviour. The ADF needs to continue to develop programs to ensure comprehensive suicide risk assessment protocols and upskilling of health personnel.

Additionally **co-morbidity** of mental disorders is common in the ADF. It needs to be accounted for in any individual or group treatment program and clinicians need to be trained to routinely assess for management of more complex presentations.

Implications for surveillance and detection

The levels of mental disorders in the ADF population indicate the importance of monitoring of mental health trends through responsive and comprehensive **electronic health surveillance systems**.

The **youngest cohort** of ADF members is particularly at risk of having a mental disorder. Many of these individuals will leave after five years of service without their disorder being diagnosed or treated. The LASER study should assist in identifying risk and resilience factors during this period of service. These young members are at particular risk in the community of not receiving adequate care and the link to military service may go unrecognised. Systems are required to ensure that the Department of Veterans' Affairs has visibility of this group, especially those with veteran entitlements.

This study found that a number of **typically rare disorders** like bipolar affective disorder exist in the ADF. It is therefore important that clinicians are trained to recognise and conduct effective differential diagnoses to ensure that treatment services are targeted effectively.

Analysis of the data has allowed psychometric determination of the **optimal epidemiological cut-offs** for ADF mental screening instruments. Consideration needs to be given to their effective use in an ADF environment.

A **significant number of personnel with mental disorders had received no care** in the previous 12 months. This may have been due to stigma, or barriers to care, or because they did not recognise that they had a problem. Despite the fact that 5.2% met diagnostic criteria for an alcohol disorder in the previous 12 months, only 2.1% indicated that they had a problem with drinking. This supports the inclusion of validated mental health screening in periodic health assessments.

ADF females were not significantly different from females in the community other than having a **lower prevalence of alcohol disorders**. Comparison of data in this study with the LASER study should allow the ADF to determine whether females who join the ADF are more resilient than those in the community and what the protective and risk factors are for both sexes.

Comparisons with major allies

The literature that most resembles the current findings is a study conducted of the Canadian Forces, where a stratified sample was interviewed using an earlier version of the same diagnostic interview used in this study. The study revealed that 14.9% of the Canadian Forces had a mental disorder. Although the prevalence of disorders in the Canadian Forces is apparently lower than in the ADF, the two studies used different diagnostic criteria to analyse the data, with the Canadians using the Diagnostic and Statistical Manual of Mental Disorders – 4th edition (DSM-IV) diagnostic criteria. For the present study, ICD-10 criteria were used to allow comparison with national rates. The ICD-10 criteria appear to use slightly lower thresholds; this may explain at least some of the higher apparent prevalence of mental disorders in the ADF.

Neither the United Kingdom nor the United States has yet conducted an interview-based study of the prevalence of mental disorders in their defence forces. Studies of the UK forces using self-reports (for example, the General Health Questionnaire) estimate that 19.7% of that population has a mental disorder, which is similar to ADF rates. In the US forces, disorder rates are higher in deployed samples, but the overall rate of disorder is estimated at 18.3% of the forces' population, which is again similar to the ADF rate.

Future work

The dataset this study has produced for the future monitoring of the health of ADF personnel is invaluable. There are still a range of occupational issues that have not been examined, including the impact of social support, family relationships, quality of life, recognition of service, bullying, health risk behaviours, physical issues and mild traumatic brain injury. The study provides a baseline for further monitoring of the quality and effectiveness of mental health services offered to both ADF members and veterans. Joint Health Command, in consultation with key stakeholders, will determine the priorities for the next level of analysis.

The end of each section in this report provides a summary of proposed further analyses that could be conducted using the study's dataset. As the ADF is currently involved in deployments involving conflict, exploration of the data that would enhance the mental health and wellbeing of currently deployed personnel should be a priority.

However, as the greatest need appears to be in those who have not been deployed, this needs to be balanced with exploration of the factors that will enhance service delivery for the entire ADF population.

The data from this study will provide an important benchmark for current research into the ADF population. In particular, they will provide comparison points for deployment health studies and for the detailed investigation of personnel who have been deployed to the Middle East Area of Operations.

The data also provide ADF-specific normative data that will provide a context for understanding the LASER findings and for other initiatives like the ADF Alcohol Management Strategy and the third-country decompression trial.

The two-phase design, which included the CIDI, means that Defence has a cohort of personnel identified as having a mental disorder in 2010. Those ADF members in the cohort who have consented to be contacted could be followed up to determine if they have care, or need it, with a focus in the research on determining the pathways to care that better address stigma and break down barriers to care.

The findings that suggest the preventive systems in the operational mental health support system are having a positive impact on the mental health status of the ADF need to be further evaluated to determine which of their components are important. Data from this study could be utilised as a benchmark in this evaluation process. Furthermore, the data provide a baseline against which key components of the ADF mental health reform process can be evaluated.

Now that comprehensive mental health prevalence rates have been established for the ADF, consideration needs to be given to the most effective mechanism to monitor mental health trends over time. This report has established cut-offs that will allow more effective monitoring of mental health trends using self-report data and the new Joint electronic Health Data Information system, or JeHDI. Work has also begun in Australia on the next national mental health prevalence study by the ABS. Consideration needs to be given to the most effective method for Defence, in collaboration with the Department of Veterans' Affairs, to leverage off this national program.

Conclusion

The 2010 ADF Mental Health Prevalence and Wellbeing Study is a major deliverable of the ADF Mental Health Reform Program, as it has provided the foundation for the 2011 ADF Mental Health and Wellbeing Strategy and the future evaluation of mental health interventions and services.

It is an important overview of the status of mental health and wellbeing in the ADF which demonstrates that, as in the Australian community, the identification and treatment of mental disorders must be a priority. However, due to the unique demands of military service, the ADF has a different mental disorder profile to that of the community and there are subgroups within it that warrant further detailed investigation and targeted prevention and treatment programs.

The findings summarised in this report suggest that the comprehensive ADF operational mental health support program is assisting to reduce the levels of disorder in deployed populations. Despite this, there are still significant barriers to seeking care and untreated mental disorders are affecting capability. Dealing with the burden of mental disorder

in personnel who have never been deployed and therefore are not involved in the operational mental health support continuum will be a particular challenge to be addressed through the mental health reform process. The ADF has robust tools to detect mental disorders and there is a wealth of data yet to be analysed that will provide significant insight into the range of occupational issues and potential interventions.

The initial summary of the data in this report provides a strong foundation for the prioritisation of programs in the development of the 2012–2015 ADF Mental Health and Wellbeing Action Plan. In particular, it highlights the need for continued programs to address stigma and break down barriers to care. These include a command-led communications strategy, consolidating and enhancing current ADF mental health treatment services, comprehensive upskilling of health providers, and establishing an informed ADF peer network. Most importantly, the data provide a baseline against which to benchmark the ADF Mental Health Reform Program and inform the development of its initiatives, policies and performance indicators.

INTRODUCTION

> Yes, we ask an inordinate amount from our people and Australia needs to understand that. We are placing young men and women in some of the most dangerous, difficult and life-changing situations you can imagine.
>
> And those who are wounded, those who are killed, their families face equal challenges. We cannot underestimate the damage that we might be doing to our people through constant stress. We must do everything we can to help them out psychologically, with medical care, with everything. These people are putting their lives on the line, they do this without question. They don't flinch and when they're hurt, when they're hurting as they will down the years, we've got to keep stepping up as a society and look after them.
>
> Major General John Cantwell, AO, *Four Corners*, ABC, 2010

Mental health and wellbeing in the Australian Defence Force

Over the past decade, the demands placed on the ADF have steadily increased due to the level of operational deployment in Australia, our region and the Middle East. Currently, in a given 12-month period, up to 12,000 members of the ADF will be in the operational deployment cycle – that is preparing, deploying or transitioning home.

ADF personnel are deployed to locations that include Afghanistan, Iraq, East Timor and Solomon Islands, as well as making contributions to the United Nations and other peacekeeping operations around the world. There are also personnel ready to respond to natural disasters, conducting border protection operations on mainland Australia and in our maritime and air approaches, and providing assistance to Indigenous communities in remote regions (Houston, 2008). Within the ADF workforce, almost half (43%) have been deployed multiple times.

These levels of high operational tempo not only expose ADF personnel to a range of occupational risks and hazards while on deployment, but also place significant pressure on those supporting the 'raise, train and sustain' functions. Furthermore, the high operational tempo is set in a broader context of ongoing global financial uncertainty, resulting in the need for the ADF to operate as efficiently as possible and to implement major changes through the Strategic Reform Program. Against this background, there is growing concern from government, command, service personnel and the community about the impact of the recent level of tempo of deployment and occupational stress within the ADF on the mental health of serving personnel.

A substantial body of research has been provided by all our major allies, namely the United States, Canada, the United Kingdom and the Netherlands, on the psychological and physical health of their defence force members, particularly those deploying to the Middle East Area of Operations. Understandably, there is public concern about the comparative rates of injury among our allies, and it is important for Defence to be able to give an informed response about ADF members. This study emphasises the commitment of Defence to developing a comprehensive understanding of the mental health and wellbeing of personnel who voluntarily enlist to serve Australia.

In 2002, Defence, consistent with the national mental health reform agenda (Commonwealth of Australia, 2008; Department of Defence, 2002, 2007), identified the need to develop a mental health strategy to improve service planning and provision in the ADF. The strategy had six initiatives:

- Integration and Enhancement of Mental Health Services
- Mental Health Research and Surveillance
- Alcohol, Tobacco and Other Drugs Program
- Suicide Prevention Program
- Resilience Building Program
- Critical Incident Mental Health Support.

A review of the progress of the ADF mental health strategy was conducted by Professor David Dunt in 2009. He identified a key component of the strategy that was missing: an understanding of ADF mental disorder prevalence rates. He noted that ADF prevalence rates were likely to differ from those of the general Australian population, but that determining the degree would be difficult due to the 'countervailing effects of the healthy worker effect and high occupational stress' (Dunt, 2009, p. 1).

The 'healthy worker effect' comes from the fact that, during recruitment, the ADF takes steps not to enlist individuals with pre-existing disorders. It then provides quality and accessible health services to all of its members. In addition, there is an occupational health service in the ADF that provides quality care at no cost to ADF members and, following deployment, ADF members are extensively screened to ensure they receive treatment if they need it. The ADF workforce should, therefore, be healthier than the general community.

On the other hand, members of the ADF are at risk of developing mental disorders, as they are exposed to a range of occupational stressors – for example, exposure to traumatic events and extended periods of time away from their primary social support networks. As a consequence, despite the existence of programs to mitigate these risks, it is important to determine the nature and impact of mental disorders within the ADF.

Comparison with the Australian community

The highest levels of government have recognised that accurate estimates of the prevalence of mental disorders are required for policy and service delivery in the Australian community. Two studies were conducted by the Australian Bureau of Statistics, a decade apart, which estimated the prevalence of mental disorders in the Australian population. These rates cannot be directly extrapolated to the ADF, however, due the unique demographics of its workforce (Slade, Johnston, Oakley Browne, Andrews, & Whiteford, 2009).

The most recent National Survey of Mental Health and Wellbeing found that one in five Australians aged 16–85 years had experienced a mental disorder in the previous 12 months, or the equivalent of 3.2 million Australians (Slade et al., 2009). The survey found that the prevalence rates of any disorder were higher in the youngest age group and among females.

The higher prevalence of mental disorders in young adults has particular significance for the predominantly youthful ADF population. A natural pattern of emergence of mental disorders occurs with the neurodevelopmental effects of maturation of the brain that places young adults at risk (McGorry, 2011) even if they are healthy at the time of their recruitment. Hence, screening of young adults at the time of recruitment has only limited capacity to minimise the prevalence of mental disorders in the ADF. In addition, substance use disorders are particularly prevalent in the younger population (13% of the 16–24 age group have a substance use disorder), which poses a further risk to the ADF.

There are many considerations other than just the risk of younger age for mental disorders that prevent direct extrapolation about the ADF from the broader community. For example, the majority of ADF members are male, and men generally have lower rates of the more common disorders than women, other than substance abuse.

The National Survey of Mental Health and Wellbeing included a category, 'serving in the Australian Defence Force', which reported a prevalence rate of 16.5% for any 12-month mental disorder. However, this category included not only serving personnel but also those who had overseas qualifying service and former Australian Defence Force members, so it is not directly applicable to the ADF.

In summary, an understanding of national community rates of mental disorders is not sufficient to determine service delivery or intervention requirements in the ADF. This is supported by recommendation 12.1 of the Dunt Review (Dunt, 2009), which states that:

> The conduct of a prevalence survey of mental health conditions in the ADF should be a high priority. Different options exist and the aim should be to choose the one that best produces robust, useful data and at reasonable cost.

Epidemiological studies of other defence populations

Internationally there have been relatively few epidemiological studies involving military populations, which limits the ability to directly extrapolate ADF rates. The sparseness of this research contrasts with the extensive research that has been done into the effects of deployment and the prevalence of post-traumatic stress disorder.

The limitation of studies to date has been that they use self-report surveys; the only interview-based study of a currently serving defence force to date examined the Canadian Forces (Sareen et al., 2007). The study systemically surveyed a stratified sample of 5,154 regular serving members, using the structured World Mental Health Composite International Diagnostic Interview (CIDI), version 2.1, at the same time as a national mental health survey was conducted by Statistics Canada. The survey demonstrated a prevalence of any mental disorder of 14.9% (using DSM-IV criteria) (American Psychiatric Association, 1994), but only examined the prevalence of a limited number of disorders. The most prevalent conditions were:

- major depression (6.9%)
- alcohol dependence (4.8%)
- post-traumatic stress disorder (2.3%).

The Canadian study also examined the risk factors for mental disorder, including the impact of peacekeeping missions, combat and exposure to atrocities and massacres. The study demonstrated that peacekeeping, in contrast to combat, tended to have a positive effect on mental health except for post-traumatic stress disorder.

Other cohort studies of US and UK forces have used self-report measures, which limits the interpretation of their conclusions. The Millennium Cohort Study is in the process of prospectively examining, over a 21-year period, three panels of US service members. An examination of the first wave of recruitment of 76,476 individuals found that the presence of any disorder in the population was 18.3% (Riddle et al., 2007; Ryan et al., 2007). The most prevalent conditions were:

- alcohol abuse (12.6%)
- major depression (3.2%)
- post-traumatic stress disorder (2.4%).

Young males in active combat roles had the highest rates of alcohol-related problems. The rates of post-traumatic stress disorder differed according to the region of deployment – 12% of Iraq veterans had this condition in contrast to 6.2% of Afghanistan veterans.

The King's Centre of Military Mental Health Research (Hotopf et al., 2006) has conducted extensive studies, using self-report measures, of the impact of deployment on British forces. These data identified potential mental disorders in 19.7% of UK forces using the General Health Questionnaire (Fear et al., 2010).

The impact of deployment on mental health

Examination of the impact of deployment on currently serving personnel in the military forces of other countries has provided a range of valuable insights into the prevalence of potential mental disorders among Australia's allies. Only one published study to date has investigated the prevalence of mental disorders due to warlike deployment in the Australian Defence Force, but it was primarily a study of naval personnel. It found that 31% of those deployed to the first Gulf War developed a psychiatric disorder following their deployment, using the CIDI to provide diagnoses of mental disorders. This rate contrasted to a rate of 21% for a DSM-IV disorder in the comparison group who could have been deployed (Ikin et al., 2004).

There have, however, been a number of other studies, particularly among the US and UK populations. One influential report examined US members before their deployment, and then again after their return from Iraq or Afghanistan (Hoge et al., 2004). Prior to deployment, a moderate or severe mental disorder was detected in 14.3% based on the Patient Health Questionnaire and the Posttraumatic Stress Disorder Checklist definitions of disorder. After deployment to Afghanistan, a rate of 17.1% was recorded, in contrast to 19.5% among Iraq veterans.

A much larger US study examined Afghanistan veterans (N=16,318) and veterans from Iraq (N=222,620) and other locations (N=64,967) (Hoge, Auchterlonie, & Milliken, 2006). The study used an abbreviated measure for post-traumatic stress disorder as well as a measure of depression. Nineteen per cent of Iraq veterans, 11.3% of Afghanistan veterans and 8.5% of veterans of other deployments reported a mental health problem. The rate of post-traumatic stress disorder in the Iraq veterans was 9.8% compared with 4.7% in the Afghanistan veterans.

The King's Centre of Military Mental Health Research has published a number of reports on the UK armed forces. The most recent report examined a cohort of 9,990 veterans and reported a prevalence of 4% for post-traumatic stress disorder using the Posttraumatic Stress Disorder Checklist. In addition, 19.7% of the population

were identified as having any mental disorder using the General Health Questionnaire and 13% were identified as abusing alcohol based on the Alcohol Use Disorders Identification Test (Fear et al., 2010). The authors concluded that for regular personnel, an effect of deployment to Iraq or Afghanistan on probable post-traumatic stress disorder and common mental disorders was not found. A modest effect of deployment on alcohol consumption, however, was detected.

A substantial benefit of the methodology of the UK study was the use of a comparison group who had not been deployed to the Middle East Area of Operations (MEAO). Previously, the King's Centre of Military Mental Health Research group had published eight papers describing the cohort in detail (Hotopf et al., 2006). The UK study found that 69% of the comparison groups not deployed to the MEAO had other deployments, including during the Falklands War and the first Gulf War in 1991, and to Northern Ireland and Sierra Leone.

The ADF Mental Health Prevalence and Wellbeing Study provided an opportunity to investigate mental disorder in both a deployed group and a non-deployed comparison group in an Australian context.

The ADF Mental Health Prevalence and Wellbeing Study

The 2010 ADF Mental Health Prevalence and Wellbeing Study was designed to establish the prevalence of mental disorders in the Australian Defence Force. To support service delivery and intervention strategies, the study also examined risk and protective factors. An understanding of these factors will allow Defence to further develop an occupational military mental health and wellbeing framework to support its members. The study provides the foundations for the design and evaluation of the framework. In addition, existing programs in the ADF will need to be assessed in light of the study's findings.

As part of the Mental Health Reform Program resulting from the Dunt Review, Defence is initiating a comprehensive occupational approach to mental health service delivery (Adler, Bliese, & Castro, 2011; McFarlane & Bryant, 2007). This approach acknowledges the importance of both prevention and evidence-based treatment in maintaining the mental health and wellbeing of ADF members. Fundamental to strengthening resilience and enabling recovery in a military environment is a shared responsibility for mental health and wellbeing between command, individual ADF members and the health care system. An understanding of the burden of disorder, as well as occupational risk and protective factors, will not only inform new service development and prioritisation but will also enable assessment of the efficacy of existing initiatives.

Study sample

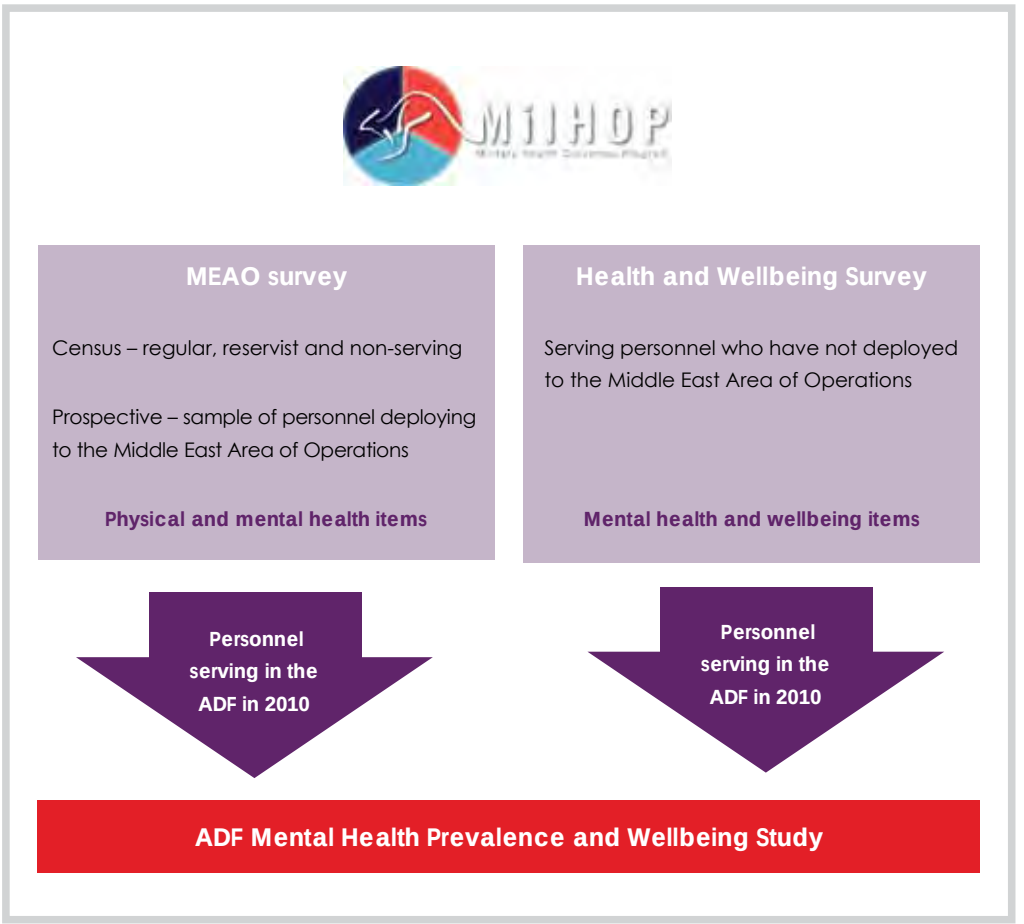
The 2010 ADF Mental Health Prevalence and Wellbeing Study measured mental health problems and psychological distress in a representative sample (N=50,049) of currently serving ADF personnel from regular Navy, Army and Air Force personnel. Trainees and reservists were not included in the sample. The study included all regular ADF personnel who completed the survey between 23 April 2010 and 31 January 2011.

The sample was made up of two mutually exclusive subpopulations (see Figure I.1). Subpopulation 1 comprised ADF personnel who had been deployed to the MEAO. Subpopulation 2 comprised ADF personnel who had never been on operational

deployment or personnel who had been deployed to an operation other than the MEAO.

Subpopulation 1 came from a broader MEAO study of both physical and mental health (Census and Prospective), which was conducted by the Centre for Military and Veterans' Health (University of Queensland and University of Adelaide node). Subpopulation 2 came from the Health and Wellbeing Survey, which focused primarily on the mental health and wellbeing of all ADF members who had not been deployed to the MEAO. The Centre for Traumatic Stress Studies at the University of Adelaide worked in collaboration with the Directorate of Strategic and Operational Mental Health in Joint Health Command. Subpopulation 1 and subpopulation 2 were combined to create the Mental Health Prevalence and Wellbeing Study dataset.

Figure I.1: *Data sources for the 2010 ADF Mental Health Prevalence and Wellbeing Study*



As at 31 January 2011, 52.5% (26,281) of ADF personnel had consented to participate in the study, 8.6% (4,293) had declined to participate, and 38.9% (19,475) had not responded. The breakdown of individuals with enough data to be included in the survey is summarised in Table I.1. As the population characteristics are known

(that is, sex, Service, medical employment classification status and deployment history), it is possible to compare personnel who responded to the survey with personnel who did not, allowing weighting of the data to provide estimates of prevalence that are representative of the entire serving regular ADF.

Table I.1: *Response rates by service for the Mental Health Prevalence and Wellbeing Study*

	Population	Respondents	Rate
Total ADF	50,049	24,481	48.9%
Navy	11,612	5,392	46.4%
Army	25,356	11,429	45.1%
Air Force	13,081	7,660	58.6%

The characteristics of respondents included:

- Sex – consistent with the ADF population, the sample was predominantly male (84.1%, versus 15.9% for females), although ADF females were more likely to respond than ADF males.
- Service – 22% of survey respondents were Navy, 46.7% were Army and 31.3% were Air Force. When the different Services were compared, Air Force personnel were most likely to respond and Army personnel were least likely.
- Age – the response rates were lower in the younger age groups. This was particularly notable among those aged between 18 and 27.
- Marital status – ADF personnel who were married were more likely to respond. Married personnel made up 77.1% of respondents, in contrast to 62.9% of the overall ADF who were married.
- Medical employment classification (MEC) – ADF personnel who were MEC 1 were slightly under-represented in the respondent group (61.1%) compared to the total ADF population (65.6%) classified as MEC 1. ADF personnel who were MEC 2 and MEC 3 were slightly over-represented.
- Rank – ADF personnel in other ranks had a significantly lower response rate. Only 19.7% of other ranks responded, compared to 31.4% of other ranks across the ADF. In contrast, non-commissioned officers were more likely to respond.
- Deployment and education – neither had much impact on the response rates.

For more details on the demographic characteristics of respondents and non-respondents, see Annex B.

Study design

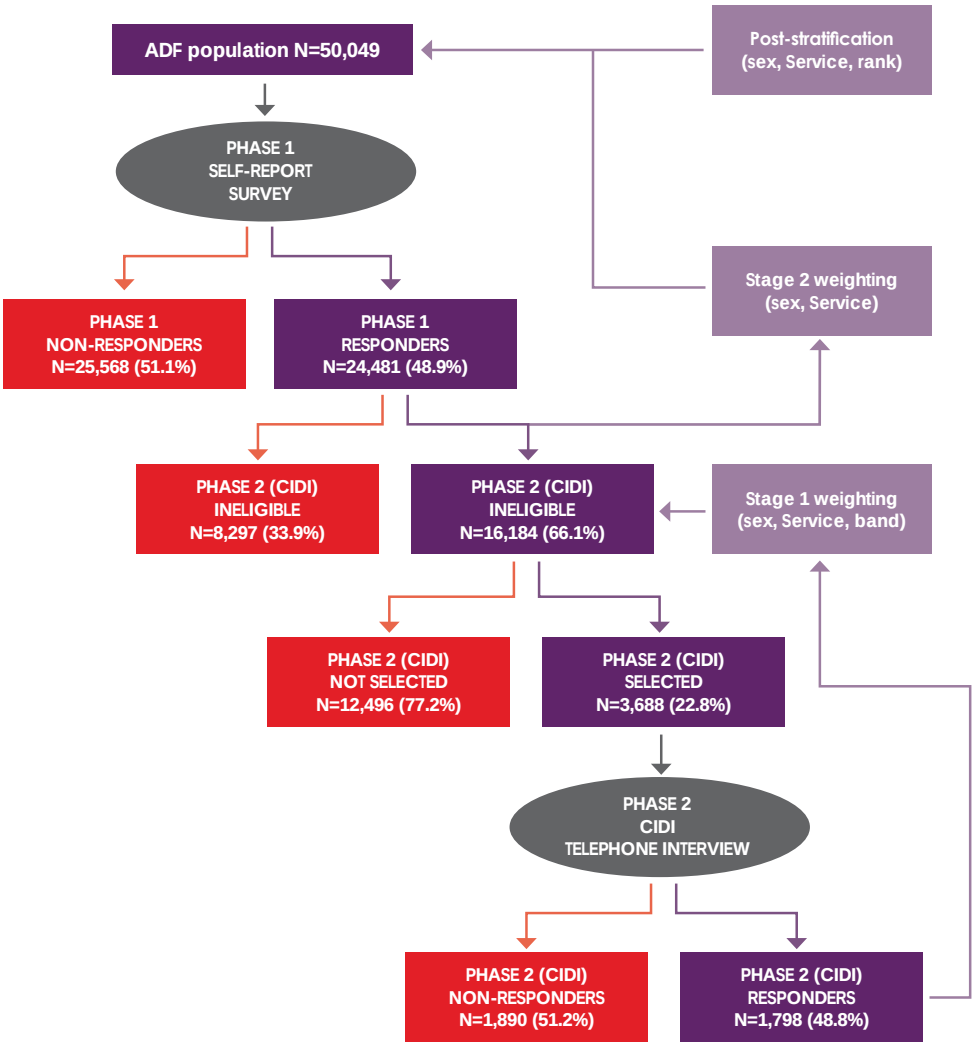
The study used a two-phase design. This approach to epidemiological research has many strengths and is well accepted in the investigation of the prevalence of mental disorders (Salim & Welsh, 2009). The design of the study optimised the information from another questionnaire-based study that was already being conducted on veterans who had been deployed to the MEAO (see Figure I.1), which could be easily extended to allow prevalence estimates of the entire ADF.

The first phase aimed to investigate the levels of psychological symptoms through a questionnaire using a range of self-report measures, including those examining common symptoms of psychological distress, post-traumatic symptomatology and alcohol use. The self-report instruments used have limitations, however, in providing precise information about the diagnostic nature of disorders, their incidence and the date of onset (see annexes A and C).

The two-phase design allowed a targeted second phase, which used a structured diagnostic interview based on the questionnaires on a subsample of respondents. The second phase provided an efficient method of capturing further information and substantially increased the quality of the information gained from the study.

The first phase allowed the selection of a stratified sample of high scorers for interview, which increased efficiency by limiting the number without a disorder. The Phase 2 sample was then weighted to represent the entire ADF (see Figure I.2).

Figure I.2: *ADF Mental Health Prevalence and Wellbeing Study – two-phase design and weighting process*



The two-stage weighting process, in combination with the 48.9% response rate and oversampling of high scorers, enabled the study to provide valid estimates of prevalence, which minimises the chance of random error.

The interview used was the Composite International Diagnostic Interview (CIDI), a widely accepted instrument in psychiatric epidemiology. This instrument has been used in at least 28 other countries, as well as in the Australian community as part of the World Mental Health Survey (Kessler & Üstün, 2004). The response rates and methods of recruitment and stratification are set out in Annex A.

Study goals

Table I.2 provides a summary of the three major goals of the ADF Mental Health Prevalence and Wellbeing Study.

Table I.2: *Goals of the ADF Mental Health Prevalence and Wellbeing Study*

Goal 1: Prevalence – Establish ADF baseline prevalence rates of mental disorders in order to target mental health services and identify high-risk groups	
Goal 2: Detection – Refine methods for detecting mental disorders in ADF populations	
Goal 3: Occupational issues – Explore the impact of occupational stressors on the mental health and wellbeing of the ADF population	
Predictive factors	**Wellbeing outcomes**
Deployment history	Help seeking
Trauma exposure	Resilience
Level of social support	Physical health
Bullying	Mild traumatic brain injury
Recognition of service	Quality of sleep
Stigma	Level of anger
Barriers to care	Family relationship
Dietary supplements	Support networks
Caffeine and tobacco use	Quality of life

The first goal of the study was to establish baseline prevalence rates of mental disorders using the criteria of the International Classification of Diseases, 10th revision (ICD-10) (American Psychiatric Association, 1994; World Health Organization, 1992). The primary focus of this survey was to examine the following categories of disorder:

- affective disorders – mild, moderate and severe depression, dysthymia and bipolar affective disorder
- anxiety disorders – panic disorder, panic attacks, agoraphobia, simple phobia, social phobia, generalised anxiety disorder, obsessive-compulsive disorder, and post-traumatic stress disorder
- alcohol disorders – alcohol harmful use and alcohol dependence.

The second goal of the study, using the stratified sample, was to establish the optimal cut-offs for the self-report questionnaires routinely used in the ADF. For an instrument to screen disorders adequately, its psychometric properties and the optimal cut-offs

for the population of interest must be determined. This is achieved by calibrating test scores against a 'gold standard' diagnostic interview. The study therefore examined the psychometric performance of the three instruments most commonly used in the ADF against the CIDI.

The third goal of the study was to examine, through self-report measures, the impact of occupational stressors that have been shown in the literature to be either risk or protective factors for mental disorders (Adler et al., 2011).

Strengths and limitations of the study

The major strength of the Mental Health Prevalence and Wellbeing Study is that it is the first comprehensive examination of mental health in the serving population of the ADF. It establishes baseline data for the ADF that will provide an invaluable resource for understanding service delivery requirements and allowing Defence to develop targeted mental health and wellbeing programs for ADF personnel. The findings of the study will assist in targeting the initiatives in the Mental Health Reform Program. Priority has therefore been given within this report to informing the development of the 2011 ADF Mental Health Strategy.

Methodologically, the main strength of the study lies in its two-phase design, which provided estimates of the prevalence of common mental disorders for currently serving ADF personnel. Using this design, the prevalence of disorder in a subsample of high scorers was weighted back to represent the entire ADF, based on a stratification process that used the CIDI (Kessler & Üstün, 2004). The stratification approach, whereby a larger proportion of high scorers were selected for interview, decreased the possible error in making prevalence estimates by ensuring the accuracy of diagnostic assessment in the group in more of those likely to have a disorder. Second, due to the fact that the approach initially screened a large proportion of the ADF population before they were selected for interview, the potential for error was further reduced. A further advantage of conducting a prevalence study in the ADF was that the demographic and health status of the ADF members who did not respond at each phase was known and therefore could be taken into account in the back-weighting of the sample.

Above and beyond the prevalence of disorders, the study also ascertained when treatment for a mental health problem was first sought, and when the participants last reported the symptoms of disorders. These data therefore have the potential to provide valuable insights into the life course of disorders in ADF members and the points at which individuals choose to seek treatment. Equally, the survey highlighted and explored the range of barriers to seeking care.

Mental disorders have the capacity to disrupt an individual's work performance, so the study investigated the number of total and partial days that individuals were unable to function due to a mental health problem. The burden of disease has major implications for the costs to an organisation such as the ADF that are attributable to mental illness.

Another strength of the study is the fact that research into warlike service has often occurred retrospectively. The United States has been actively promoting the conduct of epidemiological research to inform policy and intervention since the start of the war in Iraq (Adler et al., 2011), resulting in the current wealth of deployment-related research that can directly influence current US policy. The ADF Mental Health Prevalence and Wellbeing Study was conducted at a time when Australia had been involved in warlike service for more than a decade and currently had soldiers deployed in

combat, making the findings directly applicable not only to current ADF policy and programs, but also able to contribute to the development of Department of Veterans' Affairs services.

A limitation of the study is that several categories of mental disorder were not explored. The least common (or lowest prevalence) disorders such as schizophrenia, as well as the somatoform disorders, eating disorders, impulse control disorders and personality disorders, were not investigated. These disorders are generally more difficult to identify using structured diagnostic interviews. Certain disorders were also excluded because of concerns about the duration of the interview and the demands made of the respondents.

A further group of disorders that were not included in the study were those caused by substances other than alcohol. These substances were not included because they are prohibited in the ADF and any detection of usage can be a reason for dismissal from the Services. The probability of accurate prevalence estimates was therefore low because ADF members were unlikely to give accurate and truthful responses about their use of such substances.

The study was limited to currently serving members of the ADF and did not explore the mental health issues of reservists, trainees or discharged veterans. This does not, however, discount the importance of these issues in these populations. The deployment health studies being conducted for the ADF by the Centre for Military and Veterans' Health will address reserve and discharged veteran issues, while the ADF longitudinal study evaluating resilience will address trainee issues.

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SECTION 1
PREVALENCE OF MENTAL DISORDERS IN THE ADF

Contents

1.1 ADF mental disorders in the context of the Australian community

Mental health status

- Prevalence of mental disorders was similar to the Australian community sample, but profiles of specific disorders in the ADF varied.
- ADF lifetime prevalence rates were higher, while experience of mental disorder in the previous 12 months was similar.
- Twenty-two per cent of the ADF population (11,016), or one in five, experienced a mental disorder in the previous 12 months.
- Approximately 6.8% (760) of this number experienced more than one mental disorder at the same time.

Anxiety disorders

- Anxiety disorders were the most common mental disorder type in the ADF, with higher prevalence among females.
- Post-traumatic stress disorder was the most prevalent anxiety disorder, with highest rates among ADF males.
- Anxiety disorders were less prevalent for officers than for all other ranks.

Affective (mood) disorders

- ADF males experienced higher rates of affective disorders than the Australian community sample. This was mostly accounted for by the experience of depressive episodes.
- Officers were as likely as other ranks to experience affective disorders.

Alcohol disorders

- Alcohol disorders were significantly lower in the ADF, with most of the disorders in males in the 18–27 age group.
- Younger ADF females (aged 18–27) had much lower rates of alcohol disorders than their community counterparts.
- There were no significant differences in rates of alcohol dependence disorder between Navy, Army and Air Force.
- Navy and Army were significantly more likely than Air Force to experience alcohol harmful use disorder.
- There was no significant difference between ranks in the rate of alcohol disorders.

Suicidality

- ADF personnel reported thinking of committing suicide and making a suicide plan at a higher rate than the Australian community sample.
- The number of suicide attempts was not significantly greater than in the general community.
- The number of reported deaths by suicide in the ADF was lower than in the general community.

Community concern focuses on the burden of military service on the mental health of serving members and how the rates compare to the community at large. To address this question, this report compares the prevalence estimates of mental disorders within the ADF with those of the Australian community. An understanding of these differences will allow Defence to determine what additional prevention and treatment programs, above and beyond those provided to the general Australian population, are required to deal with its unique occupational environment. The figures for the Australian community presented in this report are derived from the Australian Bureau of Statistics (ABS) 2007 National Survey of Mental Health and Wellbeing and have been adjusted to match the demographic characteristics of the currently serving ADF population.

At some stage in their lifetime, half of ADF members (54.1%, 95% CI 50.3–57.9) experience an anxiety, affective or alcohol use disorder. This is slightly higher than the Australian Bureau of Statistics community rate of 49.3% (95% CI 46.6–52.0), which has been standardised to the ADF population using age, sex and employment. All analyses in this report relate to 12-month prevalence; however, further detailed analysis of lifetime prevalence is required to understand the onset and longitudinal course of mental disorders and their relation to ADF service.

In the 12 months prior to interview, one in five of the ADF population (22%, 95% CI 18.9–25.2) had experienced a mental disorder, a rate that does not differ significantly from that of the Australian community (20.7%, 95% CI 18.2–23.3). This level of mental illness in the ADF suggests that although the ADF is a selected and trained population that generally has better access to health care (the 'healthy worker' effect), this population is affected by a range of occupational stressors.

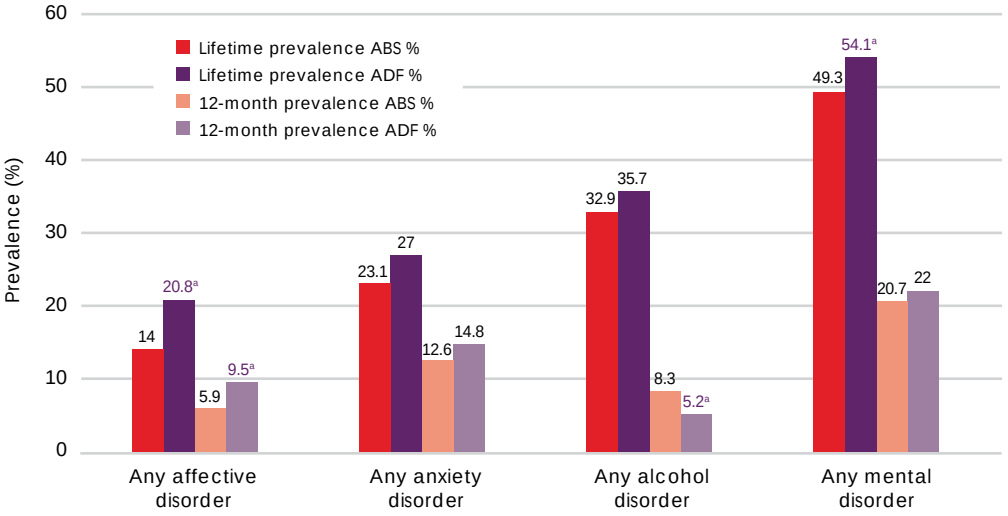
An estimated 11,016 ADF members met ICD–10 criteria for a mental disorder in the previous 12 months. Of these, 4,757 had an affective disorder, 7,420 had an anxiety disorder and 2,590 had an alcohol disorder. Table 1.1 and Figure 1.1 show the estimated prevalence of lifetime and 12-month mental disorders in the ADF and in the ABS study.

Table 1.1: *Estimated prevalence of lifetime and 12-month mental disorders in the ADF compared to the ABS study (standardised by age, sex and employment)*

	Lifetime prevalence				12-month prevalence			
	ABS %	95% CI	ADF %	95% CI	ABS %	95% CI	ADF %	95% CI
Any affective disorder	**14.0**	**12.1–16.0**	**20.8[a]**	**17.6–24.0**	**5.9**	**4.6–7.3**	**9.5[a]**	**7.2–11.8**
Any anxiety disorder	23.1	20.9–25.3	27.0	23.6–30.4	12.6	10.8–14.4	14.8	11.9–17.7
Any alcohol disorder	32.9	30.3–35.5	35.7	31.9–39.5	**8.3**	**6.5–10.1**	**5.2[a]**	**3.8–6.6**
Any mental disorder	**49.3**	**46.6–52.0**	**54.1[a]**	**50.3–57.9**	20.7	18.2–23.3	22.0	18.9–25.2

a Significantly different from the ABS study.

Figure 1.1: *Estimated prevalence of lifetime and 12-month mental disorders in the ADF and the ABS*



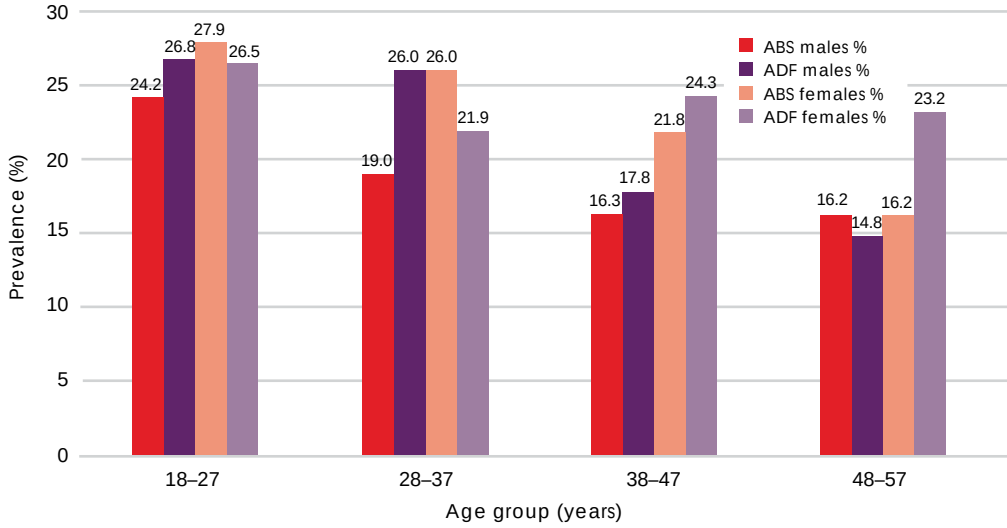
a Significantly different from the ABS study.

The most common group of 12-month disorders in the ADF were anxiety disorders; however, affective disorders were associated with the largest deviation from the Australian community. The prevalence of 12-month ICD-10 affective disorder in the ADF was 9.5%, which is significantly higher than the 5.9% community prevalence (difference in proportion ADF–ABS=3.6, 95% CI 0.9–6.2). Rates of anxiety disorders were similar in the ADF (14.8%, 95% CI 11.9–17.7) and in the ABS study (12.6% 95% CI 10.8–14.4). The prevalence of 12-month alcohol disorder in the ADF was significantly lower than in the Australian community (5.2% versus 8.3%, difference in proportion=–3.1, 95% CI –5.4, –0.8).

The detailed analysis by disorder type presented in this section highlights the disorders that are of particular interest to Defence and identifies subgroups that warrant further detailed investigation. The figures reported above represent a significant burden of disease that needs to be addressed because of the impact it can have on the operational capability of the ADF and on the wellbeing and families of service personnel. This data will inform a framework for targeting interventions.

1.1.1 Age-related prevalence of 12-month mental disorders in the ADF and the Australian community

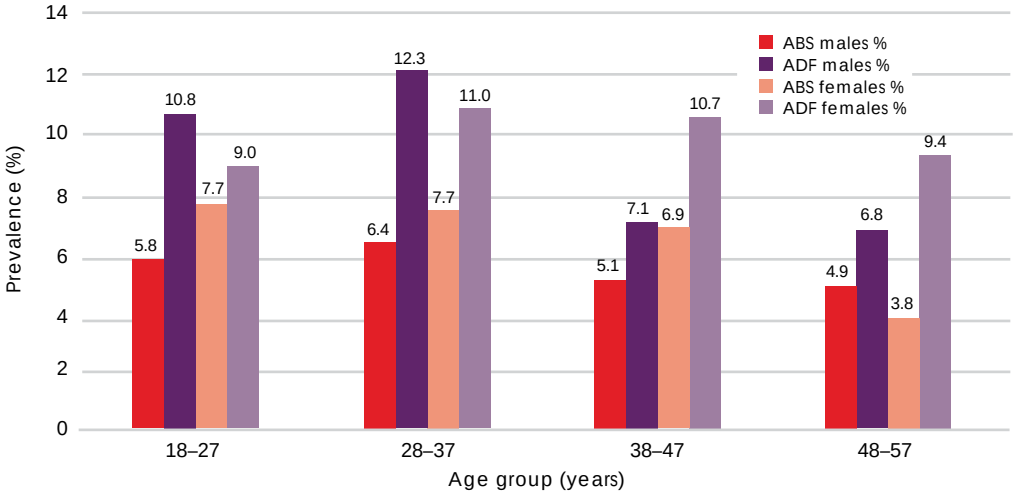
Figure 1.2: *Estimated prevalence of 12-month mental disorders by age and sex in the ADF compared to the ABS study*



Note: The ADF does not have sufficient numbers of females in the 58 to 67 age bracket; therefore, estimates of prevalence are not provided for this age group.

For both the ADF and the ABS study, the rates of any 12-month mental disorder were highest in the 18 to 27 age group (see Figure 1.2). Significantly, there is a steady decrease in mental disorders in males and females in the community, which is less apparent in the ADF. This may reflect the fact that members with mental health problems are less likely to re-engage after the first five-year contract of service. This, in turn, may result in a second-level healthy worker effect for personnel that remain. This has important implications for the Department of Veterans' Affairs as these individuals may require treatment in the future.

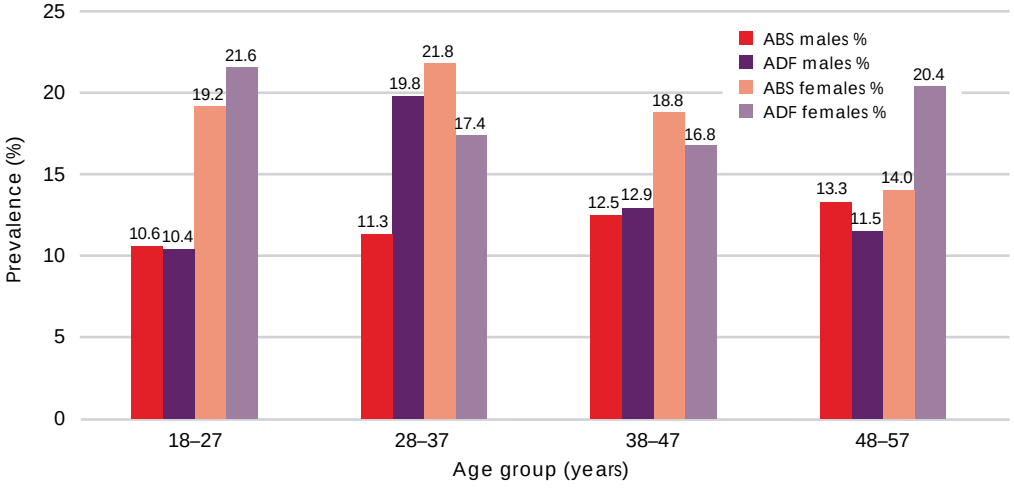
Figure 1.3: *Estimated prevalence of 12-month affective disorder by age and sex in the ADF compared to the ABS study*



Note: The ADF does not have sufficient numbers of females in the 58 to 67 age group; therefore, estimates of prevalence are not provided for this group.

As highlighted in Table 1.1, the ADF has significantly higher rates of affective disorders compared to the Australian community. This significant difference may be explained by the high proportion of ADF personnel who report an affective disorder in the 18 to 27 and 28 to 37 age bands (Figure 1.3). This effect is apparent for both males and females, but is particularly the case for male ADF members. These age-related trends indicate that interventions for affective disorders in the ADF need to be developed in a manner that takes account of the relative youth of this group and recognises the needs of female ADF members throughout their career.

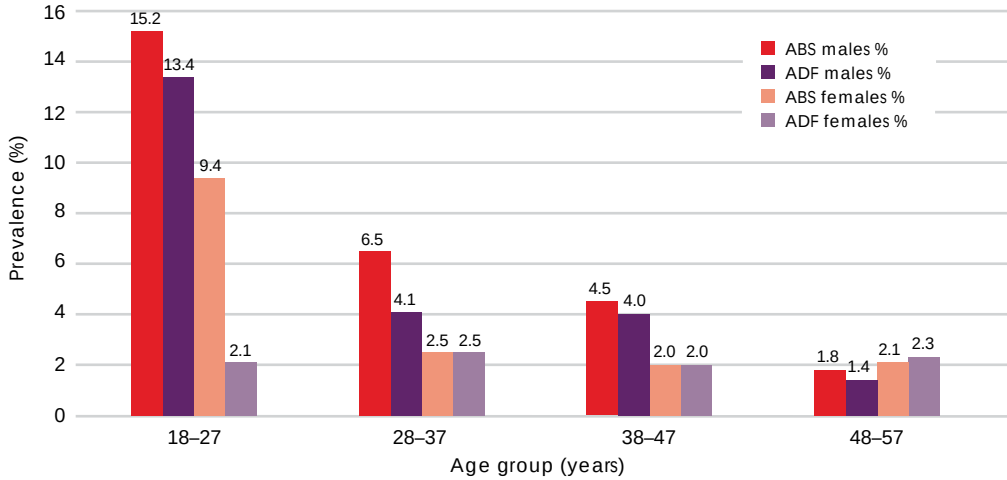
Figure 1.4: *Estimated prevalence of 12-month anxiety disorder by age and sex in the ADF compared to the ABS study*



Note: The ADF does not have sufficient numbers of females in the 58 to 67 age bracket; therefore, estimates of prevalence are not provided for this group.

As summarised in Figure 1.4, the pattern for anxiety disorder is similar to the pattern for affective disorder for ADF females (with relatively consistent rates across age bands) and ADF males (where the majority of disorders occur in the 28 to 37 age band).

Figure 1.5: *Estimated prevalence of 12-month alcohol disorder by age and sex in the ADF compared to the ABS study*



Note: The ADF does not have sufficient numbers of females in the 58 to 67 age group; therefore, estimates of prevalence are not provided for this group.

In contrast to other forms of mental disorders, alcohol disorder shows a unique pattern of prevalence across the age bands. Most disorder in the ADF males appears in the 18 to 27 age group (see Figure 1.5). ADF females, in contrast, have consistently low disorder rates across all age bands. It is noteworthy that ADF females have much lower rates of alcohol disorder in the 18 to 27 age group compared to females in the community.

A detailed table of age-related prevalence rates for each disorder category is provided in Annex B.

1.1.2 Sex-related prevalence of mental disorders in the ADF and the Australian community

Table 1.2: *Estimated prevalence of 12-month ICD-10 mental disorders by mental disorder class and sex compared to the ABS study (standardised by age, sex and employment)*

	Males				Females			
	ABS %	95% CI	ADF %	95% CI	ABS %	95% CI	ADF %	95% CI
Any affective disorder	**5.7**	**4.2–7.3**	**9.4[a]**	**6.8–12.0**	7.3	5.8–8.8	10.2	7.5–12.9
Any anxiety disorder	11.5	9.4–13.5	14.2	10.9–17.5	19.9	17.7–22.1	18.8	15.0–22.5
Any alcohol disorder	**8.8**	**6.7–10.9**	**5.6[a]**	**4.1–7.2**	**5.1**	**3.7–6.6**	**2.2[a]**	**0.9–3.6**
Any mental disorder	20.0	17.1–22.9	21.7	18.1–25.3	25.6	23.2–28.0	24.1	20.0–28.2

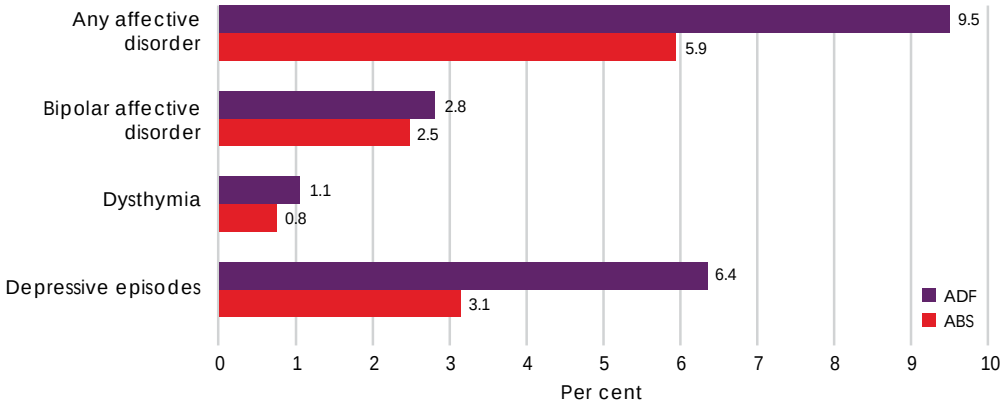
a Significantly different from the ABS study.

Overall, males in the ADF showed the largest deviation from the Australian community, with a significantly greater prevalence of 12-month affective disorders (difference in proportion ADF–ABS=3.7, 95% CI 0.6, 6.7) and significantly lower prevalence of 12-month alcohol disorders (difference in proportion ADF–ABS=–3.2, 95% CI –5.8, –0.5). ADF females were not significantly different from females in the Australian community other than having a lower prevalence of alcohol disorders (difference in proportion ADF–ABS=–2.9, 95% CI –4.9, –0.9).

1.1.3 Categories of 12-month mental disorder in the ADF compared to the Australian community

While the overall mental disorder rates in the ADF were similar to those in the ABS study, there is a significant difference in the profile of individual mental disorders.

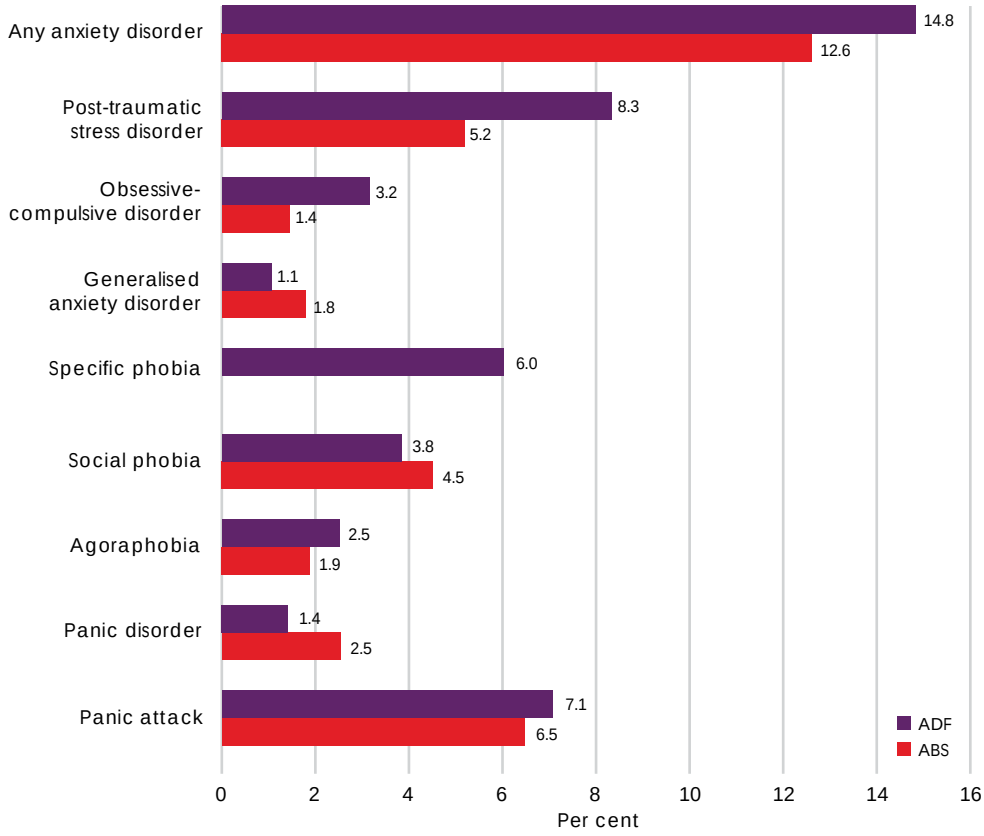
Figure 1.6: *Estimated prevalence of 12-month affective disorders, ADF and ABS study*



a Significantly different from the ABS study.

As summarised in Figure 1.6, 12-month affective disorders were associated with the largest deviation from the Australian community, with depressive episodes in both male and female ADF personnel (6% and 8.7% respectively) significantly higher than the general community rates (2.9%, 4.4%) (difference in proportion ADF males–ABS males=3.0, 95% CI 1.3, 4.8; difference in proportion in ADF females–ABS females=4.3, 95% CI 1.5, 7.1). Detailed tables of the individual ADF-and ABS-matched prevalence rates for individual affective disorders are provided in Annex B.

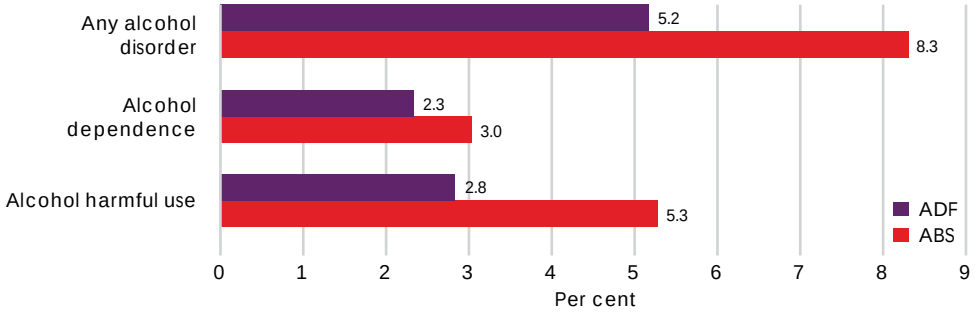
Figure 1.7: *Estimated prevalence of 12-month anxiety disorders, ADF and ABS study*



a Significantly different from the ABS study.

The most common types of 12-month mental disorder in the ADF were anxiety disorders; post-traumatic stress disorder was the most prevalent anxiety disorder (see Figure 1.7). The primary difference between the ADF and the general community was the significantly higher rates of post-traumatic stress disorder in ADF compared to the Australian community (8.3% versus 5.2%, difference in proportion ADF–ABS=3.1, 95% CI 0.6, 5.6) particularly for ADF males (8.1% versus 4.6%, difference in proportion ADF males–ABS males=3.5, 95% CI 0.6, 6.3) and the significantly lower rates of panic disorder in the ADF compared to the Australian community (1.4% versus 2.5%, difference in proportion ADF–ABS=–1.1, 95% CI –2.1, –0.2). (Note: The ABS did not ask about social phobia and therefore this disorder was not included in the calculation of any anxiety disorder in this study.)

Figure 1.8: *Estimated prevalence of 12-month alcohol disorders, ADF and ABS study*



a Significantly different from the ABS study.

Twelve-month alcohol disorder was significantly lower in the ADF compared to the Australian community (difference in proportion ADF–ABS=–3.1 95% CI –5.4, –0.8) (see Figure 1.8). Both male (3.1% versus 5.5%) and female (1.3% versus 3.7%) personnel in the ADF had significantly lower rates of harmful alcohol use disorder compared to the general community (difference in proportion ADF males–ABS males=–2.4, 95% CI –4.6, –0.3; difference in proportion ADF females–ABS females=–2.4, 95% CI –4.2, –0.7).

Detailed tables comparing the prevalence of each of the 12-month anxiety, affective and alcohol disorders in the ADF and ABS study are provided in Annex B.

1.1.4 Suicidality in the ADF compared to the Australian community

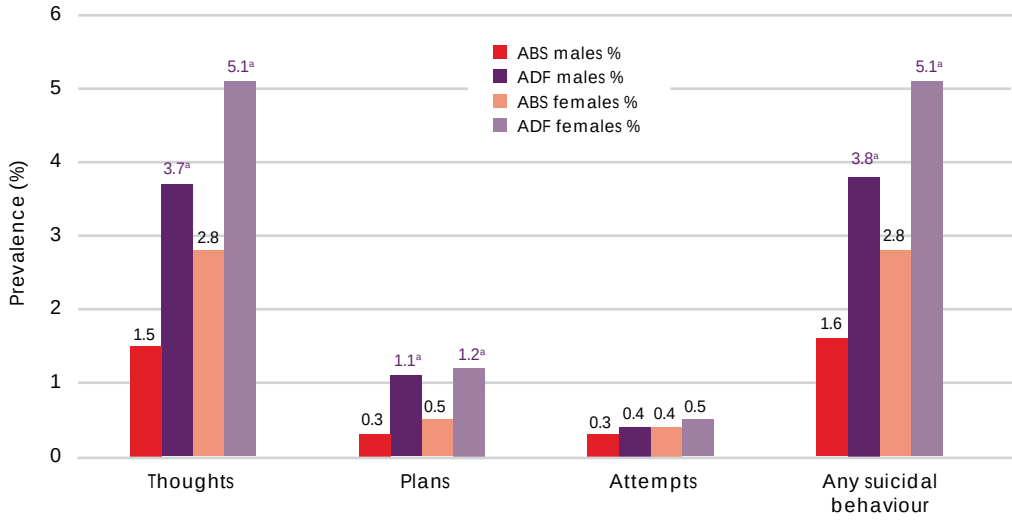
The issue of completed suicide and suicidal behaviour is one of major concern to command in the ADF and one that arouses considerable public concern as well. The ADF monitors the rate of completed suicides; the actual rate of suicide in the ADF is lower than in the general population when matched for age and sex. Table 1.3 and Figure 1.9 report the patterns of suicidal thoughts and behaviours in the ADF compared to the Australian community.

Table 1.3: *Estimated prevalence of suicidality by sex compared to the ABS study (standardised by age, sex and employment status)*

	Males				Females				Persons			
	ABS %	95% CI	ADF %	95% CI	ABS %	95% CI	ADF %	95% CI	ABS %	95% CI	ADF %	95% CI
Felt so low that you thought about committing suicide	**1.5**	**0.9–2.1**	**3.7[a]**	**3.5–3.9**	**2.8**	**1.8–3.8**	**5.1[a]**	**4.5–5.6**	**1.7**	**1.1–2.2**	**3.9[a]**	**3.7–4.1**
Made a suicide plan	**0.3**	**0.1–0.6**	**1.1[a]**	**0.9–1.2**	**0.5**	**0.0–1.1**	**1.2[a]**	**0.9–1.5**	**0.4**	**0.1–0.6**	**1.1[a]**	**1.0–1.2**
Attempted suicide	0.3	0.0–0.5	0.4	0.3–0.5	0.4	0.1–0.8	0.5	0.3–0.7	0.3	0.1–0.5	0.4	0.3–0.5
Any suicidality	**1.6**	**0.9–2.3**	**3.8[a]**	**3.5–4.0**	**2.8**	**1.8–3.8**	**5.1[a]**	**4.6–5.7**	**1.8**	**1.1–2.4**	**4.0[a]**	**3.7–4.2**

a Significantly different from the ABS study.

Figure 1.9: *Estimated prevalence of suicidality by sex compared to the ABS study*



a Significantly different from the ABS study.

There is a gradation of severity of suicidality in the ADF, ranging from those with suicidal ideation (3.9%) through those making a plan (1.1%) to those actually attempting suicide (0.4%). The prevalence of suicidal ideation (3.9% versus 1.7%, difference in proportion ADF–ABS=2.2, 95% CI 1.6, 2.8) and making a suicide plan (1.1% versus 0.4%, difference in proportion ADF–ABS=0.7 95% CI 0.5, 1.0) was significantly higher in the ADF compared to the Australian community, with the rate of suicidality in the ADF being more than double that in the general community (see Table 1.3). However, the ADF reported the same prevalence of suicide attempts (0.4%) in the preceding 12 months as the general community (0.3%).

These findings suggest that the comprehensive literacy and suicide prevention initiatives currently being implemented in Defence may be having a positive impact, because although ADF members are more symptomatic, they are less likely to carry out the act of suicide than people in the community.

In this study, steps were taken to contact the participants who were reporting suicidal ideation to help them access care, as a matter of recognition of Defence's responsibility to those participants. A priority identified from this study is the better characterisation of those individuals with mental disorders who are at risk of suicidal ideation so that intervention programs and risk assessments can be designed for them.

1.1.5 Impact on ADF workforce compared to the Australian community

One dimension of mental disorders that is critically important to the ADF is the impact they have on an individual's ability to function in the workplace. Table 1.4 reports the mean number of partial and total days out of role in the previous month due to psychological distress in the ADF compared to the Australian community.

Table 1.4: *Days out of role due to psychological distress in the previous month, by mental disorder class*

	Days totally unable to work[a]				Days had to cut down on work[a]			
	ABS mean	95% CI	ADF mean	95% CI	ABS mean	95% CI	ADF mean	95% CI
Any affective disorder	2.7	0.6–4.8	1.9	1.2–2.6	2.4	1.5–3.3	3.6	2.5–4.6
Any anxiety disorder	2.3	1.0–3.6	1.3	0.8–1.7	2.0	1.4–2.6	2.9	2.2–3.7
Any alcohol disorder	0.9	0.4–1.4	0.6	0.2–1.0	1.6	0.6–2.5	1.8	1.0–2.7
Any disorder	1.5	0.9–2.2	1.2	0.9–1.6	**1.7**	**1.2–2.1**	**2.6**[b]	**2.1–3.2**

a The ABS question asked about days out of the previous 30 totally/partially out of role due to health whereas the MHPWS question asked about days in the previous four weeks totally/partially out of role due to psychological distress.

b Significantly different from the ABS study.

As reported in Table 1.4, ADF personnel with a 12-month mental disorder reported significantly more partial days, but not total days out of role, due to psychological distress than the Australian community (2.6 days versus 1.7 days, difference in proportion ADF–ABS=0.9, 95% CI 0.2, 1.7). In contrast, the mean number of days that ADF personnel with a 12-month mental disorder were totally unable to work was 1.2 days, which closely matched the 1.5 days in the Australian community.

Figure 1.10: *Estimated mean **total** days out of role due to psychological distress in the previous month, by mental disorder class and sex in the ADF compared to the ABS study*

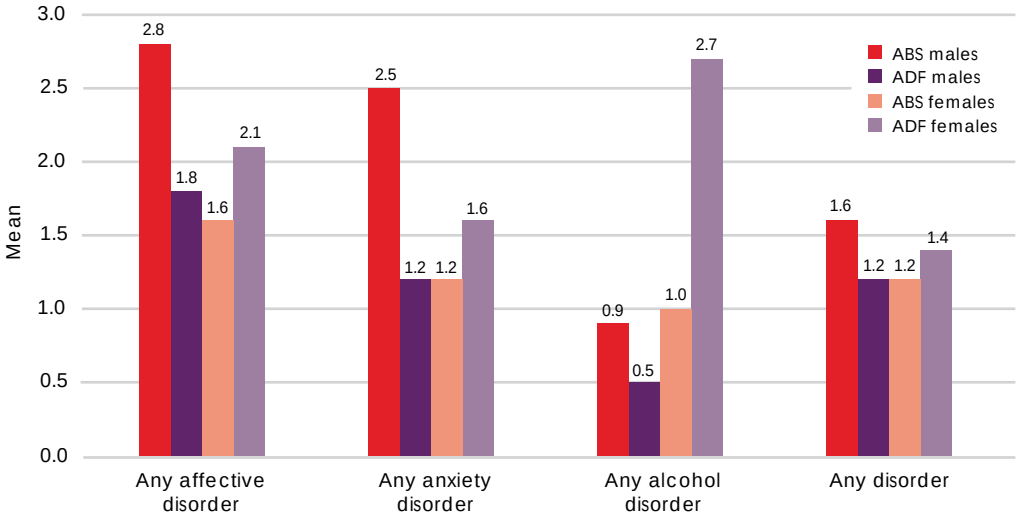
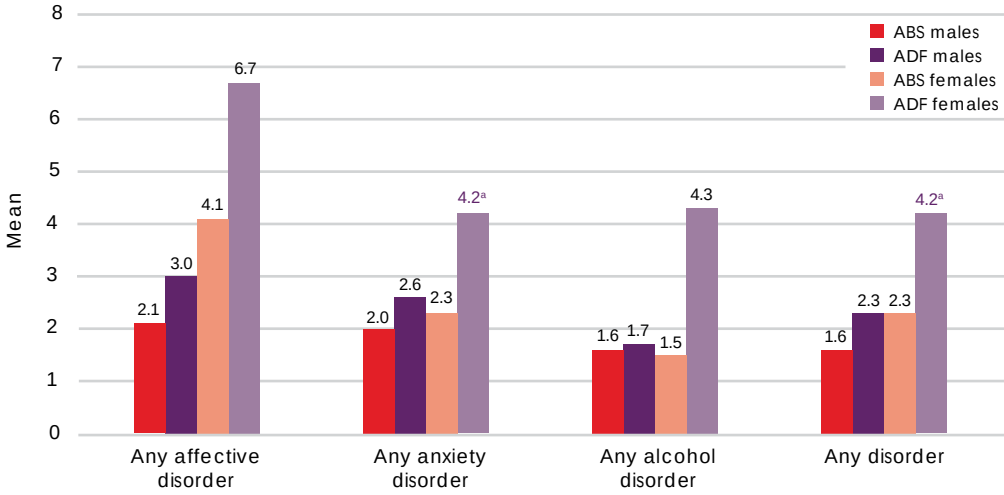


Figure 1.11: *Estimated mean **partial** days out of role due to psychological distress in the previous month, by mental disorder class and sex in the ADF compared to the ABS study*



a Significantly different from the ABS study.

A comparison of the number of total and partial days out of role reported by ADF and ABS study males and females is presented in figures 1.10 and 1.11. Although there were no significant differences between ADF males and ABS study males, ADF females with any 12-month disorder (4.2 versus 2.3, mean difference=1.9, 95% CI 0.5, 3.3) and a 12-month anxiety disorder (4.2 versus 2.3, mean difference=1.9, 95% CI 0.3, 3.4) reported a significantly greater mean number of partial days out of role than ABS study females.

In interpreting these results, it is noteworthy that the means reported in Table 1.4 and figures 1.10 and 1.11 do not take account of the prevalence of an individual disorder in the ADF and how this might modify the relative contribution to days out of role for the ADF. In other words, a disorder with a high prevalence, even if associated with relatively minor disability, is likely to be of particular importance to the loss of productivity and preparedness in the ADF environment. This issue will be examined in detail later in sections 1.2.2, 1.3.2, and 1.4.2.

Detailed tables comparing the mean number of total and partial days out of role for ADF and ABS study participants with 12-month anxiety, affective and alcohol disorders are provided in Annex B.

1.1.6 Conclusion: 12-month disorders in the ADF compared to the Australian community

The findings reported in this section indicate that the ADF and the Australian community face similar challenges. The most common disorders in the ADF are anxiety disorders; as in the general community, post-traumatic stress disorder is the most prevalent of these. Affective disorders are associated with the largest deviation from the Australian community, with the prevalence of affective disorders in males in the ADF significantly higher than in the community. Although the rates of anxiety disorders are similar in the ADF to those in the community, the incidence of alcohol disorders is significantly lower across both sexes.

The prevalence of suicidal ideation and making a suicide plan was significantly higher in the ADF compared to the Australian community, with the rate of suicidality in the ADF being more than double that in the general community. However, the actual rate of suicide in the ADF is lower than in the general population when matched for age and sex, which indicates that the comprehensive literacy and suicide preventative initiatives currently being implemented in Defence may be having a positive impact.

Finally, ADF personnel with an ICD-10 disorder (specifically an anxiety disorder) in the previous 12 months reported significantly more partial days out of role compared to the Australian community. This may indicate that there are a significant number of members in the ADF with a disabling disorder who are not known to command or are not receiving care. It also highlights the need to address stigma and break down barriers to care, which if unaddressed create a major risk to the organisation.

There is now a substantial body of literature about how interventions based in the workplace have a positive return on investment from an employer's perspective (Kessler, Merikangas, & Wang, 2008). Treating mental disorder not only increases productivity, it also improves the retention of skilled workers, which in turn saves costs on employment and training (P. S. Wang et al., 2006). The ADF provides an important example of the potential benefits of such intervention programs. While there are obvious costs in implementing improved mental health programs in the ADF, based on an occupational health care model, there are likely to be significant cost benefits due to improved productivity and retention. The budgetary expenditures may therefore bring significant dividends. Furthermore, the future potential entitlements paid to ADF members by the Department of Veterans' Affairs mean that long-term savings are likely to be even more substantial. Improved treatment outcomes and early intervention will reduce the need for income support over the long term.

1.2 Prevalence of affective disorders in the ADF

- The prevalence of 12-month ICD-10 affective disorders in the ADF was 9.5%.
- The most prevalent affective disorder was depressive episodes.
- There was no statistical difference between males and females, with 14% of ADF males and 10.2% of females experiencing depressive episodes.
- Dysthymia accounted for highest mean days of out of role; however, depressive episodes had the greatest impact due to their prevalence in the ADF population.
- There was no significant difference for affective disorders on sex, Service or deployment.
- Other ranks were seven times more likely to meet criteria for 12-month ICD-10 bipolar affective disorder than officers and 82% less likely to meet criteria for ICD-10 dysthymia than non-commissioned officers.

This section provides a summary of the prevalence of 12-month ICD-10 affective disorders in currently serving members of the ADF. The associated demographic predictors – sex, rank, Service and deployment status – are described. The impact of affective disorders is examined through days out of role and service use. Finally, a summary is provided of how these rates compare to those found in the international literature.

The ADF Mental Health and Wellbeing Study examined five types of affective disorders:

- ***Depressive episodes*** are a characteristic of a major depressive disorder and require that an individual has suffered from depressed mood lasting a minimum of two weeks, with associated symptoms or feelings of worthlessness, lack of appetite, difficulty with memory, reduction in energy, low self-esteem, concentration problems and suicidal thoughts. Depressive episodes can be mild, moderate or severe. All three are included under the same heading. Hierarchy rules were applied to depressive episodes such that a person could not have met criteria for either a hypomanic or manic episode.
- ***Dysthymia*** is characterised as a chronic or pervasive disturbance of mood lasting several years that is not sufficiently severe or in which the depressive episodes are not sufficiently prolonged to warrant a diagnosis of a recurrent depressive disorder. Hierarchy rules were applied to dysthymia such that in order to have this disorder, a person could not have met criteria for either a hypomanic or manic episode and could not have reported episodes of severe or moderate depression within the first two years of dysthymia.
- ***Bipolar affective disorder*** is associated with fluctuations of mood that are significantly disturbed. These fluctuations of mood are markedly elevated on some occasions (hypomania or mania) and can be markedly lowered on other occasions (depressive episodes). A diagnosis of bipolar affective disorder was applied in this study if the individuals met criteria for mania or hypomania in the previous 12 months, as follows.

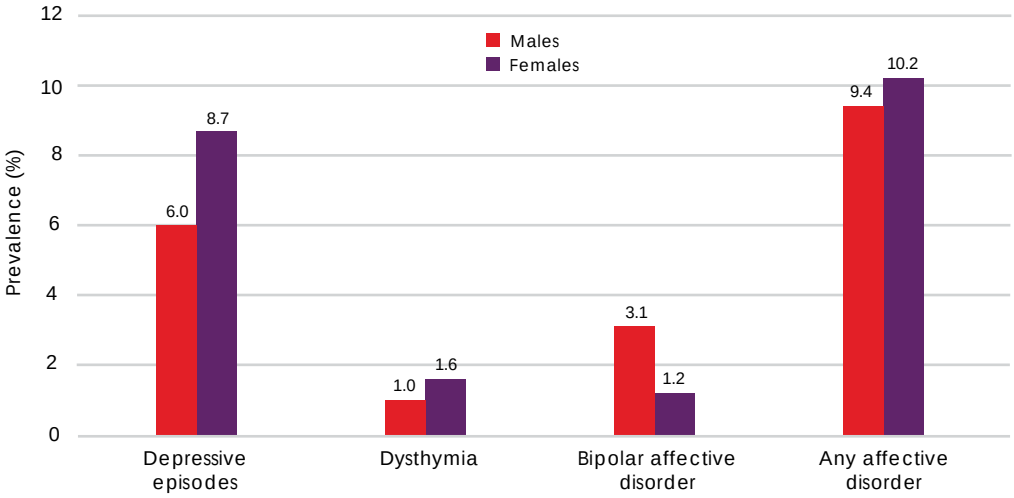
- ***Hypomanic episodes*** last at least four consecutive days and are considered abnormal to the individual. These episodes are characterised by increased activity, talkativeness, elevated mood, disrupted concentration, decreased need for sleep and disrupted judgment manifest as risk taking (for example, mild spending sprees). In a subgroup of people, these disorders are particularly characterised by irritability. To meet criteria for the 'with hierarchy' version, the person cannot have met criteria for an episode of mania.
- ***Mania*** is similar to hypomania but is more severe in nature. Lasting slightly longer (a minimum of a week), these episodes often lead to severe interference with personal functioning. In addition to the symptoms outlined under hypomania, mania is often associated with feelings of grandiosity, marked sexual indiscretions and racing thoughts.

This range of disorders is the same as that presented by the 2007 National Survey on Mental Health and Wellbeing. Tables 1.5 to 1.10 report the prevalence of affective disorders in targeted subgroups of currently serving ADF members according to ICD-10 criteria, based on CIDI interviews.

Table 1.5: *Estimated prevalence of 12-month ICD-10 affective disorders in the ADF by affective disorder type and sex*

	Males N=43,241			Females N=6,808			Persons N=50,049		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Depressive episode	*2,588*	6.0	4.5–7.4	*594*	8.7	6.1–11.3	*3,182*	6.4	5.1–7.7
Dysthymia	*416*	1.0	0.5–1.4	*110*	1.6	0.6–2.6	*526*	1.1	0.6–1.5
Bipolar affective disorder	*1,321*	3.1	0.8–5.3	*80*	1.2	0.3–2.0	*1,401*	2.8	0.9–4.7
Any affective disorder	*4,062*	9.4	6.8–12.0	*695*	10.2	7.5–12.9	*4,757*	9.5	7.2–11.8

Figure 1.12: *Estimated prevalence of 12-month ICD-10 affective disorders in the ADF by affective disorder type and sex*



In the ADF, the rate of 12-month affective disorder identified was 9.5% (95% CI 7.2, 11.8). This represents some 4,757 individuals. The most prevalent affective disorder was depressive episodes (6.4%, 95% CI 5.1, 7.7). Those with bipolar affective disorder included individuals who had experienced either hypomanic or manic episodes in the previous 12 months. The ADF had a rate of 2.8% (95% CI 0.9–4.7) people with bipolar affective disorder in the previous 12 months. This result requires careful further interpretation because of the potential impairments of function and errors of judgment associated with this condition. Though there was a trend towards a higher rate of depressive episodes among females when compared to males (OR 1.46, 95% CI 0.96–2.22), there were no statistically significant differences between males and females in the prevalence of affective disorders.

1.2.1 Prevalence of affective disorders in different population subgroups

1.2.1.1 Rank

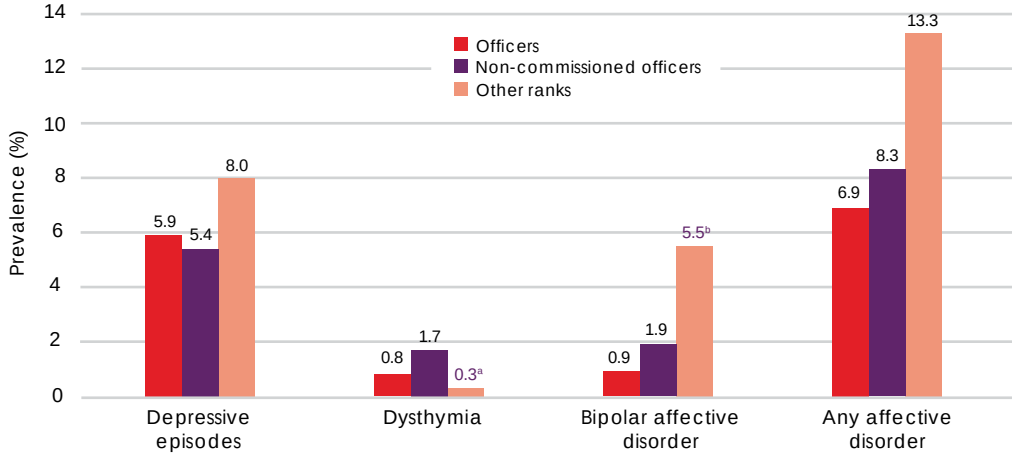
Table 1.6: *Estimated prevalence of 12-month ICD-10 affective disorders in the ADF, by affective disorder type and rank*

	Officers N=12,034			Non-commissioned officers N=22,319			Other ranks N=15,696		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Depressive episode	*711*	5.9	3.8–8.0	*1,208*	5.4	4.1–6.7	*1,263*	8.0	4.6–11.5
Dysthymia[a]	***92***	**0.8**	**0.1–1.4**	***383***	**1.7**	**0.9–2.6**	***52***	**0.3**	**0.0–0.8**
Bipolar affective disorder[b]	***109***	**0.9**	**0.3–1.5**	***427***	**1.9**	**1.3–2.6**	***865***	**5.5**	**0.0–11.6**
Any affective disorder	*828*	6.9	4.7–9.1	*1,847*	8.3	6.7–9.9	*2,082*	13.3	6.4–20.1

a Other ranks v non-commissioned officers (OR 0.18, 95% CI 0.04–0.82)

b Other ranks v officers (OR 7.49, 95% CI 1.71–32.81)

Figure 1.13: *Estimated prevalence of 12-month ICD-10 affective disorders in the ADF, by affective disorder type and rank*



a Significantly different from non-commissioned officers.

b Significantly different from officers.

The prevalence of any ICD-10 affective disorder in the previous 12 months was highest in other ranks (13.3%, 95% CI 6.4–20.1), and lowest in officers (6.9%, 95% CI 4.7–9.1); however, this difference was not significant. Personnel in other ranks were seven times more likely to meet criteria for 12-month ICD-10 bipolar affective disorder (OR 7.49, 95% CI 1.71–32.81) than officers and 82% less likely to meet criteria for ICD-10 dysthymia than non-commissioned officers (OR 0.18, 95% CI 0.04–0.82).

An examination of ICD-10 depressive episodes showed that 5.9% of officers had experienced an episode in the previous 12 months (95% CI 3.8–8.0), in contrast to other ranks, in which 8% (95% CI 4.6–11.5) reported an episode. This emphasises that there are still substantial rates of affective disorders in the higher echelons of the ADF.

1.2.1.2 Service

Table 1.7: *Estimated prevalence of 12-month ICD-10 affective disorders in the Navy, by affective disorder type and sex*

	Navy males N=9,508			Navy females N=2,104			Navy total N=11,612		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Depressive episode	*677*	7.1	3.6–10.6	*215*	10.2	3.6–16.8	*892*	7.7	4.6–10.8
Dysthymia	*108*	1.1	0.0–2.4	*48*	2.3	0.0–4.7	*156*	1.3	0.2–2.5
Bipolar disorder	*214*	2.2	0.7–3.8	*44*	2.1	0.0–4.3	*257*	2.2	0.9–3.6
Any affective disorder	*952*	10.0	6.1–13.9	*272*	12.9	6.1–19.8	*1,224*	10.5	7.1–13.9

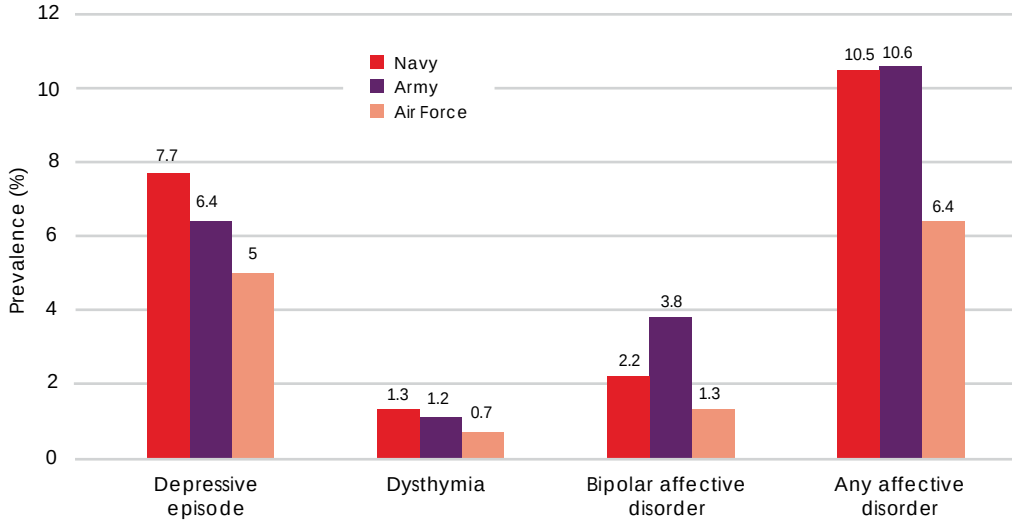
Table 1.8: *Estimated prevalence of 12-month ICD-10 affective disorders in the Army, by affective disorder type and sex*

	Army males N=22,843			Army females N=2,513			Army total N=25,356		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Depressive episode	*1,412*	6.2	4.0–8.4	*221*	8.8	5.4–12.1	*1,633*	6.4	4.4–8.5
Dysthymia	*262*	1.1	0.5–1.8	*21*	0.8	0.0–1.9	*283*	1.1	0.5–1.7
Bipolar disorder	*958*	4.2	0.0–8.4	*10*	0.4	0.0–1.2	*968*	3.8	0.1–7.6
Any affective disorder	*2,461*	10.8	6.1–15.4	*231*	9.2	5.8–12.6	*2,693*	10.6	6.4–14.8

Table 1.9: *Estimated prevalence of 12-month ICD-10 affective disorders in the Air Force by affective disorder type and sex*

	Air Force males N=10,890			Air Force females N=2,191			Air Force total N=13,081		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Depressive episode	*499*	4.6	3.0–6.2	*158*	7.2	4.0–10.4	*657*	5.0	3.6–6.5
Dysthymia	*46*	0.4	0.0–1.0	*42*	1.9	0.4–3.5	*87*	0.7	0.1–1.2
Bipolar disorder	*149*	1.4	0.4–2.4	*26*	1.2	0.0–2.5	*176*	1.3	0.5–2.2
Any affective disorder	*649*	6.0	4.1–7.8	*192*	8.8	5.4–12.1	*840*	6.4	4.8–8.1

Figure 1.14: *Estimated prevalence of 12-month ICD-10 affective disorders in the Navy, Army and Air Force*



When the individual Services were considered (tables 1.7 to 1.9), there was a trend for the Army (10.6%) to report significantly higher rates of any affective disorder in the previous 12 months than the Air Force (6.4%) (OR 1.56, 95% CI 1.02, 2.40); however, the overall effect of Service on any affective disorder was borderline significant (p=0.06). There were no significant differences among the Services on any of the individual ICD-10 affective disorders.

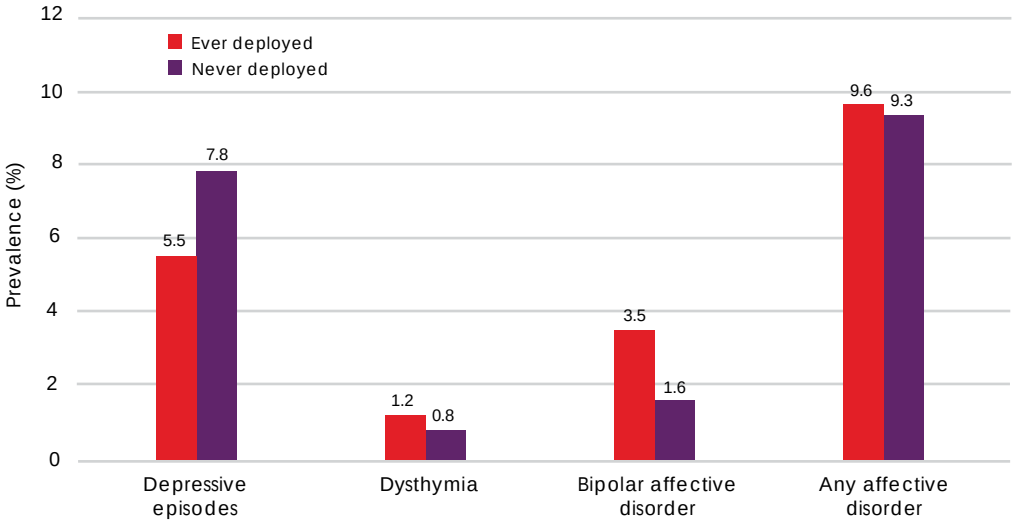
When looking at depressive episodes, which account for the significant majority of the affective disorders, the preponderance of women affected by this condition is apparent across the three Services, but there is no significant sex by Service interaction.

1.2.1.3 Deployment history

Table 1.10: *Estimated prevalence of 12-month ICD-10 affective disorders in the ADF by affective disorder type and deployment history*

ICD-10 affective disorder	Ever deployed N=31,646			Never deployed N=16,981		
	N	%	95% CI	N	%	95% CI
Depressive episode	*1,707*	5.5	4.2–6.8	*1,475*	7.8	5.0–10.5
Dysthymia	*376*	1.2	0.6–1.8	*151*	0.8	0.2–1.4
Bipolar affective disorder	*1,097*	3.5	0.5–6.6	*305*	1.6	0.6–2.6
Any affective disorder	*2,995*	9.6	6.4–12.9	*1,762*	9.3	6.4–12.2

Figure 1.15: *Estimated prevalence of 12-month ICD-10 affective disorders in the ADF, by affective disorder type and deployment history*



The prevalence of any 12-month ICD-10 affective disorder was very similar between the ever-deployed (9.6%, 95% CI 6.4, 12.9) and never-deployed groups (9.3%, 95% CI 6.4, 12.2), and no significant differences emerged for any of the individual ICD-10 affective disorders. A further analysis of the type of deployment (categorised as warlike and non-warlike) on the broad category of any affective disorder did not reveal any significant differences. This key area warrants further detailed analysis.

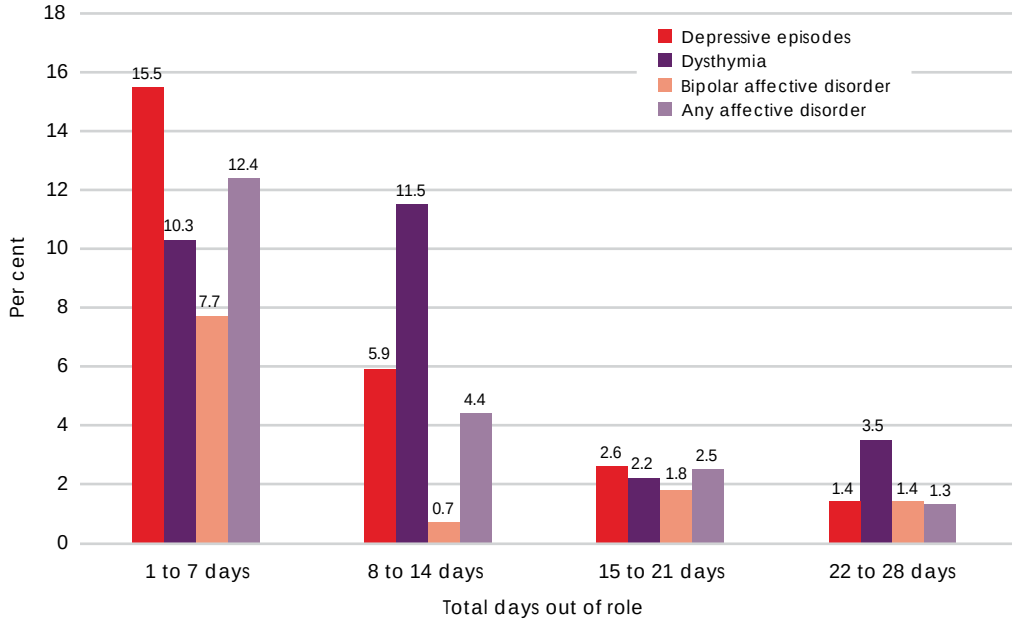
1.2.2 Impact of affective disorders

1.2.2.1 Total days out of role

Table 1.11: *Number of days an ADF member was totally unable to carry out their work, study or day-to-day activities in the previous four weeks, by type of 12-month ICD-10 affective disorder, presented as mean number and proportion of total days lost*

	Mean number of total days out of role		Percentage of total days out of role	
ICD-10 affective disorder	Mean	95% CI	%	95% CI
Depressive episode	2.2	1.4–3.0	32.4	21.8–43.0
Dysthymia	3.4	0.9–5.9	8.3	1.9–14.7
Bipolar affective disorder	1.2	0.0–2.3	7.7	2.3–13.1
Any affective disorder	1.9	1.2–2.6	41.1	29.7–52.6

Figure 1.16: *Total days out of role in the previous four weeks, by type of 12-month ICD-10 affective disorder, subgrouped by weeks*



More than 20.6% of ADF members with an affective disorder in the previous 12 months were totally unable to carry out their daily activities for at least one day in the previous month and 3.8% (183 people) were totally unable to carry out their daily activities for at least two weeks over the previous month (Figure 1.16).

This equated to an average of 1.9 (95% CI 1.2, 2.6) days out of role in the previous four weeks (Table 1.11). Dysthymia accounted for 3.4 days (95% CI 0.9–5.9) and was the highest ranked ICD-10 affective disorder.

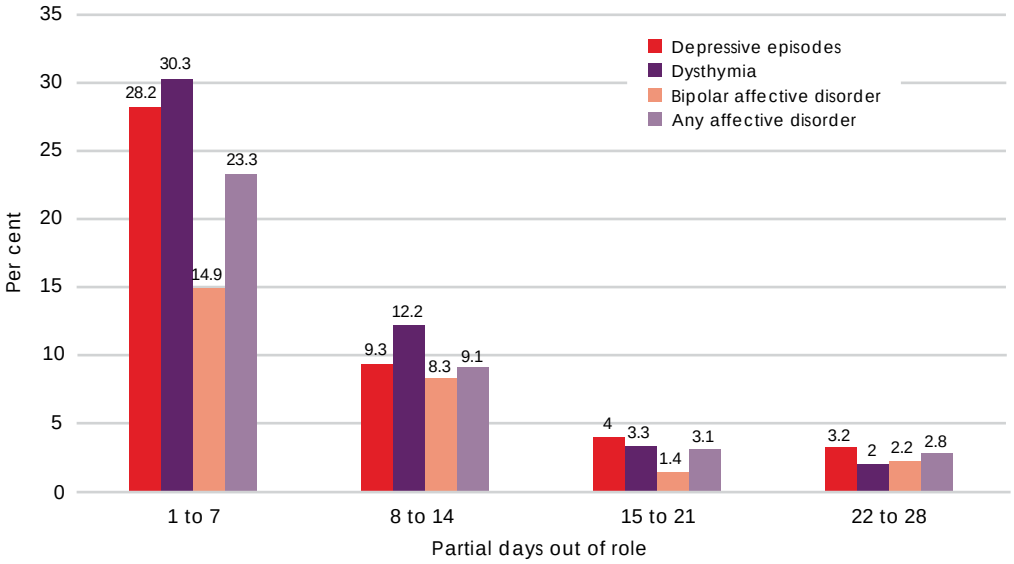
By taking into account both the prevalence of the disorders and the number of total days out of role (Table 1.11), however, depressive episodes with a 12-month prevalence of 6.4% emerged as a particularly important determinant of the number of total days out of role in the ADF. Depressive episodes accounted for 32.4% of total days out of role (95% CI 21.8–43.0) in the previous four weeks compared to dysthymia and bipolar affective disorder, which only accounted for 8.3% and 7.7% of total days out of role respectively.

1.2.2.2 Partial days out of role

Table 1.12: *Number of days ADF personnel were partially unable to work, study or carry out day-to-day activities in the previous four weeks, by type of 12-month ICD-10 affective disorder, presented as mean number and percentage of partial days lost*

ICD-10 affective disorder	Mean number of partial days out of role		Percentage of partial days out of role	
	Mean	95% CI	%	95% CI
Depressive episode	4.1	3.1–5.2	20.2	14.8–25.6
Dysthymia	4.3	2.1–6.4	3.5	1.5–5.5
Bipolar affective disorder	2.5	0.5–4.5	5.3	2.8–7.9
Any affective disorder	3.6	2.5–4.6	26.0	20.0–32.0

Figure 1.17: *Partial days out of role in the previous four weeks, by type of 12-month affective disorder, subgrouped by weeks*



More than 38% of personnel meeting criteria for an affective disorder reported some impact on their performance in the previous four weeks. Once again, when looking at the mean number of days partially out of role in the previous four weeks, dysthymia was associated with the greatest number (4.3 days partially out of role). This number can be explained by the larger proportion of people who reported one to 14 days of diminished performance when compared to the other disorders.

By taking into account both the prevalence of the disorders and the number of partial days out of role, the most substantial contribution was due to depressive episodes, accounting for 20.2% (95% CI 14.8–25.6) of partial days out of role.

For detailed tables of total and partial days out of role associated with each of the ICD-10 affective disorders, see Annex B.

1.2.2.3 Service use

Table 1.13: *Twelve-month service use by type of 12-month affective disorder*

ICD-10 disorder	Received professional treatment in previous 12 months											
	Yes			No			Don't know			Refused		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Depressive episodes[a]	*2,022*	65.2	54.5–75.8	*1,081*	34.8	24.2–45.5	*0*	0.0	–	*0*	0.0	–

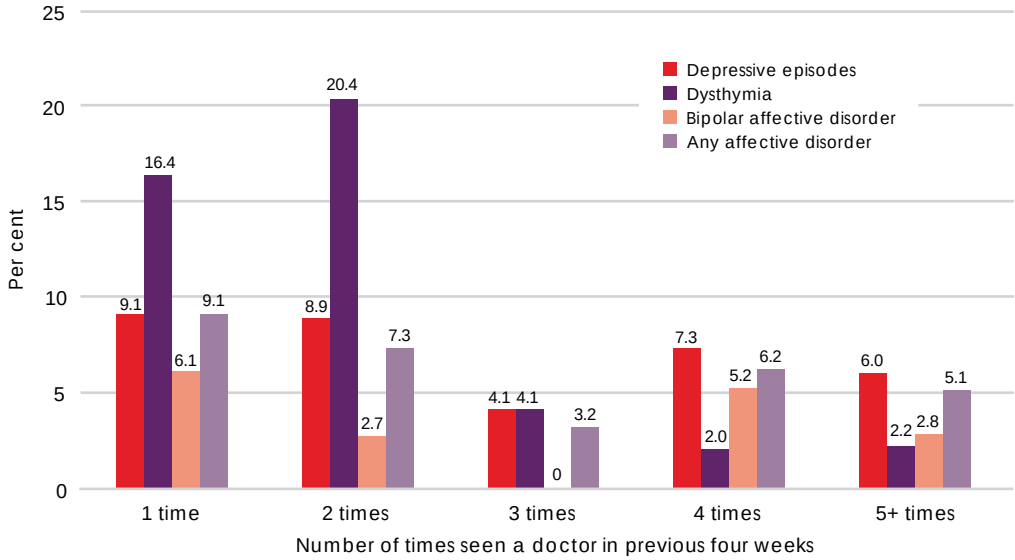
a Does not cover all members with this disorder, but percentages are out of the total number with responses.

Table 1.14: *Doctor visits in the previous four weeks by type of 12-month ICD-10 affective disorder, presented as mean number and as a proportion*

ICD-10 affective disorder	Mean number of doctor visits		Percentage of doctor visits	
	Mean	95% CI	%	95% CI
Depressive episodes	1.2	0.8–1.7	25.0	16.2–33.9
Dysthymia	0.9	0.5–1.3	3.1	1.2–4.9
Bipolar affective disorder	0.5	0.0–1.0	4.8	1.7–7.9
Any affective disorder	1.0	0.6–1.4	31.0	21.7–40.4

Note: From K10 plus in relation to general symptoms of psychological distress reported in the K10.

Figure 1.18: *Four-week service use (times seen a doctor), by type of 12-month affective disorder*



Note: From K10 plus in relation to general symptoms of psychological distress reported in the K10.

Tables 1.13 and 1.14 and Figure 1.18 examine professional treatment patterns in the previous 12 months. Of the individuals with an ICD-10 depressive episode who were asked about professional treatment, 65.2% had received some type of professional treatment in the previous 12 months (Table 1.13). However, this does not take into account the effectiveness of that treatment, the accuracy of the diagnosis, or whether evidence-based treatment was provided.

Depressive episodes were associated with the greatest mean number of doctor's visits (1.2, 95% CI 0.8–1.7) of all the ICD-10 affective disorders. They also accounted for the highest proportion of visits to the doctor in the previous four weeks (25%, 95% CI 16.2–33.9) when both the prevalence of the disorders and the number of times the ADF personnel had seen a doctor are accounted for.

Figure 1.18 shows a trend for ADF personnel with dysthymia to be more likely compared to those with other affective disorder types to have seen a doctor once or twice in the previous month for symptoms of psychological distress. This result, however, has not been statistically validated.

These data should be considered along with the fact that some 3,182 individuals in the ADF were estimated to have had a depressive episode in the previous 12 months. The workload and health services required to meet this need are substantial. Furthermore, many of these professional services were not provided by mental health services, but rather by general duties medical officers. The exact patterns of seeking treatment and care need to be ascertained and explored further. For detailed tables of number of doctor visits associated with each of the ICD-10 affective disorders, see Annex B.

1.2.3 Discussion

The incidence of affective disorders is a significant issue for the ADF. This section summarises the specific categories of affective disorder that need to be addressed in the ADF Occupational Military Mental Health Mod el. The most prevalent affective disorder type in the ADF was depressive episodes (6.4%), followed by bipolar affective disorder (2.8%) and dysthymia (1.1%).

Investigation of demographic subgroups revealed no statistically significant differences for sex or Service. Personnel in other ranks were seven times more likely to meet criteria for 12-month ICD-10 bipolar affective disorder than officers and 82% less likely to meet criteria for ICD-10 dysthymia than non-commissioned officers.

When taking into account the prevalence of each of the affective disorders, depressive episodes were associated with the highest proportion of total and partial days out of role as well as the number of visits to the doctor in the previous four weeks. Of those experiencing a depressive episode in the previous 12 months, 65.2% had received professional treatment for their disorder over this period.

1.2.3.1 Comparison with other military samples

Overall, the currently serving ADF population was found to be fairly similar to the first Gulf War veterans group (9%), despite the fact that the Gulf War veterans group comprised primarily Navy personnel. The Australian First Gulf War Veterans Study found that DSM-IV major depressive disorder was the most common disorder (12-month prevalence was 9%, compared with the comparison group, with a prevalence of 5.5%)

(Ikin et al., 2004). The 12-month prevalence of dysthymia (0.2% in Gulf War veterans, and 0.4% of comparison subjects) and bipolar affective disorder (Gulf War veterans 1.4%, and comparison group 0.6%) was much lower.

The only study that has examined affective disorders in a military population using a systematic structured diagnostic interview is the Canadian Community Health Survey, which found that 6.9% of individuals had had a major depressive episode in the previous 12 months, using DSM-IV criteria. The Canadian study did not examine the prevalence of the bipolar spectrum. The ADF study included this group of disorders because an emerging body of evidence shows that a significant number of individuals who have had depressive episodes also experience sub-threshold bipolar symptoms (Angst et al., 2010).

In the US National Co-morbidity Study, it was found that nearly 40% of participants with a history of major depression had also had sub-threshold hypomania. The associated problems of impaired decision-making and risk taking (Booth-Kewley, Highfill-Mcroy, Larson, & Garland, 2010) suggest that these conditions may be of particular importance in military populations. Depressive symptomatology has been extensively examined in other military populations, but only with self-report questionnaires (Riddle et al., 2007).

Depressive disorders are of particular relevance to military populations due to their higher prevalence among younger age groups (Kessler et al., 2010; Slade, Johnston, Oakley Browne, Andrews, & Whiteford, 2009). A common symptom of depression is irritability, a symptom that is particularly disruptive of interpersonal functioning. This pattern of depressive illness is more common in individuals ranging in age from 18 to 44 and has an association with impulse control disorders, clearly an issue of relevance in the military environment (Fava et al., 2010).

A further finding from the US National Co-morbidity Study was that behavioural disturbance manifest as violence is most common in individuals who have both a mental disorder, such as depression, and substance abuse issues (Corrigan & Watson, 2005).

In the military environment, impaired work capacity is of considerable concern, as are behavioural and disciplinary issues. Frequently these are blamed on alcohol alone, but the evidence would suggest that individuals with affective disorders and substance abuse issues are likely to be a group of particular relevance.

Other workplace stressors that may increase the risk of experiencing depressive episodes is an important area that also requires further examination. For example, in a study of a longitudinal cohort in the Canadian National Population Health Survey (N=6,663), work stress was associated with an elevated risk of major depressive episodes of 7.1% (J. L. Wang, 2005). This study also found that education level, number of chronic medical illnesses and child and adult traumatic events were significant predictors of major depressive episodes.

The inclusion of bipolar affective disorder in this survey raises some important challenges. Mania and hypomania, which are intrinsic to gaining a diagnosis of bipolar affective disorder, are associated with elevated mood, racing thoughts and disinhibition. This pattern of thinking can occasionally be identified in individuals who have had significant levels of traumatic exposure. Hence, the overlap between this pattern of phenomenology and post-traumatic stress disorder is an important question that requires further examination before conclusions are drawn about the origins and significance of such manic symptoms.

In addition, bipolar affective disorder is associated with significant errors of judgment and potentially presents a major organisational risk. The further exploration of the associations and patterns of morbidity of people identified with these conditions is therefore critical. A more detailed analysis of the specific symptoms of mania and hypomania needs to be made. This raises important questions about the screening of deployed samples for the existence of such phenomenology. The specific relationship with the traumatic ruminations in post-traumatic stress disorder, which can sometimes drive ruminative thinking, requires specific examination.

The significant prevalence of 12-month ICD-10 affective disorders needs to be considered against the lifetime prevalence of these conditions in the ADF. It is highly probable that there will be an additional number of personnel who have suffered from depression during their lifetime but who have either had a spontaneous remission or have been effectively treated. Furthermore, depression is a prevalent outcome following deployment and traumatic exposures. It was the most common disorder in the study of Australia's first Gulf War veterans (Ikin et al., 2004) and was reported in recent studies of US veterans following combat exposure (Hoge et al., 2004; Thomas et al., 2010). This emphasises the breadth of the need for adequate depression programs in the ADF.

1.2.4 Proposed further analyses

This section reports the analyses completed at the time of publication. Proposed further analyses include:

- determining the prevalence of lifetime, 12-month and current (30-day) DSM-IV affective disorders and comparing them with ICD-10 prevalence rates
- determining the prevalence of lifetime and current (30-day) ICD-10 affective disorders, and examining the movement between diagnostic categories as determined by age, sex, ADF exposures and deployments
- examining the patterns of co-morbidity associated with affective disorders. This would involve an analysis of the complexity of the patterns of psychopathology in the ADF. This perspective would assist in exploring the limitations of the single diagnostic perspective and would explore the shared aetiological and risk pathways to disorder as well as the predictors of specific affective disorders
- providing a more thorough investigation of mania, hypomania and bipolar affective disorder in the ADF. This would include an examination of the interaction between lifetime depressive episodes and lifetime mania, hypomania and bipolar affective disorder; the relationship between lifetime trauma (military and non-military) and mania, hypomania and bipolar affective disorder; the relationship between mania, hypomania and bipolar affective disorder and post-traumatic stress disorder; and a more detailed examination of the factor structure underlying ICD-10 and DSM-IV mania, hypomania and bipolar affective disorder in order to determine the type of symptoms that effectively discriminate which individuals are likely to develop mania, hypomania and bipolar affective disorder. This factor structure could then be compared with those reported in epidemiological samples
- examining the onset of affective disorders in order to determine the temporal relationship between military service and the development of psychopathology

- exploring the duration of illness for all affective diagnoses and the time taken between the onset of a disorder and treatment seeking. The interaction between duration of illness and barriers to care and stigma should be explored for the individual diagnoses and by Service. The duration of illness and impairment and days partially and completely out of role should be assessed
- investigating the risk factors for all of the individual diagnoses, including age, sex, trauma exposure, bullying, social support, number and duration of deployments and duration of service.
- exploring the RtAPS and POPS in those with disorders and mapping the length of time between initial symptoms and emergence of disorder
- investigating the relationship between psychiatric disorders, somatic symptoms and doctor-made diagnoses. This pattern of morbidity is critical to the patterns of health service utilisation and sources of diagnostic error in the ADF
- auditing the medical and psychological files of ADF members to determine the accuracy of the clinical records in terms of the presences of a psychiatric diagnosis and its accuracy using the CIDI as a gold standard. This process would assist in deciding what steps should be taken to improve the identification and treatment of ADF members.

1.3 Prevalence of anxiety disorders in the ADF

- The prevalence of 12-month ICD-10 anxiety disorders in the ADF is 14.8%.
- The most prevalent anxiety disorder was post-traumatic stress disorder.
- ADF females were more likely than males to meet the criteria for panic attack, panic disorder, social phobia and specific phobia.
- Non-commissioned officers and other ranks were significantly more likely to have an anxiety disorder than officers.
- There was no consistent difference across the Services for anxiety disorders.
- Personnel who had been on operational deployment were four times more likely to have obsessive-compulsive disorder.
- The most prevalent traumatic event experienced by ADF members was seeing somebody badly injured or killed, as experienced by an estimated 22,204 members of the ADF.
- The event associated with the highest rates of post-traumatic stress disorder was being kidnapped, with 78.5% of those who had experienced this event having post-traumatic stress disorder.
- Generalised anxiety disorder accounted for the highest mean days of out of role; however, panic attacks had the greatest impact due to their prevalence in the ADF population.

This section provides a summary of the prevalence of 12-month ICD-10 anxiety disorders in currently serving members of the ADF. The associated demographic predictors – sex, rank, Service and deployment status – are described. As post-traumatic stress disorder is of particular relevance to the military population, an examination of the relationship between trauma exposure and post-traumatic stress disorder is provided. The impact of anxiety disorders is examined through days out of role and service use. Finally, a summary is provided of how these rates compare to national and international literature.

The study examined eight types of anxiety disorders:

- ***Panic attack***: Sudden onset of extreme fear or anxiety, often accompanied by palpitations, chest pain, choking sensations, dizziness, and sometimes feelings of unreality, fear of dying, losing control, or going mad.
- ***Panic disorder***: Recurrent panic attacks that are unpredictable in nature.
- ***Agoraphobia***: Marked fear or avoidance of situations such as crowds, public places, travelling alone, or travelling away from home, which is accompanied by palpitations, sweating, shaking, or dry mouth as well as other anxiety symptoms such as chest pain, choking sensations, dizziness, and sometimes feelings of unreality, fear of dying, losing control, or going mad.
- ***Social phobia***: Marked fear or avoidance of being the centre of attention or being in situations where it is possible to behave in a humiliating or embarrassing way, accompanied by anxiety symptoms, as well as either blushing, fear of vomiting, or fear of defecation or micturition.

- ***Specific phobia***: Marked fear or avoidance of a specific object or situation such as animals, birds, insects, heights, thunder, flying, small enclosed spaces, sight of blood or injury, injections, dentists or hospitals, accompanied by anxiety symptoms as described in 'Agoraphobia'.
- ***Generalised anxiety disorder***: Generalised and persistent worry, anxiety or apprehension about everyday events and activities lasting a minimum of six months that is accompanied by anxiety symptoms as described in 'Agoraphobia'. Other symptoms may include symptoms of tension, such as inability to relax and muscle tension, and other non-specific symptoms, such as irritability and difficulty in concentrating.
- ***Obsessive-compulsive disorder***: A disorder characterised by obsessional thoughts (ideas, images, impulses) or compulsive acts (ritualised behavior). These thoughts and acts are often distressing and typically cannot be avoided, despite the sufferer recognising their ineffectiveness.
- ***Post-traumatic stress disorder***: A stress reaction to an exceptionally threatening or traumatic event that would cause pervasive distress in almost anyone. Symptoms are categorised into three groups: re-experiencing symptoms such as memories or flashbacks, avoidance symptoms, and either hyperarousal symptoms (increased arousal and sensitivity to cues) or inability to recall important parts of the experience.

Table 1.15: *Estimated prevalence of 12-month ICD-10 anxiety disorders in the ADF, by anxiety disorder type and sex*

	Males (N=43,241)			Females (N=6,808)			Persons (N=50,049)		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Panic attack[a]	***2,746***	**6.4**	**4.7–8.0**	***791***	**11.6**	**8.5–14.7**	***3,537***	**7.1**	**5.6–8.6**
Panic disorder	*537*	1.2	0.8–1.7	*172*	2.5	1.3–3.8	*709*	1.4	1.0–1.9
Agoraphobia	*1,164*	2.7	1.9–3.5	*97*	1.4	0.4–2.4	*1,261*	2.5	1.8–3.2
Social phobia[b]	***1,497***	**3.5**	**2.6–4.3**	**422**	**6.2**	**3.7–8.7**	**1,919**	**3.8**	**3.0–4.7**
Specific phobia[c]	***2,419***	**5.6**	**4.2–7.0**	**591**	**8.7**	**6.0–11.4**	**3,011**	**6.0**	**4.8–7.3**
Generalised anxiety disorder	*414*	1.0	0.5–1.4	*120*	1.8	0.6–3.0	*533*	1.1	0.7–1.5
Obsessive-compulsive disorder	*1,397*	3.2	0.9–5.5	*184*	2.7	1.1–4.3	*1,581*	3.2	1.1–5.2
Post-traumatic stress disorder	*3,484*	8.1	5.5–10.6	*684*	10.1	7.3–12.8	*4,169*	8.3	6.1–10.6
Any anxiety disorder[d]	***6,141***	**14.2**	**10.9–17.5**	**1,279**	**18.8**	**15.0–22.5**	**7,420**	**14.8**	**11.9–17.7**

a Females v males (OR 1.85, 95% CI 1.19–2.87).

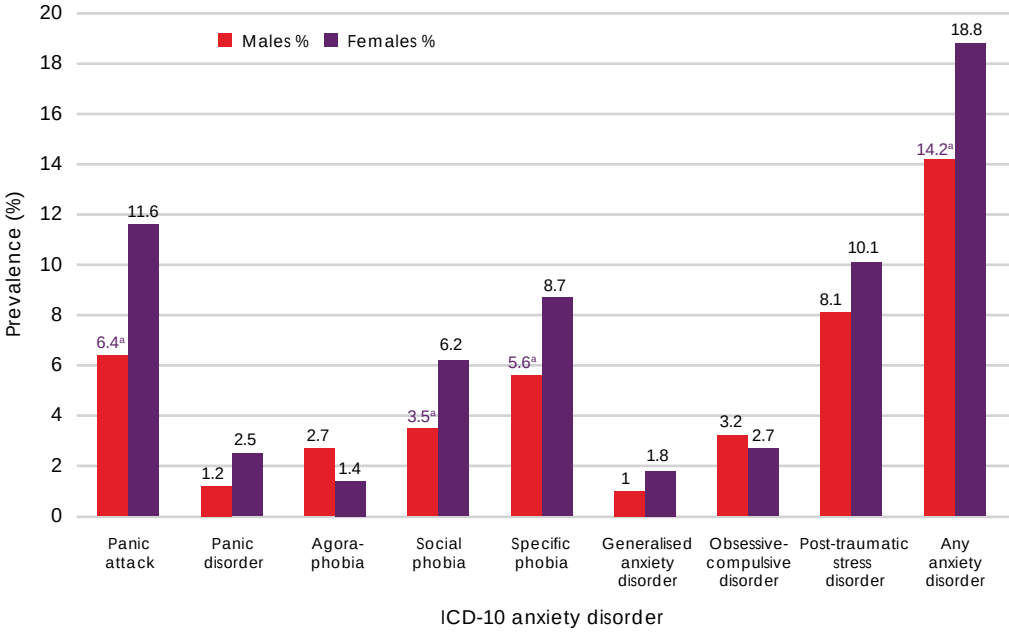
b Females v males (OR 1.77, 95% CI 1.07–2.93).

c Females v males (OR 1.65, 95% CI 1.08–2.53).

d Females v males (OR 1.56, 95% CI 1.11–2.19).

Note: For comparison with the ABS study, 'any anxiety disorder' was limited to the following six anxiety disorders: panic disorder, agoraphobia, social phobia, generalised anxiety disorder, obsessive-compulsive disorder and post-traumatic stress disorder.

Figure 1.19: *Estimated prevalence of 12-month ICD-10 anxiety disorders in the ADF, by anxiety disorder type and sex*



a Significantly different from females.

Anxiety disorders constituted the most common class of mental disorder, with 14.8% (95% CI 11.9, 17.7) of ADF personnel having an anxiety disorder in the 12 months prior to interview. Post-traumatic stress disorder (8.3%, 95% CI 6.1, 10.6), panic attacks (7.1%, 95% CI 5.6, 8.6) and specific phobia (6.0%, 4.8, 7.3) were the most common types of anxiety disorders in the ADF (Table 1.15). Females were significantly more likely than males to meet ICD-10 criteria for any 12-month anxiety disorder (OR 1.56, 95% CI 1.11–2.19). This effect is accounted for by a number of disorders, including panic attacks (OR 1.85, 95% CI 1.19–2.87), social phobia (OR 1.77, 95% CI 1.07–2.93) and specific phobia (OR 1.65, 95% CI 1.08–2.53). There was a significant sex by Service interaction for panic disorder and post-traumatic stress disorder. These results are summarised in section 1.3.1.2.

1.3.1 Prevalence of anxiety disorder in population subgroups

1.3.1.1 Rank

Table 1.16: *Estimated prevalence of 12-month ICD-10 anxiety disorders in the ADF, by anxiety disorder type and rank*

	Officers N=12,034			Non-commissioned officers N=22,319			Other ranks N=15,696		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Panic attack[a]	***561***	**4.7**	**3.4–5.9**	***1,573***	**7.0**	**5.5–8.5**	***1,403***	**8.9**	**4.7–13.2**
Panic disorder	*133*	1.1	0.6–1.6	*438*	2.0	1.2–2.8	*139*	0.9	0.2–1.6
Agoraphobia[b]	***110***	**0.9**	**0.4–1.4**	***698***	**3.1**	**2.1–4.2**	***452***	**2.9**	**1.2–4.6**
Social phobia[c]	***308***	**2.6**	**1.6–3.6**	***1,056***	**4.7**	**3.4–6.0**	**555**	**3.5**	**1.7–5.4**
Specific phobia	*532*	4.4	2.4–6.4	*1,533*	6.9	4.9–8.9	*946*	6.0	3.6–8.4
Generalised anxiety disorder	*96*	0.8	0.1–1.5	*315*	1.4	0.8–2.0	*122*	0.8	0.0–1.6
Obsessive-compulsive disorder	*256*	2.1	0.3–4.0	*525*	2.4	1.4–3.3	*800*	5.1	0.0–11.2
Post-traumatic stress disorder	*661*	5.5	3.5–7.5	*1,844*	8.3	6.3–10.3	*1,664*	10.6	4.2–17.0
Any anxiety disorder[d]	***1,242***	**10.3**	**7.4–13.2**	***3,332***	**14.9**	**12.5–17.4**	***2,846***	**18.1**	**9.9–26.4**

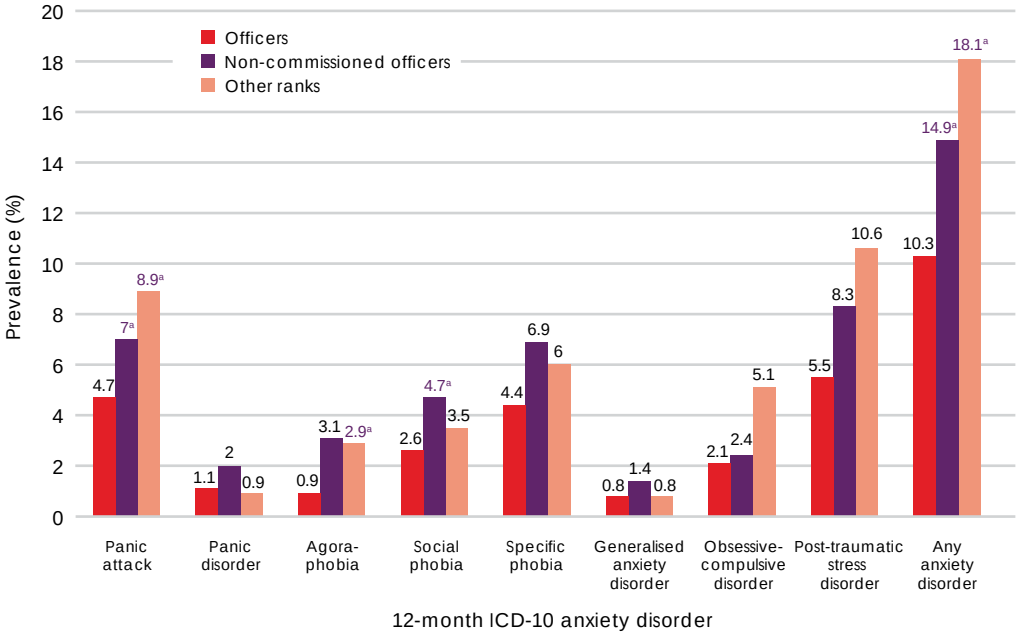
a Non-commissioned officers v officers (OR 1.65, 95% CI 1.14–2.39), other ranks v officers (OR 1.81, 95% CI 1.07–3.03).

b Non-commissioned officers v officers (OR 3.24, 95% CI 1.65–6.38), other ranks v officers (OR 2.94, 95% CI 1.28–6.76).

c Non-commissioned officers v officers (OR 1.99, CI 1.2–3.28).

d Non-commissioned officers v officers (OR 1.5, 95% CI 1.02–2.21), other ranks v officers (OR 1.91, CI 1.01–3.61).

Figure 1.20: *Estimated prevalence of 12-month ICD-10 anxiety disorders in the ADF, by anxiety disorder type and rank*



a Significantly different from officers.

When rank was considered, non-commissioned officers (OR 1.5, 95% CI 1.02–2.21) and other ranks (OR 1.91, CI 1.01–3.61) had significantly higher rates of anxiety disorders than officers (Table 1.16, Figure 1.20).

In particular, there were significantly higher rates of panic attacks in non-commissioned officers (OR 1.65, 95% CI 1.14–2.39) and other ranks (OR 1.81, 95% CI 1.07–3.03) when compared with officers. Agoraphobia demonstrated a similar pattern for non-commissioned officers (OR 3.24, 95% CI 1.65–6.38) and other ranks (OR 2.94, 95% CI 1.28–6.76). Panic attacks and agoraphobia are often associated disorders, and therefore this relationship is to be anticipated. The related disorder of social phobia was only significantly different between officers and non-commissioned officers (OR 1.99, CI 1.2–3.28), with non-commissioned officers once again reporting higher rates. There is also a trend for other ranks to have a higher prevalence of post-traumatic stress disorder (OR 1.95, 95% CI 1.01–3.74), though the effect of rank on post-traumatic stress disorder was not significant.

1.3.1.2 Service

Table 1.17: *Estimated prevalence of 12-month ICD-10 anxiety disorders in the Navy, by anxiety disorder type and sex*

ICD-10 disorder	Navy males N=9,508			Navy females N=2,104			Navy total N=11,612		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Panic attack	*893*	9.4	3.9–14.9	*264*	12.6	5.5–19.6	*1,157*	10.0	5.3–14.6
Panic disorder[a]	***90***	**1.0**	**0.3–1.6**	***65***	**3.1**	**0.0–6.3**	***155***	**1.3**	**0.5–2.1**
Agoraphobia	*252*	2.6	1.0–4.3	*17*	0.8	0.0–2.4	*269*	2.3	0.9–3.7
Social phobia	*485*	5.1	2.6–7.6	*190*	9.0	2.4–15.7	*676*	5.8	3.4–8.2
Specific phobia	*456*	4.8	2.4–7.2	*144*	6.9	2.2–11.5	*600*	5.2	3.0–7.3
Generalised anxiety disorder	*181*	1.9	0.3–3.5	*53*	2.5	0.0–5.6	*234*	2.0	0.6–3.4
Obsessive-compulsive disorder	*131*	1.4	0.2–2.5	*31*	1.5	0.0–4.2	*162*	1.4	0.3–2.4
Post-traumatic stress disorder	*789*	8.3	4.9–11.7	*102*	4.8	1.1–8.6	*891*	7.7	4.8–10.5
Any anxiety disorder	*1,250*	13.1	9.3–17.0	*388*	18.5	10.5–26.5	*1,638*	14.1	10.7–17.6

a Female v male (OR 3.64, 95% CI 1.01–13.17).

Table 1.18: *Estimated prevalence of 12-month ICD-10 anxiety disorders in the Army, by anxiety disorder type and sex*

ICD-10 disorder	Army males N=22,843			Army females N=2,513			Army total N=25,356		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Panic attack	*1,354*	5.9	3.9–8.0	*257*	10.2	5.7–14.8	*1,611*	6.4	4.5–8.3
Panic disorder	*373*	1.6	0.9–2.4	*8*	0.3	0.0–0.9	*381*	1.5	0.8–2.2
Agoraphobia	*789*	3.5	2.2–4.7	*54*	2.2	0.1–4.2	*844*	3.3	2.2–4.5
Social phobia	*755*	3.3	2.1–4.5	*114*	4.5	1.4–7.6	*869*	3.4	2.3–4.5
Specific phobia	*1,260*	5.5	3.4–7.6	*224*	8.9	4.2–13.7	*1,484*	5.9	3.9–7.8
Generalised anxiety disorder	*1,12*	0.5	0.2–0.8	*28*	1.1	0.0–2.6	*140*	0.6	0.2–0.9
Obsessive-compulsive disorder	*1,079*	4.7	0.4–9.0	*99*	4.0	0.9–7.0	*1,179*	4.6	0.7–8.6
Post-traumatic stress disorder	*2,149*	9.4	4.8–14.0	*313*	12.5	6.8–18.1	*2,462*	9.7	5.5–13.9
Any anxiety disorder	*3,902*	17.1	11.1–23.1	*475*	18.9	12.6–25.2	*4,377*	17.3	11.8–22.7

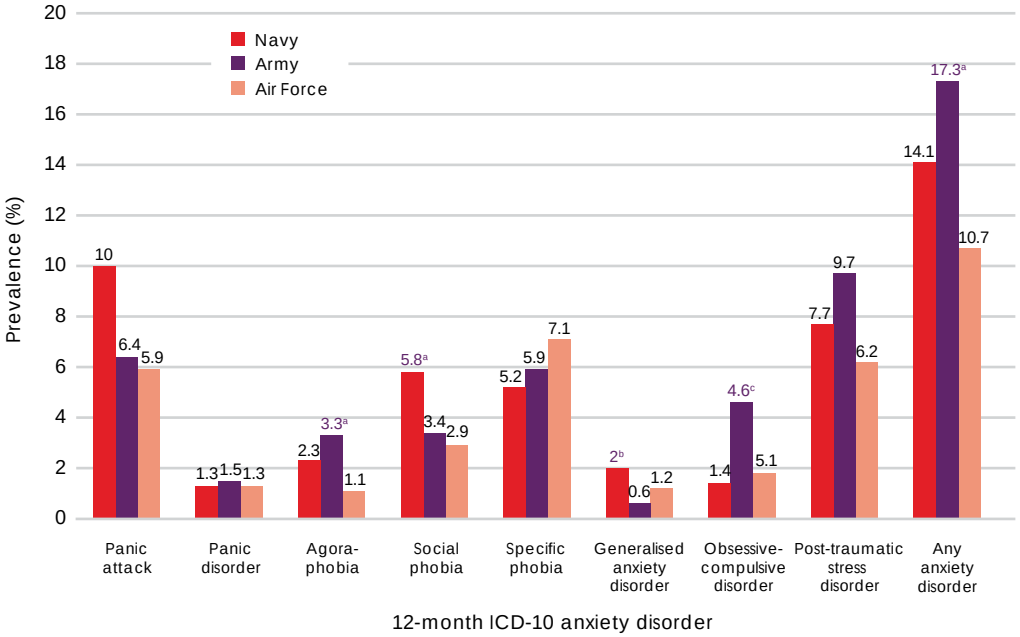
***Table 1.19:** Estimated prevalence of 12-month ICD-10 anxiety disorders in the Air Force, by anxiety disorder type and sex*

ICD-10 disorder	Air Force males N=10,890			Air Force females N=2,191			Air Force total N=13,081		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Panic attack	*499*	4.6	3.1–6.1	*270*	12.3	8.0–16.6	*769*	5.9	4.5–7.3
Panic disorder[a]	***73***	**0.7**	**0.1–1.2**	***100***	**4.5**	**2.3–6.8**	**173**	**1.3**	**0.7–1.9**
Agoraphobia	*123*	1.1	0.3–2.0	*25*	1.1	0.0–2.7	*148*	1.1	0.4–1.9
Social phobia	*257*	2.4	1.3–3.4	*118*	5.4	2.8–7.9	*374*	2.9	1.9–3.8
Specific phobia	*704*	6.5	4.0–9.0	*223*	10.2	5.6–14.8	*927*	7.1	4.9–9.3
Generalised anxiety disorder	*121*	1.1	0.4–1.9	*38*	1.7	0.3–3.1	*159*	1.2	0.6–1.9
Obsessive-compulsive disorder	*187*	1.7	0.7–2.8	*54*	2.5	0.2–4.8	*241*	1.8	0.9–2.8
Post-traumatic stress disorder[b]	***547***	**5.0**	**3.3–6.7**	***269***	**12.3**	**7.9–16.7**	***816***	**6.2**	**4.6–7.8**
Any anxiety disorder	*989*	9.1	6.9–11.2	*416*	19.0	14.0–23.9	*1,405*	10.7	8.8–12.7

a Female v male (OR 7.44, 95% CI 2.74–20.26).

b Female v male (OR 2.67, 95% CI 1.55–4.61).

***Figure 1.21:** Estimated prevalence of 12-month ICD-10 anxiety disorders in Navy, Army, and Air Force*



a Significantly higher than the Air Force.

b Significantly higher than the Army.

c Significantly higher than the Navy.

When the individual Services are considered (tables 1.17–1.19, Figure 1.21), the Army has significantly higher rates of obsessive-compulsive disorder than the Navy (OR 3.21, 95% CI 1.03,10.06) and significantly higher rates of any anxiety disorder than the Air Force (OR 1.65, 95% CI 1.1, 2.47). The only specific anxiety disorder that was significantly higher in the Army compared to the Air Force was agoraphobia (OR 2.65, 95% CI 1.28, 5.49). Navy personnel were twice more likely to meet criteria for social phobia than the Air Force (OR 2.20, 95% CI 1.26, 3.83). Navy personnel were three times more likely to meet criteria for generalised anxiety disorder than Army personnel (OR 3.32, 95% CI 1.37–8.00).

Although it was not statistically significant, there was a general trend for both the Navy and the Army to report higher rates of anxiety disorders than the Air Force.

The rates of panic disorder were significantly different for males and females when compared across the three Services (sex by Service interaction). Females had higher rates of panic disorder than males in both the Air Force (OR 7.44, 95% CI 2.74, 20.26) and the Navy (OR 3.64, 95% CI 1.01,13.17), whereas there was no significant difference between the rates of panic disorder for males and females among Army personnel. Among females, the rates of panic disorder were higher in both the Navy (OR 11.22, 95% CI 1.34, 94.03) and the Air Force (OR 15.72, 95% CI 2.32,106.41) when compared with the Army. Among males, however, there were no significant differences between the rates of panic disorder in the Services.

The rates of post-traumatic stress disorder were also significantly different for males and females when compared across the three Services. Females had higher rates of post-traumatic stress disorder than males in the Air Force (OR 2.67, 95% CI 1.55, 4.61), whereas there was no significant difference between the rates of post-traumatic stress disorder for males and females among Navy and Army personnel. Among females, the rates of post-traumatic stress disorder were higher for the Army (OR 3.02, 95% CI 1.12, 8.09) and the Air Force (OR 2.99, 95% CI 1.20, 7.46) when compared with the Navy. Among males, however, there were no significant differences between the rates of post-traumatic stress disorder in the Services.

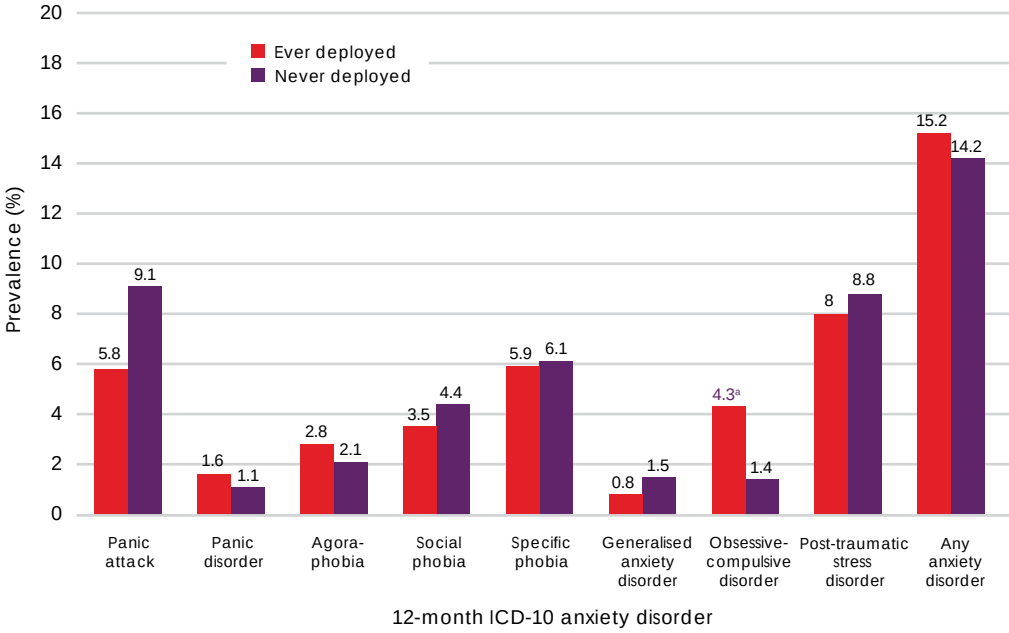
1.3.1.3 Deployment history

Table 1.20: *Estimated prevalence of 12-month ICD-10 anxiety disorders in the ADF, by anxiety disorder type and deployment history*

ICD-10 anxiety disorders	Ever deployed N=31,056			Never deployed N=18,993		
	N	%	95% CI	N	%	95% CI
Panic attack	*1,803*	5.8	4.6–7.0	*1,735*	9.1	5.7–12.6
Panic disorder	*504*	1.6	1.0–2.2	*206*	1.1	0.5–1.6
Agoraphobia	*867*	2.8	1.9–3.7	*393*	2.1	1.0–3.2
Social phobia	*1,083*	3.5	2.5–4.5	*836*	4.4	2.8–6.0
Specific phobia	*1,847*	5.9	4.3–7.6	*1,164*	6.1	4.2–8.1
Generalised anxiety disorder	*244*	0.8	0.4–1.1	*289*	1.5	0.6–2.4
Obsessive-compulsive disorder[a]	***1,321***	**4.3**	**1.1–7.4**	***260***	**1.4**	**0.6–2.1**
Post-traumatic stress disorder	*2,491*	8.0	6.3–9.8	*1,678*	8.8	3.8–13.9
Any anxiety disorder	*4,728*	15.2	11.7–18.8	*2,692*	14.2	9.0–19.3

a Ever deployed v never deployed (OR 4.09, 95% CI 1.20–13.87).

Figure 1.22: *Estimated prevalence of 12-month ICD-10 anxiety disorders in the ADF, by anxiety disorder type and deployment history*



a Significantly different from those who had never deployed.

When the effects of deployment were established, an unexpected finding emerged: the only condition associated with deployment is obsessive-compulsive disorder (OR 4.09, 95% CI 1.2, 13.87). With any anxiety disorder, no statistically significant trend emerged. A further analysis of the type of deployment (categorised as warlike and non-warlike) on the broad category of any anxiety disorder did not reveal any significant differences. This is a key area for further detailed analysis.

1.3.1.4 Post-traumatic stress disorder and trauma exposure

Figure 1.23: *Estimated prevalence of lifetime trauma exposure in the ADF*

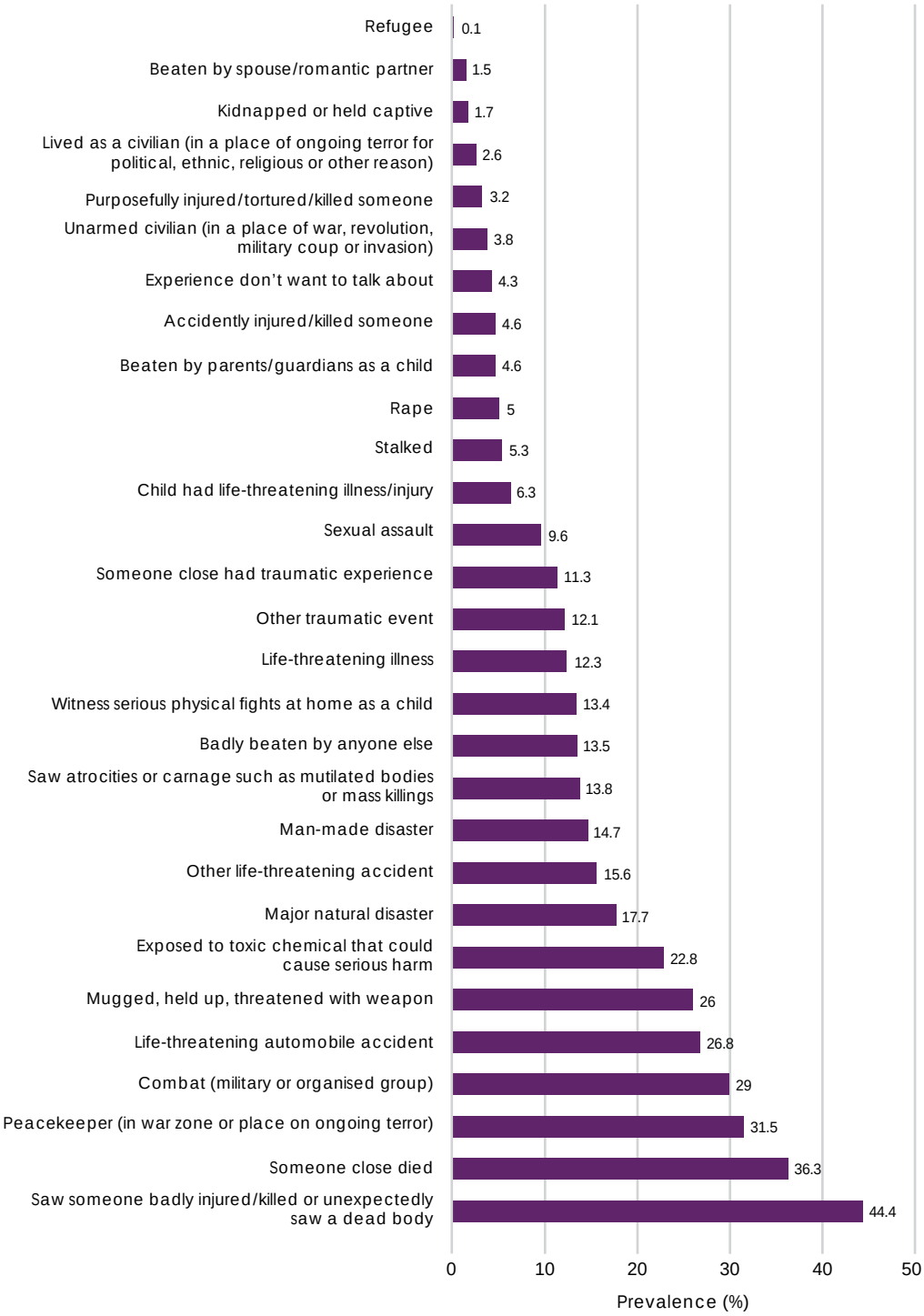
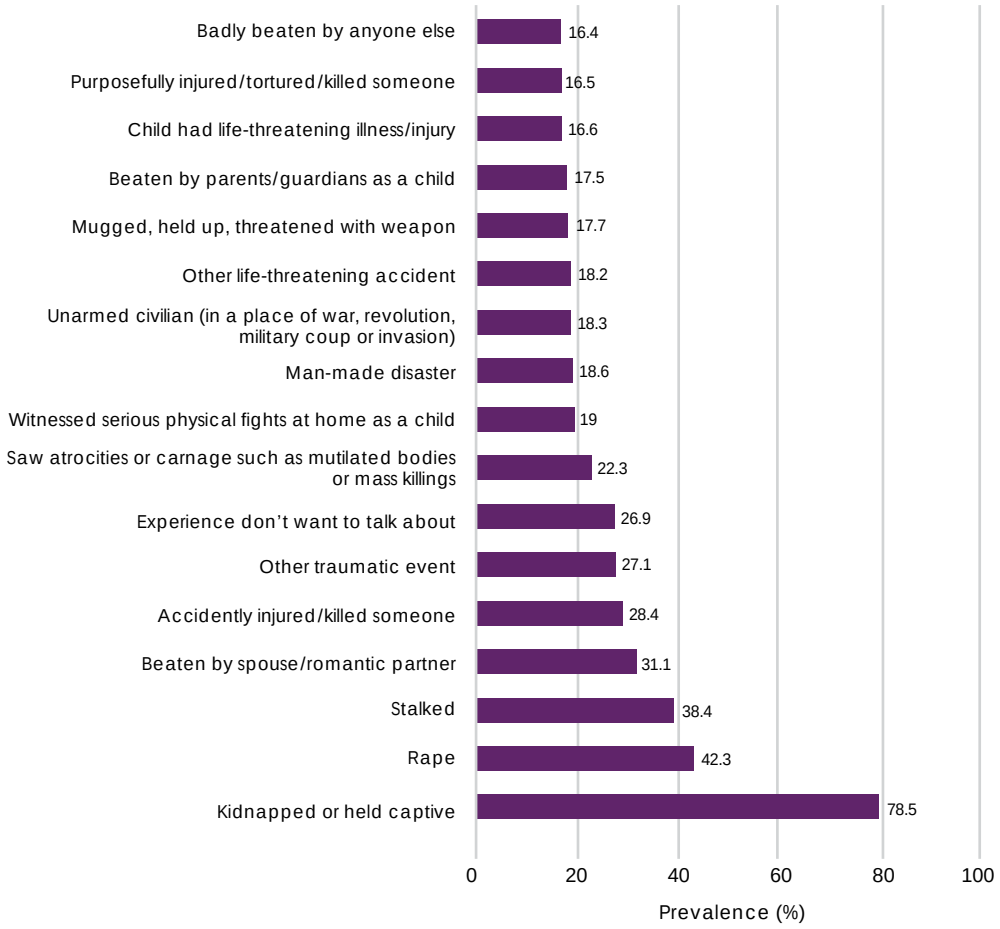


Figure 1.24: *Estimated prevalence of post-traumatic stress disorder from specific event types*



Figures 1.23 and 1.24 examine the rates of traumatic experience in ADF members and the proportion of those personnel who go on to develop post-traumatic stress disorder. It is important to state, however, that many individuals have had multiple trauma exposure; hence the total percentage of cases of post-traumatic stress disorder exceeds 100%.

The most common traumatic experiences in ADF members were seeing somebody badly injured or killed, an experience that an estimated 22,204 members of the ADF (44.4%, 95% CI 40.5, 48.3) have been exposed to. This contrasts to incidents that occur during peacekeeping operations (15,781 individuals; 31.5%, 95% CI 27.9, 35.2) or combat (14,941 individuals; 29.9%, 95% CI 26.4, 33.3). It is obvious that these traumatic experiences can occur contemporaneously. Hence, these categories are not mutually exclusive (see also 1.3.3).

An important issue in terms of combat exposure is the number who had witnessed atrocities (6,923 individuals; 13.8%, 95% CI 11.1, 16.6).

The rates of interpersonal violence in this sample were also high. Some 12,994 individuals (26.0%, 95% CI 22.4, 29.5) had been mugged. The rates of exposure to natural and man-made disaster were also very high and probably in part accounted for by their ADF service. Predictably, automobile accidents are a common exposure, with some 13,395 individuals (26.8%, 95% CI 23.1, 30.5) identified as having had this experience.

Rape and sexual assault were also significant issues, with 2,518 individuals (5.0%, 95% CI 2.9, 7.1) having been raped. A further 2,659 individuals (5.3%, 95% CI 3.2, 7.4) had been stalked. At this stage, the sex distribution of these experiences and whether this occurred during ADF service have not been investigated.

The event that had the highest rates of post-traumatic stress disorder was being kidnapped, with 78.5% (95% CI 52.3, 100.0) of those who had experienced this event having a post-traumatic stress disorder. The number experiencing this event was surprisingly high (N=864, 95% CI 0, 1,836). The other two events that were associated with very high rates of post-traumatic stress disorder were rape (42.3%, 95% CI 18.5, 66.1) and being stalked (38.4%, 95% CI 15.1, 61.7). Another noteworthy group were the victims of domestic violence, where 31.1% of the 770 people who experienced this event met criteria for post-traumatic stress disorder (95% CI 14.2, 48.1).

Individuals who had accidentally injured or killed someone had a 28.4% risk of post-traumatic stress disorder (95% CI 0.0, 62.0). The prevalence of post-traumatic stress disorder following witnessing of atrocities was 22.3% (95% CI 10.7, 33.9). It is obvious that there is a need to further explore the context of ADF service where these experiences may have occurred. Furthermore, it is particularly noteworthy that some 2,131 individuals (95% CI 1,642, 2,621) had a traumatic experience that they found too difficult to talk about. These individuals had a 26.9% risk of having post-traumatic stress disorder (95% CI 17.8, 33.6).

The second lowest rate of post-traumatic stress disorder was for those who had served as a peacekeeper (9.2%, 95% CI 6.3, 12.1). Similarly, the rates from combat experience alone were 10.4% (95% CI 7.5, 13.3). In summary, these results provide an insight into the fact that certain aspects of military service such as combat or peacekeeping do not per se present major risks to post-traumatic stress disorder. Rather, it is likely that there are certain experiences within military service, such as seeing atrocities or accidentally injuring or killing another individual, which may be particularly damaging to an individual's psychological health.

Traumas experienced during military service and in the private lives of ADF members need to be separated. Also it is clear that an ADF member while on service in Australia could also experience many of the events set out in Figure 1.23.

Detailed tables relating to trauma prevalence and post-traumatic stress disorder are provided in Annex B.

1.3.2 Impact of anxiety disorders

1.3.2.1 Total days out of role

Table 1.21: *Number of days ADF members were totally unable to carry out their work, study or day-to-day activities in the previous four weeks due to psychological distress, by type of 12-month ICD-10 anxiety disorder, presented as mean number and proportion of total days lost*

	Mean number of total days out of role		Percentage of total days out of role	
ICD-10 anxiety disorder	Mean	95% CI	%	95% CI
Panic attack	2.0	1.4–2.6	32.7	22.6–42.9
Panic disorder	1.9	0.9–2.9	6.2	2.5–9.9
Agoraphobia	2.4	1.2–3.6	13.3	6.3–20.3
Social phobia	1.2	0.6–1.7	10.5	5.1–16.0
Specific phobia	2.0	1.1–2.9	28.4	16.8–40.0
Generalised anxiety disorder	2.6	1.0–4.1	6.3	1.8–10.7
Obsessive-compulsive disorder	1.4	0.1–2.7	10.7	2.6–18.9
Post-traumatic stress disorder	1.3	0.7–1.9	24.0	15.0–33.1
Any anxiety disorder	1.3	0.8–1.7	42.9	31.1–54.7

Seventeen and a half per cent of ADF members with an anxiety disorder in the previous 12 months were totally unable to carry out their normal day-to-day activities due to psychological distress for at least one day in the previous 28 days. This corresponds to 1,302 ADF personnel. Of those with any anxiety disorder, 11.9% (95% CI 7.9, 15.8) were unable to carry out their normal day-to-day activities for between one day and one week, 3.1% (95% CI 0.3, 6.0) for one to two weeks, 2% (95% CI 0.6, 3.4) for two to three weeks and 0.6% (95% CI 0, 1.1) for three to four weeks.

ADF personnel with an anxiety disorder in the previous 12 months reported an average of 1.3 (95% CI 0.8, 1.7) days out of role in the previous four weeks (Table 1.21). The disorder associated with the highest number of days out of role was generalised anxiety disorder (2.6 days out of role, 95% CI 1.0, 4.1), followed by agoraphobia (2.4 days out of role, 95% CI 1.2, 3.6). In contrast, social phobia, obsessive-compulsive disorder and post-traumatic stress disorder were associated with the least number of total days out of role.

Taking into account both the prevalence of the anxiety disorders and the number of total days out of role, three of the anxiety disorders accounted for significant disability. Panic attacks accounted for the greatest proportion of total days out of role, at 32.7% (95% CI 22.6, 42.9) followed by specific phobia (at 28.4%) (95% CI 16.8, 40.0) and post-traumatic stress disorder (at 24%) (95% CI 15.0, 31.1) (see Table 1.21).

1.3.2.2 Partial days out of role

Table 1.22: *Number of days ADF personnel were partially unable to work, study or carry out day-to-day activities in the previous four weeks due to psychological distress, by type of 12-month ICD-10 anxiety disorder, presented as mean number and percentage of partial days lost*

ICD-10 anxiety disorder	Mean number of partial days out of role		Percentage of partial days out of role	
	Mean	95% CI	%	95% CI
Panic attack	4.0	3.0–5.0	21.9	16.5–27.3
Panic disorder	4.7	2.8–6.6	5.2	2.9–7.6
Agoraphobia	3.5	2.3–4.7	6.5	3.9–9.1
Social phobia	3.6	2.5–4.7	10.9	7.0–14.8
Specific phobia	2.9	2.0–3.8	13.6	9.1–18.1
Generalised anxiety disorder	6.0	3.2–8.9	5.1	2.1–8.1
Obsessive-compulsive disorder	2.3	0.3–4.3	5.8	1.9–9.7
Post-traumatic stress disorder	3.0	2.1–4.0	19.6	14.4–24.7
Any anxiety disorder	2.9	2.2–3.7	33.4	26.6–40.3

Over 39% of personnel meeting criteria for an anxiety disorder in the previous 12 months reported some impact on their performance in the previous four weeks. ADF personnel with generalised anxiety disorder, for example, reported the greatest disruption, cutting down on their daily activities for an average of six days in the previous month due to feelings of psychological distress. Interestingly, the disorder with the least impact on performance was obsessive-compulsive disorder, with 71.2% indicating there had been no impact on their performance.

Taking into account both the prevalence of the disorders and the number of partial days out of role, panic attacks made the most substantial contribution to loss of productivity in the ADF, accounting for 21.9% of lost productivity (95% CI 16.5, 27.3). The second anxiety disorder type to have the most impact was post-traumatic stress disorder, accounting for 19.6% (95% CI 14.4, 24.7).

1.3.2.3 Service use

Table 1.23: *Twelve-month service use, by type of 12-month anxiety disorder*

ICD-10 disorder	Received professional treatment in previous 12 months											
	Yes			No			Don't know			Refused		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Panic disorder	*343*	48.3	32.7–63.9	*367*	51.7	36.1–67.3	*0*	0.0	–	*0*	0.0	–
Agoraphobia	*584*	46.3	32.7–60.0	*677*	53.7	40.0–67.3	*0*	0.0	–	*0*	0.0	–
Social phobia	*484*	25.2	16.1–34.3	*1,435*	74.8	65.7–83.9	*0*	0.0	–	*0*	0.0	–
Specific phobia	*371*	12.3	6.0–18.6	*2,640*	87.7	81.4–94.0	*0*	0.0	–	*0*	0.0	–
Generalised anxiety disorder	*403*	75.6	60.0–91.2	*130*	24.4	8.8–40.0	*0*	0.0	–	*0*	0.0	–
Obsessive-compulsive disorder	*185*	11.7	2.5–20.9	*1,349*	85.3	73.6–97.0	*0*	0.0	–	*47*	3.0	0.0–8.8
Post-traumatic stress disorder[a]	*1,068*	50.2	38.7–61.7	*1,041*	48.9	37.4–60.4	*7*	0.3	0.0–0.9	*12*	0.5	0.0–1.6

a Does not cover all members with this disorder, but percentages are out of the total number with responses.

Table 1.24: *Doctor visits in the previous four weeks due to psychological distress, by type of 12-month ICD-10 anxiety disorder, presented as mean number and as a proportion*

ICD-10 anxiety disorder	Mean number of doctor visits		Percentage of doctor visits	
	Mean	95% CI	%	95% CI
Panic attack	1.1	0.8–1.4	25.2	17.9–32.5
Panic disorder	1.3	0.8–1.9	5.8	2.8–8.8
Agoraphobia	1.3	0.9–1.8	10.3	5.7–15.0
Social phobia	1.0	0.6–1.5	13.1	6.9–19.3
Specific phobia	1.0	0.6–1.4	19.0	11.0–27.1
Generalised anxiety disorder	1.4	0.7–2.1	4.9	1.8–8.0
Obsessive-compulsive disorder	0.8	0.1–1.5	8.4	2.6–14.2
Post-traumatic stress disorder	0.8	0.5–1.2	21.2	13.2–29.1
Any anxiety disorder	0.8	0.6–1.1	39.4	29.3–49.5

Tables 1.23 and 1.24 examine professional treatment patterns in the previous 12 months. These data are particularly significant because they identify the size of the unmet needs in the anxiety disorders, which in many cases is partly driven by the severity of the disorder. For example, 75.6% (95% CI 60, 91.2) of those with a generalised anxiety disorder had sought treatment, in contrast to the 12.3% (95% CI 6.0, 18.6) of those with a specific phobia, with personnel with generalised anxiety disorder also reporting the

greatest number of visits to the doctor in the previous four weeks (mean 1.4 times, 95% CI 0.7,2.1). ADF personnel with post-traumatic stress disorder and obsessive-compulsive disorder had the least number of visits to the doctor (mean 0.8 visits), with only 50% of those with post-traumatic stress disorder having sought treatment. The exact nature of this treatment, however, is an important issue that requires further exploration.

Taking into account both the prevalence of the disorders and the number of doctor visits, panic attacks, however, accounted for the greatest proportion of doctor visits at 25.2% (95% CI 17.9,32.5), followed by post-traumatic stress disorder at 21.2% (95% CI 13.2,29.1) (Table 1.24).

1.3.3 Discussion

The most common type of disorder in the ADF was anxiety disorder. This section summarises the specific categories of anxiety disorder that need to be addressed in the ADF Occupational Military Mental Health Model. The most prevalent anxiety disorders in the ADF were post-traumatic stress disorder (8.3%) and panic attacks (7.1%), followed by specific phobia (6.0%), social phobia (3.8%) and obsessive-compulsive disorder (3.2%). The anxiety disorders with the lowest prevalence were agoraphobia (2.5%), panic disorder (1.4%) and generalised anxiety disorder (1.1%).

Investigation of demographic subgroups revealed that females in the ADF were significantly more likely to meet ICD-10 criteria for any anxiety disorder than males. This effect is accounted for by a number of disorders, including panic attacks, social phobia and specific phobia. The rates of panic disorder and post-traumatic stress disorder were significantly different for males and females when compared across the three Services (sex by Service interaction).

When the frequency of anxiety disorders among the different ranks was examined, there was a general trend for anxiety disorder cases to aggregate in non-commissioned officers and other ranks. Non-commissioned officers and personnel in the other ranks were significantly more likely to meet ICD-10 criteria for both panic attacks and agoraphobia. Despite the higher reported rates in non-commissioned officers and other ranks, it is important to note that officers are not immune to these disorders.

This report demonstrates that anxiety disorders appear to be a particular issue among Army personnel. This finding needs to be explored in relation to occupation and role. Army has significantly higher rates of any anxiety disorder than the Air Force; however, the only specific disorder that was significantly higher in the Army compared to the Air Force was agoraphobia. Additionally, Navy personnel were twice as likely to meet the criteria for social phobia as Air Force personnel.

When the effects of deployment were examined, the unexpected finding emerges that the only condition associated with deployment is obsessive-compulsive disorder. This is a somewhat unexpected result in regard to post-traumatic stress disorder, which has been linked to deployment-related trauma in a number of studies (Hoge et al., 2004; Sareen et al., 2007) although this was not identified in the UK studies of OP TELIC (Hotopf et al., 2006).

The apparent absence of differences in rates of anxiety disorders between those who had and those who had never been deployed is an unexpected finding. However, the high rates of exposure to other traumatic events may explain the absence of this relationship. Figure 1.23 provides a unique insight into the traumas that adversely affect the lives of ADF members.

These figures show that there are some events that are extremely prevalent in the ADF, such as being in a life-threatening motor accident, where 26.8% of 13,395 individuals were exposed. In terms of direct military exposures, 29.9% of the ADF (14,941) had been exposed to combat and a further 31.5% (15,781) had been involved in peacekeeping. The most prevalent traumatic event was seeing somebody badly injured or killed or unexpectedly seeing a dead body, which had been experienced by some 22,204 or 44.4% of the ADF. Hence, these traumatic experiences cover both matters that can occur during ADF service as well as in an individual's civilian life.

In considering the events that cause the greatest burden to Defence in terms of post-traumatic stress disorder, it is necessary to look at the prevalence of an event as well as the probability that it causes post-traumatic stress disorder. The event that accounted for the numerically highest number of cases was seeing somebody badly injured or killed or unexpectedly seeing a dead body (N=3.057; see Table B.20 in Annex B). The second most important event was having somebody close die (N=2,407). The next most important event was being mugged, held up or threatened with a weapon (N=2,303). At this stage, the data have not been examined to ascertain whether these experiences occurred solely as part of military service or as part of the individual's civilian life. The fourth most important was being involved in a life-threatening automobile accident, accounting for post-traumatic stress disorder in 1,667 individuals. Combat, in comparison, accounted for 1,550 cases of post-traumatic stress disorder, while being exposed to atrocities or carnage such as mutilated bodies accounted for 1,541 cases. Hence, traumas that are prevalent in the general community as causes of post-traumatic stress disorder have substantial relevance to ADF members, as well as events that are only an occupational hazard for those on military service, such as combat and being exposed to atrocities.

This analysis does not address the issue that some of these events might have occurred simultaneously; hence the interaction effect between different traumatic experiences requires further exploration. This interaction may reflect the fact that prior exposure to one class of trauma may increase the risk of subsequent exposure. The impact of multiple traumatic events is examined in section 3.3.2, which looks at the adverse mental health outcomes that progressively arise from exposure to multiple events. Further analysis is required to ascertain which traumatic events occur while on combat duty, on peacekeeping duty, during ADF service in Australia and during the individual's domestic life.

In terms of loss of productivity and service utilisation, panic attacks accounted for the highest proportion of total and partial days out of role as well as number of doctor visits in the previous month, mostly due to their high prevalence in the ADF. This was followed by post-traumatic stress disorder and specific phobia.

1.3.3.1 Comparison with other military samples

The rates of post-traumatic stress disorder reported in this study using ICD-10 are significantly higher than reported rates from other military populations using DSM-IV criteria. In general, ICD-10 criteria lead to slightly higher prevalence estimates for post-traumatic stress disorder, as the avoidance criteria are less stringent. Hence some of the individuals identified in the ADF as having post-traumatic stress disorder would probably have sub-syndromal post-traumatic stress disorder according to DSM-IV criteria. Partial or sub-syndromal post-traumatic stress disorder is associated with significant impairment and distress (Grubaugh et al., 2005; Stein, Walker, Hazen, & Forde, 1997). The

prevalence of post-traumatic stress disorder in the Canadian Forces, for example, was only 2.3%.

In the ADF, the only published study to report the prevalence of post-traumatic stress disorder was that of the first Gulf War veterans, which found 5.1% of the veterans and 1.7% of the comparison group had post-traumatic stress disorder (Ikin et al., 2004). It is important to emphasise that this population included both current and former serving members and comprised mostly Navy personnel, which may have affected the prevalence rates.

One finding from epidemiological studies investigating the prevalence of post-traumatic stress disorder is that the more carefully the range of possible traumatic exposures are explored, the higher the rates. The reason for this is that post-traumatic stress disorder is identified and diagnosed only after particular stressful life events. This, however, is unlikely to be a contributing factor in this study due to the large similarities in methodology between the 2007 National Mental Health and Wellbeing Study and the current study. However, the theory may explain some of the discrepancy between post-traumatic stress disorder rates in the ADF and the Canadian military, due to the Canadian military using a less comprehensive measure to assess trauma exposure (CIDI 2.1 as opposed to CIDI 3.0).

In the ADF population, the 12-month prevalence estimate of panic disorder was 1.4% and of panic attacks 7.1%. This result very closely matches the prevalence of panic disorder and panic attacks in both the Canadian military (1.8% and 7% respectively) and the broader Australian population (2.5% and 6.5%). Females had higher rates of panic disorder than males in both the Air Force and the Navy. The significant rates of panic disorder in the ADF require further exploration. A considerable percentage of people who have panic attacks do not understand the nature or the significance of the triggers to their panic. In post-traumatic stress disorder, frequently post-traumatic memories are triggered by environmental cues. However, often individuals do not consciously understand the relationship between these triggers and a traumatic exposure, simply experiencing episodic intense distress. In many individuals, this distress manifests as panic attacks. The relationship between triggers and traumatic exposure, therefore, requires further analysis before any conclusive statement can be made.

The rates of obsessive-compulsive disorder, specifically in ADF males, were unexpected. Aspects of military life encourage ritualisation of behaviour and it is possible that some individuals may come to develop excessive anxiety about non-adherence to these rituals. However, individuals who have also been exposed to trauma can develop somewhat compulsive behaviours in an attempt to manage and control their traumatic anxieties. Therefore, this relationship also requires further exploration, particularly because the phenomenology of obsessional ruminations and intrusive recollections of traumatic events are very similar. This pattern of phenomenology in ADF members requires further investigation, in particular the impact of deployment experience.

While this has not been examined systematically, investigation of the prevalence of obsessive-compulsive disorder through discussion with interviewers has highlighted that ADF personnel often report a compulsion to wash their hands. This is particularly prevalent in those who have been on humanitarian missions and have been exposed to profound human degradation, including the exhumation of mass graves. These individuals do not necessarily recognise the traumatic origin of this behaviour. Obsessional rumination in relation to harming another individual is also frequently

reported in those who have been involved in witnessing atrocities or the degradation of civilian populations. The nature of such rumination is about the moral dilemmas associated with these activities and the internal conflicts this can create for individuals who have not been able to intervene as they might have desired. These manifestations of distress require further analysis to investigate their phenomenology and how they should be addressed in treatment.

The 3.8% prevalence rate for social phobia in the ADF was the same as in the Canadian Forces. This disorder is challenging for individuals in an organisational setting and is related to the social withdrawal arising from trauma exposure. The specific patterns of associated impairment require further exploration.

A range of studies have suggested that ICD-10 has a slightly lower threshold for diagnosis than DSM-IV (American Psychiatric Association, 1994). It is important, therefore, in comparing the statistics and findings of this study with those of our major allies, that the DSM-IV comparisons are made as part of the analysis of the data.

1.3.4 Proposed further analyses

This section reports the analyses completed at the time of publication. Proposed further analyses include:

- modelling the risk of trauma exposure and other risk factors on each of the ICD-10 anxiety disorders
- examining the risk associated with military and non-military trauma on the development of ICD-10 anxiety disorders
- determining the prevalence of lifetime, 12-month and current (30-day) DSM-IV anxiety disorders and comparing them with ICD-10 prevalence rates
- determining the prevalence of lifetime and current (30 day) ICD-10 anxiety disorders
- examining the patterns of co-morbidity between the anxiety disorders, particularly panic disorder, obsessive-compulsive disorder and post-traumatic stress disorder to detect deployment effects
- examining the temporal association between different anxiety disorders in order to determine which of them serve as a precursor or risk factor to other anxiety disorders
- examining the onset of anxiety disorders in order to determine the temporal relationship between military service and the development of psychopathology.

1.4 Prevalence of alcohol disorders in the ADF

- Males in the ADF were significantly more likely than females to meet criteria for ICD-10 alcohol dependence and ICD-10 alcohol disorders but not for ICD-10 alcohol harmful use disorder.
- Navy personnel were particularly at risk of being diagnosed with alcohol harmful use disorder.

This section provides a summary of the prevalence of 12-month ICD-10 alcohol disorders in currently serving members of the ADF. The associated demographic predictors – sex, rank, Service, and deployment status – are described. The impact of alcohol disorders is examined through days out of role and service use. Finally, a summary is provided of how these rates compare to national and international literature.

The ADF Mental Health and Wellbeing Study examined two types of alcohol disorder:

- ***Alcohol harmful use***: Diagnosis not only requires high levels of alcohol consumption, but that the alcohol use is damaging to the person's physical or mental health. Each participant was initially asked if they consumed 12 or more standard alcoholic drinks in a 12-month period. If so, they were then asked a series of questions about their level of consumption. A diagnosis of alcohol harmful use was applied if the alcohol interfered with either work or other responsibilities; caused arguments with their family or friends; was consumed in a situation where the person could get hurt; resulted in being stopped or arrested by police; or if the participant continued to consume alcohol despite experiencing social or interpersonal problems as a consequence of their drinking during the previous 12 months. A person could not meet criteria for alcohol harmful use if they met criteria for alcohol dependence.
- ***Alcohol dependence***: Alcohol dependence is characterised by an increased prioritisation of alcohol in a person's life. The defining feature of alcohol dependence is a strong, overwhelming desire to use alcohol despite experiencing a number of associated problems. A diagnosis was given if the person reported three or more of the following symptoms in the previous 12 months:
  - strong and irresistible urge to consume alcohol
  - a tolerance to the effects of alcohol
  - inability to stop or reduce alcohol consumption
  - withdrawal symptoms upon cessation or reduction of alcohol intake
  - continuing to drink despite it causing emotional or physical problems
  - reduction in important activities because of or in order to drink.

The tables below report the patterns of alcohol harmful use and dependence in currently serving ADF members according to ICD-10 criteria, based on CIDI interviews.

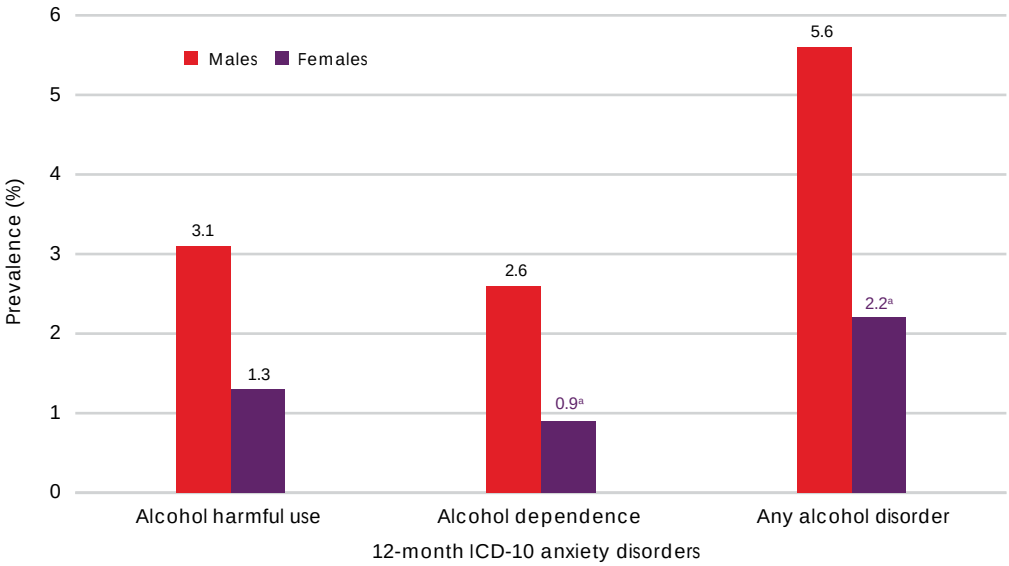
***Table 1.25:** Estimated prevalence of 12-month ICD-10 alcohol disorders in the ADF, by alcohol disorder type and sex*

ICD-10 disorder	Males N=43,241			Females N=6,808			Persons N=50,049		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Alcohol harmful use	*1,331*	3.1	1.7–4.5	*89*	1.3	0.2–2.5	*1,420*	2.8	1.6–4.1
Alcohol dependence[a]	***1,107***	**2.6**	**1.8–3.3**	***63***	**0.9**	**0.2–1.7**	***1,171***	**2.3**	**1.7–3.0**
Any alcohol disorder[b]	***2,438***	**5.6**	**4.1–7.2**	***152***	**2.2**	**0.9–3.6**	***2,590***	**5.2**	**3.8–6.6**

a Females v males (OR 0.37, 95% CI, 0.15–0.89).

b Females v males (OR 0.36, 95% CI 0.18–0.75).

***Figure 1.25:** Estimated prevalence of 12-month ICD-10 alcohol disorders in the ADF, by alcohol disorder type and sex*



a Significantly different from ADF males.

Table 1.25 and Figure 1.25 present the prevalence of ICD-10 alcohol harmful use and dependence in the ADF. In total 5.2% (95% CI 3.8, 6.6) of the ADF met criteria for an ICD-10 alcohol disorder, with females being 63% less likely to meet criteria for ICD-10 alcohol dependence than males (OR 0.37, 95% CI 0.15, 0.89) and 64% less likely to meet criteria for any ICD-10 alcohol disorder (OR 0.36, 95% CI 0.18, 0.75).

When examining ICD-10 alcohol harmful use, 2.8% (95% CI 1.6, 4.1) of ADF members were diagnosed with this problem. There is a trend for females to have lower rates of alcohol harmful use (1.3%, 95% CI 0.2, 2.5) compared to males (3.1%, 95% CI 1.7, 4.5).

When ICD-10 alcohol dependence is examined, 2.3% (95% CI 1.7, 3.0) of members have this problem. The rate for females in the ADF is 0.9% (95% CI 0.2, 1.7) compared with 2.6% (95% CI 1.8, 3.3) of male ADF members.

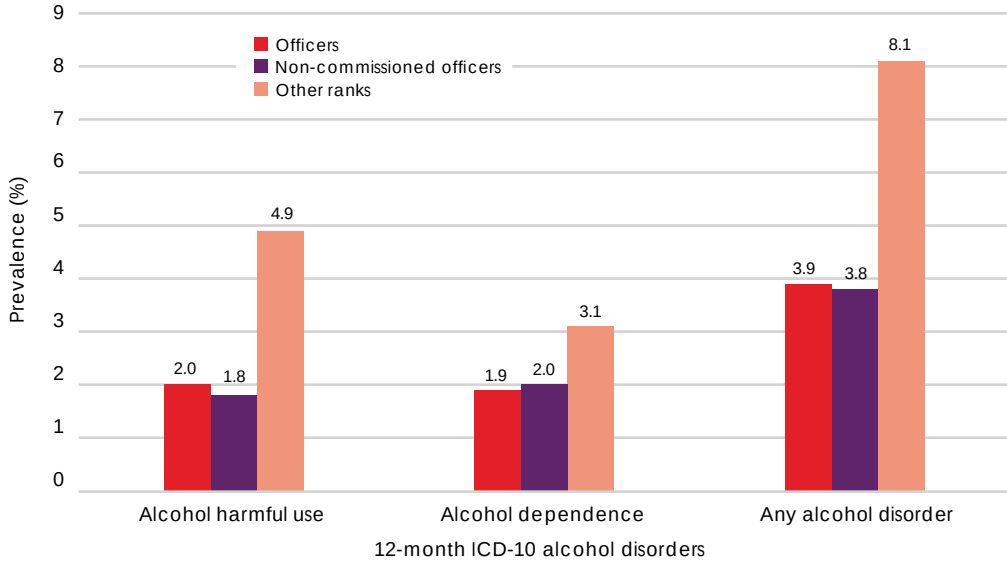
1.4.1 Prevalence of alcohol disorders in different population subgroups

1.4.1.1 Rank

Table 1.26: *Estimated prevalence of 12-month ICD-10 alcohol disorders in the ADF, by alcohol disorder type and rank*

ICD-10 disorder	Officers N=12,034			Non-commissioned officers N=22,319			Other ranks N=15,696		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Alcohol harmful use	*241*	2.0	0.3–3.7	*404*	1.8	1.0–2.6	*774*	4.9	1.4–8.4
Alcohol dependence	*234*	1.9	1.2–2.7	*445*	2.0	1.2–2.8	*491*	3.1	1.3–4.9
Any alcohol disorder	*475*	3.9	2.1–5.8	*849*	3.8	2.6–5.0	*1,266*	8.1	4.1–12.0

Figure 1.26: *Estimated prevalence of 12-month ICD-10 alcohol disorders in the ADF, by alcohol disorder type and rank*



When rank was considered, 8.1% (95% CI 4.1, 12.0) of personnel in other ranks met criteria for any ICD-10 alcohol disorder, which was more than double the rates for officers and non-commissioned officers. Similarly the rates for ICD-10 alcohol harmful use and dependence were very similar among officers and non-commissioned officers but were lower than in other ranks, where 4.9% (95% CI 1.4, 8.4) had a diagnosable alcohol harmful use disorder and 3.1% (95% CI 1.3, 4.9) met criteria for alcohol dependence. This highlights that alcohol harmful use and dependence are problems for all categories of rank but are over-represented in other ranks. Despite these trends, there were no significant differences between the ranks on any of the ICD-10 alcohol disorder categories.

1.4.1.2 Service

Table 1.27: *Estimated prevalence of 12-month ICD-10 alcohol disorders in the Navy, by alcohol disorder type and sex*

ICD-10 disorder	Navy males N=9,508			Navy females N=2,104			Navy total N=11,612		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Alcohol harmful use	*457*	4.8	0.6–9.0	*78*	3.7	0.1–7.3	*536*	4.6	1.1–8.1
Alcohol dependence	*350*	3.7	1.7–5.7	*0*	0.0	–	*350*	3.0	1.4–4.7
Any alcohol disorder	*807*	8.5	3.9–13.0	*78*	3.7	0.1–7.3	*886*	7.6	3.8–11.4

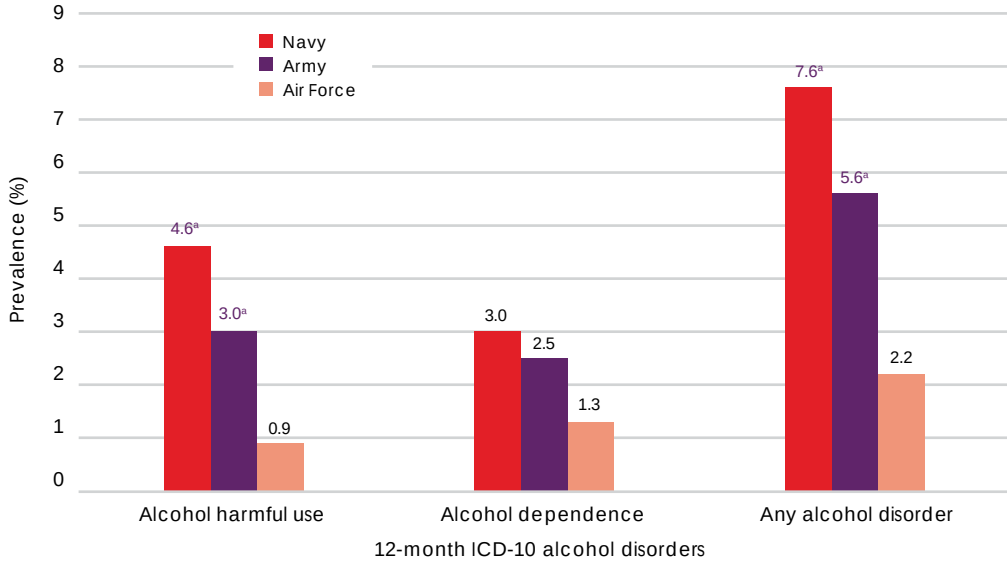
Table 1.28: *Estimated prevalence of 12-month ICD-10 alcohol disorders in the Army, by alcohol disorder type and sex*

ICD-10 disorder	Army males N=22,843			Army females N=2,513			Army total N=25,356		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Alcohol harmful use	*762*	3.3	1.4–5.3	*10*	0.4	0.0–1.1	*773*	3.0	1.3–4.8
Alcohol dependence	*616*	2.7	1.6–3.8	*28*	1.1	0.0–2.6	*644*	2.5	1.5–3.6
Any alcohol disorder	*1,378*	6.0	3.8–8.3	*39*	1.5	0.0–3.2	*1,417*	5.6	3.6–7.6

Table 1.29: *Estimated prevalence of 12-month ICD-10 alcohol disorders in the Air Force by alcohol disorder type and sex*

ICD-10 disorder	Air Force males N=10,890			Air Force females N=2,191			Air Force total N=13,081		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Alcohol harmful use	*111*	1.0	0.1–1.9	*0*	0.0	–	*111*	0.9	0.1–1.6
Alcohol dependence	*141*	1.3	0.3–2.3	*35*	1.6	0.0–3.2	*176*	1.3	0.5–2.2
Any alcohol disorder	*252*	2.3	1.0–3.7	*35*	1.6	0.0–3.2	*287*	2.2	1.1–3.3

Figure 1.27: *Estimated prevalence of 12-month ICD-10 alcohol disorders in the Navy, Army and Air Force*



a Significantly different from the Air Force.

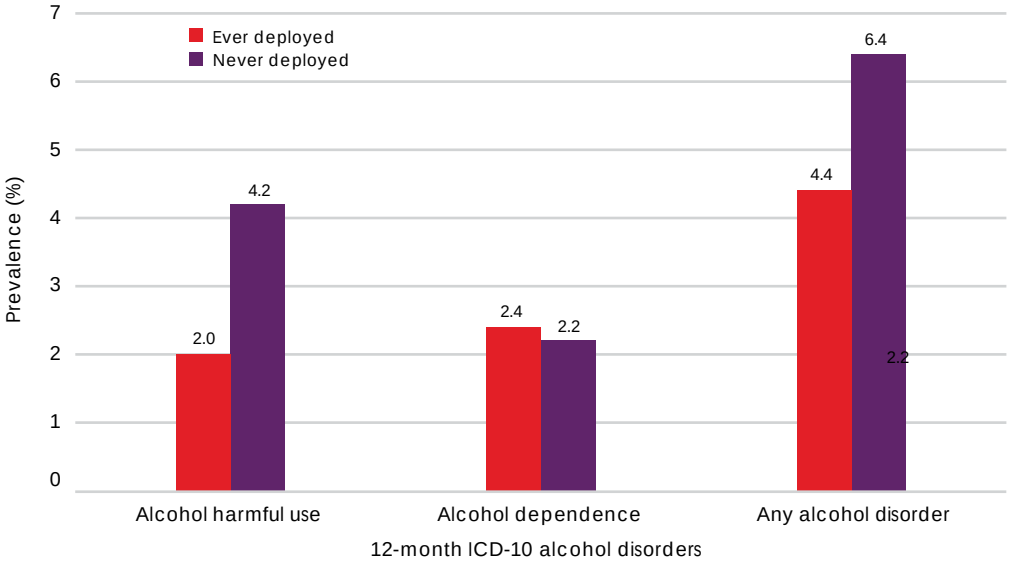
When the individual Services are considered (tables 1.27, 1.28 and 1.29), the Navy tended to have the highest rates of alcohol disorders followed by the Army and then the Air Force. For example, 7.6% (95% CI 3.8, 11.4) of Navy personnel met criteria for an ICD-10 alcohol disorder, in contrast to 5.6% (95% CI 3.6, 7.6) in the Army and 2.2% (95% CI 1.1, 3.3) in the Air Force. Navy personnel were more than five times as likely to meet criteria for ICD-10 alcohol harmful use (OR 5.61, 95% CI 1.72, 18.25) and more than three times more likely to meet criteria for any ICD-10 alcohol disorder (OR 3.57, 95% CI 1.67, 7.63) than Air Force personnel. Army personnel also reported a significantly higher prevalence of ICD-10 alcohol harmful use (OR 3.77, 95% CI 1.24, 11.49) and any ICD-10 alcohol disorder than Air Force personnel (OR 2.53, 95% CI 1.26, 5.07). There were no significant differences between the rates of ICD-10 alcohol dependence among the Services, however.

1.4.1.3 Deployment history

Table 1.30: *Estimated prevalence of 12-month ICD-10 alcohol disorders in the ADF, by alcohol disorder type and deployment history*

	Ever deployed N=31,056			Never deployed N=18,993		
ICD-10 alcohol disorder	N	%	95% CI	N	%	95% CI
Alcohol harmful use	*625*	2.0	1.1–3.0	*794*	4.2	1.4–7.0
Alcohol dependence	*751*	2.4	1.6–3.2	*420*	2.2	1.0–3.4
Any alcohol disorder	*1,377*	4.4	3.2–5.7	*1,214*	6.4	3.4–9.4

Figure 1.28: *Estimated prevalence of 12-month ICD-10 alcohol disorders in the ADF, by alcohol disorder type and deployment history*



When the effects of deployment were examined (Table 1.30 and Figure 1.28), there was a trend for alcohol harmful use to be more common in the never deployed (4.2%) (95% CI 1.4, 7.0) versus the deployed (2.0%) (95% CI 1.1, 3.0), although this difference was not significant. A further analysis of the type of deployment (categorised as warlike and non-warlike) on the broad category of any alcohol disorder did not reveal any significant differences. This is a key area for further detailed analysis.

1.4.2 Impact of alcohol disorders

1.4.2.1 Total days out of role

Table 1.31: *Number of days ADF members were totally unable to work, study or carry out their day-to-day activities in the previous four weeks due to psychological distress, by type of 12-month ICD-10 alcohol disorder, presented as mean number and proportion of total days lost*

ICD-10 alcohol disorder	Mean number of total days out of role		Percentage of total days out of role	
	Mean	95% CI	%	95% CI
Alcohol harmful use	0.7	0.1–1.2	4.3	0.8–7.7
Alcohol dependence	0.5	0.2–0.9	2.8	0.7–4.9
Any alcohol disorder	0.6	0.2–1.0	7.1	3.0–11.1

Figure 1.29: *Total days out of role in the previous four weeks due to psychological distress, by type of 12-month ICD-10 alcohol disorder*

Nine per cent of ADF personnel reporting an ICD-10 alcohol disorder in the previous 12 months were totally unable to carry out their normal day-to-day activities for at least one day in the previous 28 days due to psychological distress.

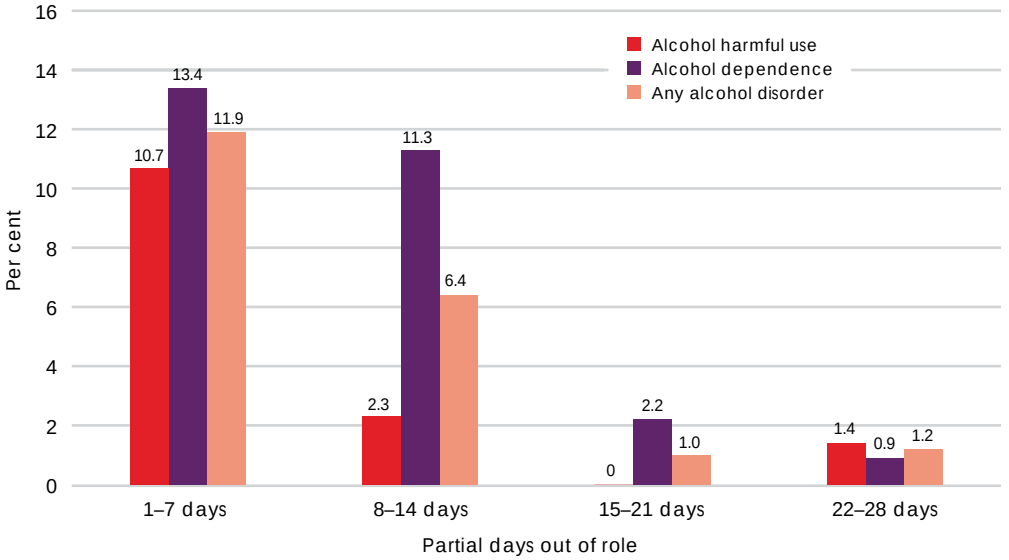
ADF personnel with an alcohol disorder reported an average of 0.6 (95% CI 0.2, 1.0) days out of role in the previous four weeks. Alcohol harmful use was associated with greatest mean number of total days out of role (mean 0.7, 95% CI 0.1–1.2) and also accounted for the greatest proportion of total days out of role when taking into account the prevalence of alcohol disorders as well as the number of total days out of role (4.3%, 95% CI 0.8-7.7).

1.4.2.2 Partial days out of role

Table 1.32: *Number of days ADF members were partially unable to work, study or carry out their day-to-day activities in the previous four weeks due to psychological distress, by type of 12-month ICD-10 alcohol disorder, presented as mean number and proportion of partial days lost*

ICD-10 alcohol disorder	Mean number of partial days out of role		Percentage of partial days out of role	
	Mean	95% CI	%	95% CI
Alcohol harmful use	1.1	0.3–1.9	2.4	0.9–3.9
Alcohol dependence	2.8	1.3–4.2	4.8	2.0–7.6
Any alcohol disorder	1.8	1.0–2.7	7.2	4.1–10.4

Figure 1.30: *Partial days out of role in the previous four weeks due to psychological distress, by type of 12-month ICD-10 alcohol disorder*



Although the mean number of days totally out of role for alcohol problems was less than one, 20.4% of those with an alcohol disorder reported some impact on their performance in the previous four weeks in terms of partial days out of role. ADF personnel an alcohol disorder for example reported an average of 1.8 (95% CI 1.9, 2.7) partial days out of role in the previous four weeks.

Alcohol dependence was associated with greatest mean number of partial days out of role (mean 2.8, 95% CI 1.3-4.2) and also accounted for the greatest proportion of partial days out of role when taking into account both the prevalence of the disorders as well as the number of total days out of role (4.8%, 95% CI 2.0, 7.6).

Of those who met criteria ICD-10 for harmful alcohol use, 82.9% indicated there had been no impact on their performance, 10.7% had had between one and seven partial days out of role and a total of 3.7% had had eight or more. For those with alcohol dependence, 66.1% reported no impact on their functioning, whereas 13.4% had cut down for between one and seven days and 14.4% had had eight or more partial days out of role (see Figure 1.30).

In interpreting these statistics, the attribution of this impairment solely to alcohol disorder needs to be made with care. The way that these questions were answered referred to the whole psychiatric morbidity experienced by the individual. The existence of co-morbid disorders in a number of individuals with alcohol harmful use and dependence means that these days out of role reflect the impact of alcohol harmful use as well as other psychiatric disorders.

1.4.2.3 Service use

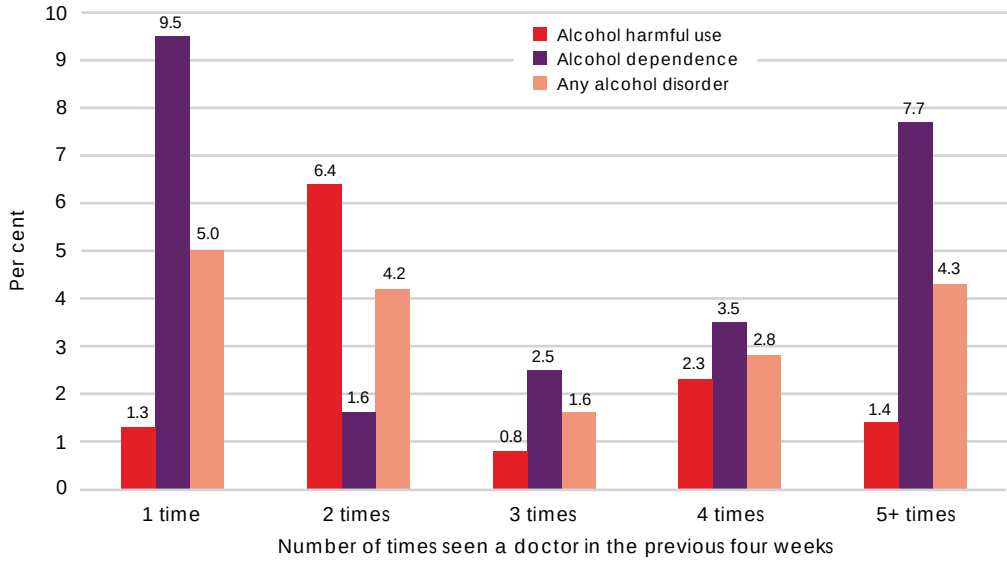
Table 1.33: *Twelve-month service use, by type of 12-month alcohol disorder*

ICD-10 alcohol disorder	Received professional treatment in the previous 12 months											
	Yes			No			Don't know			Refused		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Any alcohol disorder	383	14.8	7.2–22.4	2,208	85.2	77.6–92.8	0	0.0	–	0	0.0	–

Table 1.34: *Doctor visits in the previous four weeks due to psychological distress, by type of 12-month ICD-10 alcohol disorder, presented as mean number and proportion of doctor visits*

ICD-10 alcohol disorder	Mean number of doctor visits		Percentage of doctor visits	
	Mean	95% CI	%	95% CI
Alcohol harmful use	0.4	0.1–0.6	3.3	1.2–5.5
Alcohol dependence	0.8	0.3–1.4	6.0	1.6–10.4
Any alcohol disorder	0.6	0.3–0.9	9.3	4.4–14.2

Figure 1.31: *Four-week service use (times seen a doctor), by type of 12-month alcohol disorder*



Tables 1.33 and 1.34 and Figure 1.31 examine professional treatment patterns in the previous 12 months for ADF personnel with an alcohol disorder. When individuals with an ICD-10 alcohol disorder were asked about service use, only 14.8% (95% CI 7.2, 22.4) indicated that they had received any professional help in the previous 12 months. This indicates a significant issue: how to identify individuals having difficulties as well as those with disorders who may be unwilling to seek treatment.

When the pattern of service usage in the previous four weeks due to psychological distress was examined, 83.4% of those with ICD-10 alcohol harmful use (95% CI 72.5, 94.2) indicated that they had not seen a doctor for psychological distress in the previous four weeks. This contrasted with 69.0% (95% CI 55.5, 82.5) of those with ICD-10 alcohol dependence. However, among those with alcohol dependence there was a trend for those who were seeking care to have had more consultations. For example, 7.7% (95% CI 0.0, 15.8) had seen a health professional five or more times. Again, it is important to further examine the extent to which the response to the previous four weeks' service usage was driven by co-morbid disorders, in contrast to the primary diagnosis of alcohol harmful use and dependence.

Alcohol dependence was associated with the greatest mean number of doctor visits due to psychological distress (mean 0.8, 95% CI 0.3, 1.4) and also accounted for the greatest proportion of number of doctor visits when taking into account the prevalence of the disorders as well as the number of total days out of role (6.0%, 95% CI 1.6, 10.4).

1.4.3 Discussion

The most prevalent form of alcohol disorder in the ADF was alcohol harmful use (2.8%), although this was only slightly higher than alcohol disorder (2.3%).

Overall, the only significant differences in the demographic groups for any alcohol disorder were for sex and Service: males were more likely to meet criteria than females, and Navy personnel and Army personnel reported a significantly higher prevalence of any ICD-10 alcohol disorder than Air Force personnel.

Males in the ADF were significantly more likely to have alcohol dependence disorder than ADF females but there was no significant difference for rank or deployment status. It is noteworthy that Navy personnel were five times more likely to have alcohol harmful use while Army personnel were three times more likely. There were no significant differences between the rates of ICD-10 alcohol dependence between the Services.

In terms of impairment, alcohol harmful use was associated with the greatest mean number of total days out of role and also accounted for the greatest proportion of total days out of role, taking into account the prevalence of the disorder as well as the number of total days out of role. In contrast, alcohol dependence was associated with the greatest mean number of partial days out of role and also accounted for the greatest proportion of partial days out of role, taking into account both the prevalence of disorder as well as the number of total days out of role. Alcohol dependence was also associated with the most visits to the doctor in the previous four weeks due to psychological distress. This effect has important implications for the ADF in terms of lost productivity and disruption of work performance. However, the information provided in this section does not address the issue of the significant co-morbidity between alcohol harmful use and dependence in individuals with other psychiatric disorders.

1.4.3.1 Comparison with other armed forces

A somewhat unexpected finding was the trend for lower rates of alcohol harmful use in those who had been deployed. Although not significant, this pattern may be related to the enforced periods of abstinence that occur on deployments, specifically to the Middle East. Hence, there may be a naturalistic intervention effect whereby deployment modifies individuals' patterns of alcohol use due to forced periods of having to live and socialise without the use of alcohol. This may have an enduring effect following return from deployment.

Internationally, a small number of recent studies have examined the relationship between combat exposure and alcohol problems and have identified a number of risk factors for the development of alcohol disorders (Browne et al., 2008; Rona et al., 2007). Rona et al. (2007), for example, in a study of the UK armed forces, identified a significant relationship between duration of deployment, exposure to combat and severe alcohol problems post-deployment. In the study, severe alcohol problems were reported by 20% of military personnel who were deployed for nine to twelve months. However, this was on a self-report instrument (AUDIT) and not a diagnostic interview.

In a similar study published three years later, Rona and colleagues (2010) extended this research to look at the relationship between alcohol misuse and functional impairment. Higher AUDIT scores were reported among Army personnel and among those who were younger, single, less educated and those who either were a case on the General Health Questionnaire or were a post-traumatic stress disorder case. Functional impairment, related to cutting down on work and 'accomplishing less', was highest in those scoring greater than or equal to 20 on the AUDIT and lowest in those scoring 8–15. This pattern of impairment supports previous research by McFarlane and colleagues (2009), which reported a U-shaped relationship between alcohol consumption and adverse outcomes, whereby those at particular risk are those who do not drink at all or those who have excessive or problem drinking.

Jacobson and colleagues (2010), utilising a sample of 48,481 US military personnel surveyed as part of the Millennium Cohort Study, examined the relationship between deployment, combat and alcohol consumption, again using self-report measures. They found new onset rates of heavy weekly drinking, binge drinking and alcohol-related problems in currently serving personnel following combat-related deployment were 6.0%, 26.6% and 4.8% respectively.

Wilk and colleagues (2010) surveyed 1,120 US combat soldiers between three and four months following deployment to Iraq and found that one in four soldiers screened positive for alcohol misuse. These rates are slightly higher than rates reported in regular UK personnel who had been deployed (alcohol misuse 15.7%) and not deployed (alcohol misuse 10.9%) to Iraq or Afghanistan (Fear et al., 2010).

Sareen and colleagues (2007), however, in the first published population-based survey of currently serving military personnel (N=8,441), using a diagnostic interview, made the important differentiation between heavy alcohol usage and alcohol dependence in the Canadian Forces. They examined the relationship between peacekeeping, exposure to combat and witnessing atrocities or massacres and a range of CIDI DSM-IV disorders, including alcohol dependence.

Unlike for a range of other disorders, they found no association between alcohol dependence and any of the experiences reported. In the Sareen study, alcohol dependence was found to be present in 4.8% (N=302) of the population and heavy alcohol consumption in 34.2%. This result is similar to the result in the ADF Mental Health Prevalence and Wellbeing Study and emphasises the complexity of the relationship between alcohol consumption, alcohol disorder and military service.

Despite these rates of alcohol-related disorders in the Canadian Forces, only 36.6% of those with a diagnosis of alcohol dependence perceived the need for help for their alcohol or drug problem in the previous year. This was significantly lower than the level who perceived the need for care for any of the other disorder types. Only 10.9% of those with alcohol dependence felt that their needs had been fully met. This is significantly lower than all of the other disorders.

This pattern of insufficient care for people with alcohol disorders was also observed in the 2007 National Survey on Mental Health and Wellbeing (Slade et al., 2009). In this study, only 22.4% of Australians with an alcohol disorder received help for a mental health problem in the previous year. This percentage is even lower for males (20.4%). Given the additional barriers to care in the military it is expected that these rates will be even lower in the ADF.

The relationship between alcohol consumption and health is not a straightforward one. For instance, there is significant evidence to suggest that moderate alcohol consumption is associated with better mental and physical health outcomes. Among heavy drinkers, it is important to ascertain the difference between those people with a pattern of consumption that does not result in adverse behavioural or health consequences and those where there are associated interpersonal difficulties, adverse behavioural consequences and associated mental disorders.

There does appear to be a difference in the level of disorder reported between self-report measures using standard cut-offs and those that utilise cut-offs based on diagnostic interviews. In their study of first Gulf War Australian veterans , McKenzie and colleagues (2006) used the AUDIT to examine alcohol consumption and problems in 1,232 Navy Gulf War veterans. Using a cut-off of 10, derived from Receiver Operating Characteristic (ROC) analysis using the CIDI, 4.5% met the diagnostic criteria for 12-month DSM-IV alcohol use or dependence. Considering that DSM-IV prevalence rates tend to be higher than ICD-10, these findings are comparable to those in the ADF Mental Health Prevalence and Wellbeing Study.

The relationship between deployment and alcohol use in the ADF requires further analysis, but appears to be different from the patterns reported in other nations' self-report measures (Wilk et al., 2010). Section 2 of this report provides an analysis of self-report alcohol consumption patterns and appropriate cut-offs for serving ADF members.

1.4.4 Proposed further analyses

This section reports the analyses completed at the time of publication. Proposed further analyses include:

- examining the impact of co-morbidity on days out of role, interference with work and service usage for those with ICD-10 alcohol disorder
- examining the interaction between deployment, lifetime trauma exposure, the number of deployments and ICD-10 alcohol disorder
- investigating the longitudinal relationship between psychiatric disorders, ICD-10 alcohol disorder, and trauma exposure
- determining the prevalence of lifetime and current (30-day) ICD-10 alcohol disorders
- determining the prevalence of lifetime, 12-month and current (30-day) DSM-IV alcohol disorder and comparing that with ICD-10 prevalence rates
- investigating the relationship between deployment-related trauma and other lifetime trauma and ICD-10 alcohol disorder
- examining the temporal relationship between deployment, alcohol disorder and other ICD-10 psychiatric disorders
- determining the risk factors and outcomes for heavy drinkers with and without problem drinking.

1.5 Prevalence of co-morbidity in the ADF

- One in five (N=11,016) members of the ADF have suffered from a mental disorder.
- 15.2% of the ADF met criteria for one disorder class, 6.1% met criteria for two disorder classes, and 0.7% met criteria for three disorder classes.
- The most common single disorder class in the ADF was anxiety disorder (9%).
- The most common co-morbidity for the ADF as a whole was anxiety disorder with affective disorder (4.5% were in this group).
- Personnel in other ranks were more likely to have a co-morbid disorder than either officers or non-commissioned officers.
- The number of disorder classes was a significant predictor of the number of days totally and partially unable to work due to psychological distress, but not of the number of doctor visits due to psychological distress.

The prevalence of co-morbid alcohol, anxiety and affective disorders was explored for the ADF population. The associated demographic predictors – sex, rank, Service and deployment status – are described. Finally, a summary is provided of how these rates compare to national and international literature.

1.5.1 Prevalence of co-morbid disorder in the ADF

Table 1.35: *Estimated prevalence of single and co-morbid affective, anxiety and alcohol use disorders in the ADF in the previous 12 months using ICD-10 criteria*

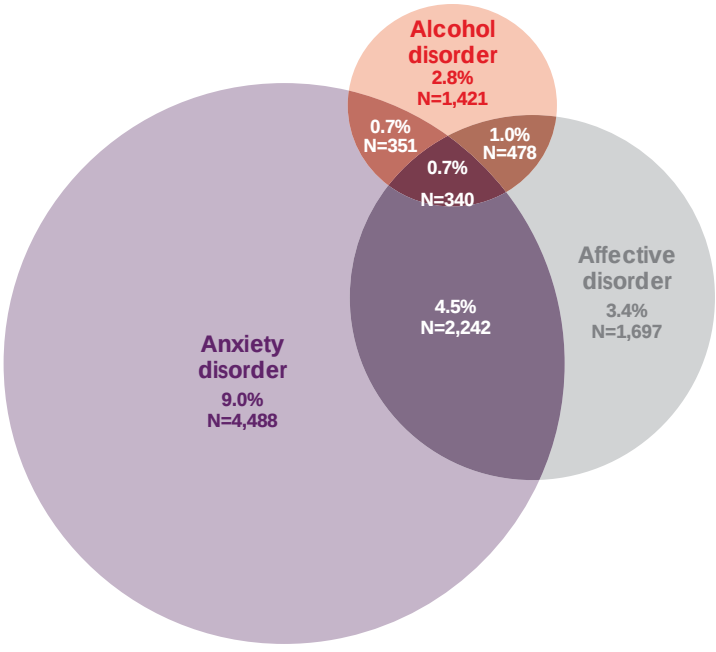
ICD-10 disorder group	Total			Males			Females		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
No disorder	*39,033*	78.0	74.8–81.1	*33,866*	78.3	74.7–81.9	*5,167*	75.9	71.8–80.0
Any alcohol disorder only	*1,421*	2.8	1.7–4.0	*1,383*	3.2	1.8–4.6	*38*	0.6	0.0–1.2
Any anxiety disorder only	*4,488*	9.0	6.7–11.2	*3,624*	8.4	5.8–11.0	*864*	12.7	9.2–16.2
Any affective disorder only	*1,697*	3.4	2.4–4.4	*1,390*	3.2	2.1–4.3	*307*	4.5	2.4–6.6
One disorder class	*7,605*	15.2	12.5–17.9	*6,397*	14.8	11.8–17.8	*1,209*	17.8	13.8–21.7
Any anxiety disorder and any alcohol disorder	*351*	0.7	0.4–1.1	*307*	0.7	0.3–1.1	*44*	0.6	0.0–1.5
Any affective disorder and any alcohol disorder	*478*	1.0	0.4–1.5	*461*	1.1	0.4–1.7	*17*	0.3	0.0–0.7
Any anxiety disorder and any affective disorder	*2,242*	4.5	2.4–6.5	*1,924*	4.4	2.1–6.8	*318*	4.7	3.0–6.3
Two disorder classes	*3,071*	6.1	4.0–8.3	*2,692*	6.2	3.8–8.7	*379*	5.6	3.7–7.4
Three disorder classes	*340*	0.7	0.3–1.0	*287*	0.7	0.3–1.1	*53*	0.8	0.0–1.5

The prevalence of co-morbid alcohol, anxiety and affective disorders, and the proportion of ADF personnel meeting criteria for one, two and three of the disorder classes are presented in Table 1.35 and Figure 1.32. The results are formatted to replicate Teesson, Slade and Mills (2009) in order to simplify presentation.

The proportion of the ADF with no disorder was 78% (95% CI 74.8, 81.1). The proportions for the other three classes were: one disorder class – 15.2% (95% CI 12.5, 17.9); two disorder classes – 6.1% (95% CI 4.0, 8.3); and three disorder classes – 0.7% (95% CI 0.3, 1.0). Anxiety disorders were most frequently experienced in isolation from the other disorder types. Nine per cent (95% CI 6.7, 11.2) of the ADF (4,480 individuals) met criteria for an ICD-10 anxiety disorder only in the previous 12 months, while 3.4% (95% CI 2.4, 4.4) (1,697 ADF members) had suffered from an affective disorder such as depression in the previous 12 months, but did not meet criteria for either an anxiety disorder or an alcohol disorder. A further 2.8% (95% CI 1.7, 4.0) (1,421 ADF members) had suffered from alcohol harmful use or dependence disorder but not from an anxiety or an affective disorder.

In relation to the sexes, more females (17.8%, 95% CI 13.8, 21.7) met criteria for one disorder class compared to males (14.8%, 95% CI 11.8, 17.8); however, the relative risk of being in the one disorder class compared to no disorder was the same for males and females. Similarly, there was no significant effect of sex on the relative risk of two or three disorder classes. The most common co-morbidity for both sexes was affective disorder with anxiety disorder – 4.4% (95% CI 2.1, 6.8) of males and 4.7% (95% CI 3.0, 6.3%) of females met the criteria for both of these disorders in the previous 12 months. The second most common co-morbidity for females was anxiety disorder with alcohol disorder (0.6%, 95% CI 0.0, 1.5), whereas for males the second most common co-morbidity was affective disorder with alcohol disorder (1.1%, 95% CI 0.4, 1.7). These findings are reflected in Figure 1.32.

Figure 1.32: *Estimated prevalence of single and co-morbid affective, anxiety and alcohol disorders in the ADF in the previous 12 months using ICD-10 criteria*



As Figure 1.32 shows, the most common co-morbidity for the ADF as a whole was anxiety disorder with affective disorder – some 2,242 individuals or 4.5% (95% CI 2.4, 6.5) of the ADF fell into this group. Figure 1.32 illustrates how the largest group is those meeting the criteria for an anxiety disorder only, which represents 9% of the ADF (95% CI 6.7, 11.2). The majority of individuals with an anxiety disorder have only a single disorder.

When looking at the alcohol-related disorders, 45% of those who met criteria for an alcohol disorder in the previous 12 months also had an affective disorder or an anxiety disorder, or both an affective disorder and an anxiety disorder.

The majority of individuals with a 12-month affective disorder also met the criteria for some other condition. This group of 3,060 individuals represented 64% of those with an affective disorder. Importantly, 818 of these individuals also had a co-existing alcohol-related disorder.

The group who had three or more disorders represented some 340 individuals or 0.7% (95% CI 0.3, 1.0) of the ADF who have an anxiety disorder, a depressive disorder and an alcohol-related disorder.

1.5.2 Prevalence of co-morbid disorder in the ADF in different population subgroups

1.5.2.1 Rank

Table 1.36: *Estimated prevalence of single and co-morbid affective, anxiety and alcohol disorders in the ADF, by rank*

ICD-10 disorder group	Officers			Non-commissioned officers			Other ranks		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
No disorder	*10,041*	83.4	79.9–87.0	*17,919*	80.3	77.6–83.0	*11,072*	70.5	61.5–79.6
Any alcohol disorder only	*237*	2.0	1.2–2.7	*343*	1.5	0.8–2.3	*841*	5.4	1.8–8.9
Any anxiety disorder only	*846*	7.0	4.3–9.8	*2,018*	9.0	7.0–11.1	*1,623*	10.3	4.0–16.7
Any affective disorder only	*398*	3.3	2.2–4.4	*604*	2.7	1.8–3.6	*695*	4.4	1.6–7.3
One disorder class	*1,481*	12.3	9.3–15.3	*2,965*	13.3	10.9–15.6	*3,159*	20.1	12.6–27.7
Any anxiety disorder and any alcohol disorder	*82*	0.7	0.3–1.1	*191*	0.9	0.3–1.4	*78*	0.5	0.0–1.2
Any affective disorder and any alcohol disorder	*116*	1.0	0.0–2.6	*121*	0.5	0.2–0.9	*241*	1.5	0.3–2.8
Any anxiety disorder and any affective disorder	*274*	2.3	1.3–3.2	*929*	4.2	3.0–5.4	*1,040*	6.6	0.4–12.8
Two disorder classes	*471*	3.9	2.0–5.8	*1,241*	5.6	4.2–6.9	*1,359*	8.7	2.3–15.0
Three disorder classes	*40*	0.3	0.0–0.6	*194*	0.9	0.3–1.4	*106*	0.7	0.0–1.5

As indicated elsewhere in this report (sections 1.2.1.1 and 1.3.1.1), the burden of disease is particularly reflected in other ranks (Table 1.36). However, it needs to be emphasised that officers and non-commissioned officers are by no means immune to the effects of psychiatric disorder.

More personnel in other ranks met the criteria for both one and two disorder classes than both officers and non-commissioned officers. However, there was no significant effect of rank on the relative risks of having one, two or three disorder classes.

For both officers and non-commissioned officers, the most common single disorder group was anxiety disorder followed by affective disorder. For ADF personnel in the other ranks, however, the most common disorder type was anxiety disorder followed by alcohol disorder.

The most common co-morbidity for all three ranking groups was affective disorder with anxiety disorder – 2.3% (95% CI 1.3, 3.2) of officers, 4.2% (95% CI 3.0, 5.4%) of non-commissioned officers and 6.6% (95% CI 0.4, 12.8%) of personnel in the other ranks met the criteria for both of these disorders in the previous 12 months. Interestingly, however, the second most common co-morbidity for non-commissioned officers was anxiety disorder with alcohol disorder (0.9%, 95% CI 0.3, 1.4), whereas for the officers and other ranks the second most common co-morbidity was affective disorder with alcohol disorder.

1.5.2.2 Service

Table 1.37: *Estimated prevalence of single and co-morbid affective, anxiety and alcohol disorders in the ADF, by Service*

	Navy			Army			Air Force		
ICD-10 disorder group	N	%	95% CI	N	%	95% CI	N	%	95% CI
No disorder	*8,767*	*75.5*	70.4–80.6	*19,160*	75.6	69.9–81.2	*11,106*	84.9	82.5–87.3
Any alcohol disorder only	*506*	*4.4*	0.9–7.8	*799*	3.2	1.5–4.8	*116*	0.9	0.2–1.6
Any anxiety disorder only	*952*	*8.2*	5.6–10.8	*2,593*	10.2	6.0–14.5	*943*	7.2	5.5–8.9
Any affective disorder only	*590*	*5.1*	2.7–7.4	*733*	2.9	1.3–4.4	*374*	2.9	1.7–4.1
One disorder class	*2,048*	*17.6*	12.9–22.3	*4,125*	16.3	11.6–20.9	*1,433*	11.0	8.8–13.1
Any anxiety disorder and any alcohol disorder	*163*	*1.4*	0.4–2.4	*111*	0.4	0.0–0.9	*76*	0.6	0.0–1.1
Any affective disorder and any alcohol disorder	*111*	*1.0*	0.0–2.1	*287*	1.1	0.2–2.1	*80*	0.6	0.0–1.3
Any anxiety disorder and any affective disorder	*418*	*3.6*	1.5–5.7	*1,453*	5.7	1.9–9.6	*371*	2.8	1.9–3.8
Two disorder classes	*692*	*6.0*	3.4–8.6	*1,851*	7.3	3.3–11.3	*527*	4.0	2.7–5.3
Three disorder classes	*105*	*0.9*	0.0–1.8	*220*	0.9	0.3–1.4	*15*	0.1	0.0–0.3

When the three Services were examined (Table 1.37), the mental health of the Air Force was generally better than that of the Navy or the Army, which each had one in four members who had suffered from a psychiatric disorder in the previous 12 months.

The proportion of the Air Force with no disorder was 84.9% (95% CI 82.5, 87.3), compared with 75.5% (95% CI 70.4, 80.6) of the Navy and 75.6% (95% CI 69.9, 81.2) of the Army. Consequently, the Air Force also had fewer personnel with one, two and three disorder classes than either the Navy or the Army. Compared to no disorder, the risk of one disorder class was 76% greater (relative risk (RR) 1.76, 95% CI 1.19, 2.61) among Navy members and 74% greater (RR 1.74, 95% CI 1.14, 2.65) among Army members than Air Force members. The risk of three disorder classes was nine times greater among both Navy members (RR 9.03, 95% CI 1.81, 45.13) and Army members (RR 9.07, 95% CI 2.19, 37.61) than among Air Force members. The risk of two disorder classes was not significantly different for the three Services.

For both the Navy and the Air Force, the two most common single disorder groups were anxiety disorder followed by affective disorder. For the Army, however, the two most common disorder types were anxiety disorder followed by alcohol disorder.

Once again, the most common co-morbidity for all three ranking groups was affective disorder with anxiety disorder – 3.6% (95% CI 1.5, 5.7) of Navy, 5.7% (95% CI 1.9, 9.6%) of Army and 2.8% (95% CI 1.9, 3.8%) of Air Force met the criteria for both of these disorders in the previous 12 months. Interestingly, however, the second most common co-morbidity for the Navy was anxiety disorder with alcohol disorder (1.4%, 95% CI 0.4, 2.4), whereas for the Army it was affective disorder with alcohol disorder (1.1%, 95% CI 0.2, 2.1).

1.5.2.3 Deployment history

Table 1.38: *Estimated prevalence of single and co-morbid affective, anxiety and alcohol use disorders in the ADF, by deployment history*

ICD-10 disorder group	Ever deployed			Never deployed		
	N	%	95% CI	N	%	95% CI
No disorder	*24,584*	79.2	75.4–82.9	*14,449*	76.1	70.3–81.8
Any alcohol disorder only	*590*	1.9	1.1–2.7	*831*	4.4	1.5–7.2
Any anxiety disorder only	*2,620*	8.4	6.5–10.3	*1,868*	9.8	4.8–14.8
Any affective disorder only	*843*	2.7	1.9–3.5	*853*	4.5	2.2–6.8
One disorder class	*4,053*	13.1	10.9–15.2	*3,552*	18.7	13.0–24.4
Any anxiety disorder and any alcohol disorder	*267*	0.9	0.4–1.4	*83*	0.4	0.0–0.9
Any affective disorder and any alcohol disorder	*311*	1.0	0.2–1.8	*168*	0.9	0.1–1.7
Any anxiety disorder and any affective disorder	*1,633*	5.3	2.1–8.4	*609*	3.2	1.8–4.6
Two disorder classes	*2,210*	7.1	3.9–10.3	*861*	4.5	2.9–6.2
Three disorder classes	*209*	0.7	0.3–1.1	*131*	0.7	0.0–1.4

When the impact of deployment was examined, there was a trend for those who had never been deployed to be more likely to meet the criteria for a single class of disorder (18.7%, 95% CI 13.0, 24.4 v 13.1%, 95% CI 10.9, 15.2) and for those who had been on deployment to meet the criteria for two disorder classes (7.1%, 95% CI 3.9, 10.3 v 4.5%, 95% CI 2.9, 6.2) in the previous 12 months. However, there was no significant effect of deployment on the risk of having one, two or three disorder classes.

For both groups, the most common single disorder was anxiety disorder, followed by affective disorder. The most common co-morbidity for both groups was affective disorder with anxiety disorder, followed by affective disorder with alcohol disorder.

1.5.3 Impact of co-morbid disorder

1.5.3.1 Total days out of role

Table 1.39: *Mean number of days ADF personnel were totally unable to carry out their work, study or day-to-day activities in the previous four weeks, by number of co-morbid ICD-10 disorder classes*

ICD-10 disorder	Days in the previous four weeks totally out of role	
	Mean	95% CI
Three disorder classes	1.8	0.4–3.2
Two disorder classes	1.7	0.8–2.5
One disorder class	1.0	0.6–1.4
No disorder	0.2	0.1–0.3

As can be seen in Table 1.39, there was a gradation of severity in terms of mean number of total days out of role according to the number of ICD-10 disorder classes reported by ADF personnel. ADF personnel with an affective, anxiety or alcohol disorder reported an average of 1.8 days totally out of role, compared to those with no disorder, who reported 0.2 days out of role due to psychological distress.

The only disorder group to have a significant impact on the number of total days out of role in the previous month was affective disorder. For those with an affective disorder, the expected number of days totally unable to work, study or carry out day-to-day activities was 2.30 times (95% CI 1.44, 3.68) greater than that for those without an affective disorder. This effect was estimated for those who were possibly totally unable to work due to psychological distress. Both affective disorders and anxiety disorders significantly increased the likelihood of possibly having days out of role due to psychological distress.

The number of disorder classes is a significant predictor of having psychological distress, and is also a significant predictor of the number of days totally out of role due to psychological distress. For those with two disorder classes, the expected number of days totally unable to work due to psychological distress was 2.76 times (95% CI 1.41, 5.39) greater than that for those with no disorder. Having one or more disorder classes significantly increased the likelihood of having psychological distress that could result in days out of role.

1.5.3.2 Partial days out of role

Table 1.40: *Mean number of days ADF personnel were partially unable to carry out their work, study or day-to-day activities in the previous four weeks, by number of co-morbid ICD-10 disorder classes*

ICD-10 disorder	Days in the previous four weeks partially out of role	
	Mean	95% CI
Three disorder classes	6.5	2.9–10.0
Two disorder classes	3.2	1.9–4.6
One disorder class	2.2	1.6–2.8
No disorder	0.9	0.7–1.1

As with the results reported in Table 1.39, partial days out of role were associated with the same gradation of severity according to the number of ICD-10 disorder classes reported (Table 1.40).

The only co-morbidity to have a significant impact on the number of partial days out of role in the previous month was affective disorder with anxiety disorder. For those with both an affective disorder and an anxiety disorder, the expected number of days partially out of role was 58% times (95% CI 1.16, 2.15) greater than that for those without this co-morbidity. This effect was estimated for those who could have possibly reported total days out of role due to psychological distress. Both affective disorders and anxiety disorders significantly increased the likelihood of possibly having days partially out of role due to psychological distress.

The number of disorder classes is a significant predictor of having psychological distress, and is also a significant predictor of the number of days partially out of role due to psychological distress. For those with two disorder classes, the expected number of days partially out of role due to psychological distress was 1.44 times (95% CI 1.05, 1.98) greater than that for those with no disorder. For those with three disorder classes, the expected number of days partially out of role due to psychological distress was 1.71 times (95% CI 1.04, 2.82) greater than that for those with no disorder.

For those with two disorder classes, the expected number of days partially out of role due to psychological distress was 1.65 times (95% CI 1.21, 2.24) greater than that for those with one disorder class. For those with three disorder classes, the expected number of days partially out of role due to psychological distress was 1.95 times (95% CI 1.95–3.19) greater than that for those with one disorder class. Having one or more disorder classes significantly increased the likelihood of having psychological distress that could possibly have resulted in partial days out of role.

1.5.3.3 Service use

Table 1.41: *Mean number of doctor visits in the previous four weeks, by number of co-morbid ICD-10 disorder classes*

ICD-10 disorder	Times seen a doctor in the previous four weeks	
	Mean	95% CI
Three disorder classes	1.1	0.3–2.0
Two disorder classes	0.9	0.5–1.4
One disorder class	0.8	0.5–1.0
No disorder	0.2	0.1–0.2

Unlike the findings for total and partial days out of role, doctor visits did not show the same severity of gradation according to the number of ICD-10 disorder groups reported. Those with three disorder classes still reported more average visits to the doctor than those with no disorder, although the number of disorder classes was not a significant predictor of the number of times a doctor was seen due to psychological distress. It was, however, a significant predictor of having psychological distress that could possibly have led to seeing a doctor.

No disorder group had a significant impact on the number of doctor visits in the previous month due to psychological distress. This effect was estimated for those who could possibly have had doctor visits due to psychological distress. Both affective disorders and anxiety disorders significantly increased the likelihood of possibly visiting a doctor due to psychological distress.

1.5.4 Discussion

Advances in epidemiology and psychiatry over the last two decades have demonstrated that the co-existence of psychiatric disorders is much more common than was previously anticipated. This co-existence of disorders was highlighted by the development of structured diagnostic interviews that were routinely applied in epidemiological and clinical samples (Kessler, Wai, Demler, & Walters, 2005). A number of studies in diverse populations have indicated that individuals frequently meet the full criteria for more than one disorder (Kessler et al., 2005; Merikangas & Swanson, 2010). Clinical practice, where the use of such structured interviews is rare, does not encourage the same exhaustive assessment of a patient's mental state. Consequently, there is often a failure to recognise the multiplicity of symptoms that occur within the same individual. This underestimation of the range of secondary symptomatology is still a significant issue in clinical practice (McFarlane, 2009). The burden of disability arising from co-morbidity has been identified in other studies (Swendsen et al., 2010) and is, therefore, important to define in the ADF. Furthermore, the patterns of co-morbidity have major implications for the design of treatment services, particularly in relation to alcohol abuse (Swendsen et al., 2010).

In the previous 12 months, one in five (N=11,016) members of the ADF had suffered from a mental disorder. Of those with a mental disorder, 69% met the criteria for one disorder class (15.2% of the entire ADF), 27.9% met the criteria for two disorder classes (6.1% of the ADF) and 3.1% met the criteria for three disorder classes (0.7% of the ADF).

The most common single disorder class in the ADF was anxiety disorder, experienced by 9% of the ADF, followed by affective disorder (3.4%) and alcohol disorder (2.8%). In fact, the majority of individuals with an anxiety disorder met criteria for this single disorder class only. In contrast, the majority of individuals with a 12-month affective disorder also met criteria for some other condition (64%). Similarly, when looking at alcohol disorders, 45% of those who met criteria for an alcohol disorder in the previous 12 months also had either an affective disorder or an anxiety disorder, or both.

The most common co-morbidity for the ADF as a whole was anxiety disorder and affective disorder, with some 2,242 individuals or 4.5% falling into this group. This was consistent across the sexes and matched the patterns of co-morbidity reported in the 2007 National Survey of Mental Health and Wellbeing (Teesson et al., 2009).

Interestingly, the second most common co-morbidity for females was anxiety disorder with alcohol disorder, whereas for males it was affective disorder with alcohol disorder. This may imply some differences in the pattern of interaction between alcohol use and other psychiatric disorders in males and females, whereby females use alcohol to self-medicate for their anxiety symptoms, whereas among males alcohol is more often used to self-medicate for affective disorders. This relationship between alcohol and other psychiatric disorders is often poorly addressed in treatment settings. Although an ADF member may present for treatment for an alcohol disorder, almost half of these people will also have an affective or an anxiety disorder in conjunction with these symptoms, not to mention the further proportion that have other sub-syndromal psychopathology. Treatment programs need to specifically target this underlying psychopathology in order to better treat those people with alcohol disorders.

In relation to rank, consistent with data presented in other sections of this report, personnel in other ranks are more likely to have co-morbid disorder than either officers or non-commissioned officers. However, it needs to be emphasised that officers and non-commissioned officers are by no means immune to the effects of psychiatric disorder.

When the three Services were examined, the mental health of the Air Force was generally better than that of the Navy or the Army. In the Army, some 7.3% had two or more disorders, with 16.3% having one disorder. In both Army and Navy, nearly one in four individuals had suffered from a psychiatric disorder in the previous 12 months.

These data do not represent those who have a lifetime history of disorder or who currently have a treated condition and are on maintenance or medication to prevent relapse. Hence, the burden of psychiatric morbidity in the ADF is likely to be substantially greater than that reflected in these figures.

In terms of the impact of co-morbidity on days out of role and service use, the only single disorder to impact significantly on the number of total days out of role in the previous month was affective disorder. The only co-morbidity to have a significant impact on the number of partial days out of role in the previous month was affective disorder with anxiety disorder. The number of disorder classes was a significant predictor of the number of days totally and partially unable to work due to psychological distress, but not the number of doctor visits due to psychological distress.

1.5.4.1 Comparison with other armed forces

The only military study published to date to examining the prevalence of co-morbid disorder using structured diagnostic interviews is that by Kehle and colleagues (2011). In this sample of US National Guard soldiers returning from Iraq, 23% met criteria for one disorder, 10% reported two diagnoses, 3% met criteria for three diagnoses and 2% had four or more diagnoses. This sample, however, comprised soldiers recently returning from deployment to Iraq who had had substantial exposure to combat and other war-related traumas, which may explain the slightly higher rates.

The results presented in this section are largely descriptive. Substantial further analysis is required to define the sequence of the development of disorder in order to explore the prevalence of phenomena such as self-medication with alcohol. This longitudinal perspective is addressed in more detail in section 3.3, which reviews the interaction between traumatic stress exposure and multiple deployments as risk factors for mental disorder in the ADF. There is a need to further explore this dataset, for example, the relationship between mental and physical disorders, which is critical to understanding post-deployment syndromes.

In summary, co-morbidity is a conceptual challenge to classification in mental health. There is a presumed specificity of aetiology of all the disorders and most research is conducted on relatively pure samples of disorders, avoiding the issue of shared aetiology that is required to explain patterns of co-morbidity. The uncomfortable fact is that the real world of patients is not so neatly divided. Paradoxically, the existence of any psychiatric disorder without the co-occurrence of other disorders in a clinical setting is the exception rather than the rule. The ADF Mental Health Prevalence Study indicates that all disorders – affective disorders, anxiety disorders and alcohol disorders – frequently emerge in conjunction with one of the others and that this is not isolated to treatment-seeking populations (McFarlane, 2004). Patients with co-morbid disorders are likely to have a worse long-term outcome than those without co-morbidities and may require chronic maintenance therapy. Therefore, it is important to define and address these patterns of co-morbidity in designing treatment services in the ADF.

1.5.5 Proposed further analyses

This section reports the analyses completed at the time of publication. Proposed further analyses include:

- examining the temporal relationship between the onset of co-morbid disorders
- investigating the risk factors, and particularly the interactions, between classes of traumatic exposures and the risk and patterns of co-morbidity
- addressing the barriers to care, issues of stigma and perceived need for care according to patterns of co-morbidity
- studying the patterns of co-morbidity between each of the individual affective, anxiety and alcohol disorders
- analysing the level of impairment and days out of role associated with co-morbid mental disorder.
- disaggregating the risk factors and the longitudinal course of the patterns of co-morbidity.

1.6 Prevalence of suicidality in the ADF

- The prevalence of 12-month suicidality in the ADF indicated that 4.0% had experienced some form of suicidal ideation or behaviour. This was mostly accounted for by suicidal ideation (3.9%) and suicide planning (1.1%).
- Suicidal ideation was 39% more likely among females (5.1%) than males (3.8%). However, when the prevalence of suicide plans and suicide attempts were examined, there was no significant difference between the sexes.
- Suicidal ideation was more likely among non-commissioned officers than officers, whereas other ranks were more likely to report making a suicide plan and to have made a suicide attempt than non-commissioned officers and officers.
- There were no significant differences between the Services on the prevalence of suicidal ideation plans or attempts.
- ADF personnel who had been deployed were less likely to report suicidal ideation than those who had never been on operational deployment.
- There is a strong association between mental disorders and suicidality.

Twelve-month self-reported suicidal ideation and behaviour in the ADF was examined in the study using five questions:

(1) *Suicidal ideation Q1*: In the last 12 months, have you ever felt that your life was not worth living?

(2) *Suicidal ideation Q2*: In the last 12 months, have you ever felt so low that you thought about committing suicide?

(3) *Suicide plan*: In the last 12 months, have you made a suicide plan?

(4) *Suicide attempt*: In the last 12 months, have you attempted suicide?

(The responses for each of these four questions were limited to either yes or no.)

(5) *Suicidal ideation Q3*: Over the last two weeks, how much have you been bothered by thoughts that you would be dead, or of hurting yourself in some way?

(The fifth question was extracted from the Patient Health Questionnaire (Kroenke, Spitzer, & Williams, 2001).)

Participants were asked to rate the degree to which these thoughts bothered them on a four-point scale where 0 = not at all, 1 = several days, 2 = more than half the days and 3 = nearly every day.

Tables 1.42 to 1.47 report the prevalence of self-reported suicidality in currently serving ADF members.

1.6.1 Prevalence of any form of suicidality in the ADF in the previous 12 months

Table 1.42 combines a series of questions that were asked about suicidal ideation and behaviours in order to provide a summary of the prevalence of any suicidality. These included the following specific questions:

- In the last 12 months, have you ever felt so low that you thought about committing suicide?
- In the last 12 months, have you made a suicide plan?
- In the last 12 months, have you attempted suicide?

***Table 1.42:** Estimated prevalence of any suicidality in the ADF in the previous 12 months, by sex, Service, sex by Service, rank and deployment status*

	Total	No			Yes		
Any suicidality	**n**	**N**	**%**	**95% CI**	**N**	**%**	**95% CI**
	50,049	*48,064*	96.0	95.8–96.3	*1985*	4.0	3.7–4.2
Males	43,241	*41,606*	96.2	96.0–96.5	*1635*	3.8	3.5–4.0
Navy	9,508	*9,125*	96.0	95.4–96.5	*383*	4.0	3.5–4.6
Army	22,843	*21,959*	96.1	95.8–96.5	*884*	3.9	3.5–4.2
Air Force	10,890	*10,522*	96.6	96.3–97.0	*368*	3.4	3.0–3.7
Females	6,808	*6,458*	94.9	94.3–95.4	*350*	5.1	4.6–5.7
Navy	2,104	*1,996*	94.9	93.8–95.9	*108*	5.1	4.1–6.2
Army	2,513	*2,384*	94.9	93.9–95.9	*129*	5.1	4.1–6.1
Air Force	2,191	*2,078*	94.8	94.0–95.7	*113*	5.2	4.3–6.0
Service							
Total Navy	11,612	*11,121*	95.8	95.3–96.3	*491*	4.2	3.7–4.7
Total Army	25,356	*24,343*	96.0	95.7–96.3	*1013*	4.0	3.7–4.3
Total Air Force	13,081	*12,600*	96.3	96.0–96.6	*481*	3.7	3.4–4.0
Rank							
Officers	12,034	*11,599*	96.4	96.1–96.7	*435*	3.6	3.3–3.9
Non-commissioned officers	22,319	*21,412*	95.9	95.7–96.2	*907*	4.1	3.8–4.3
Other ranks	15,696	*15,053*	95.9	95.4–96.4	*643*	4.1	3.6–4.6
Deployment							
Deployed never	19,347	*18,546*	95.9	95.5–96.3	*801*	4.1	3.7–4.5
Deployed ever	30,702	*29,518*	96.1	95.9–96.4	*1184*	3.9	3.6–4.1

In the previous 12 months, 4.0% of the ADF had experienced some form of suicidal ideation or behaviour (95% CI 3.7, 4.2). This represented a total of 1,985 individuals. Suicidality was 39% more likely (OR 1.39, 95% CI 1.22, 1.58) among females (5.1%, 95% CI 4.6, 5.7) than males (3.8%, 95% CI 3.5, 4.0). Suicidality was also 15% more likely (OR 1.15, 95% CI 1.03, 1.29) among non-commissioned officers (4.1%, 95% CI 3.8, 4.3) than officers (3.6%, 95% CI 3.3, 3.9). Suicidality tended to be lower in the Air Force (3.7%, 95% CI 3.4, 4.0) than the other Services; however, these differences were not significant.

1.6.1.1 Prevalence of suicidal ideation in the ADF in the previous 12 months

The prevalence of 12-month and two-week suicidal ideation was examined using the following three questions in the self-report questionnaire and the responses are reported in tables 1.43–1.45 below.

(1) In the last 12 months, have you ever felt that your life was not worth living?

(2) Over the last two weeks how much have you been bothered by thoughts that you would be dead or of hurting yourself in some way?

(3) In the last 12 months, have you ever felt so low that you thought about committing suicide?

Table 1.43: *Estimated percentage of ADF personnel who felt that their life was not worth living in the previous 12 months, by sex, Service, sex by Service, rank and deployment status*

	Total	Yes		
	n	N	%	95% CI
	50,049	*3,358*	6.7	6.4–7.0
Males	43,241	*2,761*	6.4	6.1–6.7
Navy	9,508	*656*	6.9	6.2–7.6
Army	22,843	*1,444*	6.3	5.9–6.8
Air Force	10,890	*660*	6.1	5.6–6.5
Females	6,808	*597*	8.8	8.1–9.5
Navy	2,104	*185*	8.8	7.4–10.2
Army	2,513	*219*	8.7	7.5–9.9
Air Force	2,191	*193*	8.8	7.7–9.9
Service				
Navy	11,612	*841*	7.2	6.6–7.9
Army	25,356	*1,663*	6.6	6.1–7.0
Air Force	13,081	*853*	6.5	6.1–6.9
Rank				
Officers	12,034	*756*	6.3	5.9–6.7
Non-commissioned officers	22,319	*1,482*	6.6	6.3–7.0
Other ranks	15,696	*1,119*	7.1	6.4–7.8
Deployment				
Deployed never	19,347	*1,407*	7.3	6.8–7.8
Deployed ever	30,702	*1,951*	6.4	6.0–6.7

Among the entire ADF, 6.7% (an estimated 3,358 personnel) reported that they had felt that their life was not worth living in the previous 12 months. Females were 39% more likely (OR 1.39, 95% CI 1.26, 1.55) to feel this than males (8.8% v 6.4%), whereas ADF personnel who had been deployed were 11% less likely (OR 0.89, 95% CI 0.81, 0.98) to feel this than those who had never been on operational deployment (6.4% v 7.3%).

This thought does not represent a high level of lethality but rather the propensity of the individual to slip into suicidal ideation.

There were no significant differences among the Services or ranks; therefore, no group was spared this pattern of preoccupation.

Table 1.44: *Estimated percentage of ADF personnel who had thoughts that they would be better off dead or of hurting themselves in some way, by sex, Service, sex by Service, rank and deployment status*

	Total	Several days			More than half the days			Nearly every day		
	n	N	%	95 % CI	N	%	95% CI	N	%	95 % CI
	50,049	*1,396*	2.8	2.6–3.0	*219*	0.4	0.4–0.5	*119*	0.2	0.2–0.3
Males	43,241	*1,205*	2.8	2.6–3.0	*185*	0.4	0.4–0.5	*103*	0.2	0.2–0.3
Navy	9,508	*326*	3.4	2.9–4.0	*45*	0.5	0.3–0.6	*19*	0.2	0.1–0.3
Army	22,843	*622*	2.7	2.4–3.0	*100*	0.4	0.3–0.6	*70*	0.3	0.2–0.4
Air Force	10,890	*257*	2.4	2.1–2.6	*41*	0.4	0.3–0.5	*14*	0.1	0.1–0.2
Females	6,808	*191*	2.8	2.4–3.3	*34*	0.5	0.3–0.7	*16*	0.2	0.1–0.3
Navy	2,104	*77*	3.7	2.7–4.7	*8*	0.4	0.1–0.6	*4*	0.2	0.0–0.4
Army	2,513	*53*	2.1	1.4–2.8	*18*	0.7	0.4–1.1	*4*	0.2	0.0–0.3
Air Force	2,191	*61*	2.8	2.2–3.4	*8*	0.4	0.1–0.6	*8*	0.4	0.1–0.6
Service										
Navy	11,612	*403*	3.5	3.0–4.0	*53*	0.5	0.3–0.6	*23*	0.2	0.1–0.3
Army	25,356	*675*	2.7	2.4–2.9	*118*	0.5	0.4–0.6	*74*	0.3	0.2–0.4
Air Force	13,081	*318*	2.4	2.2–2.7	*48*	0.4	0.3–0.5	*22*	0.2	0.1–0.2
Rank										
Officers	12,034	*303*	2.5	2.3–2.8	*39*	0.3	0.2–0.4	*18*	0.2	0.1–0.2
Non-commissioned officers	22,319	*623*	2.8	2.6–3.0	*112*	0.5	0.4–0.6	*50*	0.2	0.2–0.3
Other ranks	15,696	*470*	3.0	2.5–3.5	*68*	0.4	0.3–0.6	*51*	0.3	0.2–0.5
Deployment										
Deployed never	19,347	*538*	2.8	2.4–3.1	*89*	0.5	0.3–0.6	*36*	0.2	0.1–0.3
Deployed ever	30,702	*858*	2.8	2.6–3.0	*129*	0.4	0.3–0.5	*83*	0.3	0.2–0.3

Table 1.44 reports on the proportion of ADF personnel who had thoughts that they would be better off dead or of hurting themselves in some way. The timeframe employed in this question was the previous two weeks, and is, therefore, a rough indicator of current (point prevalence) suicidal ideation in currently serving ADF members. The proportion of the ADF who reported having these thoughts in the previous two weeks was 3.4%; most reported having these thoughts for several days only (2.8%, 95% CI 2.6, 3.0). A small proportion of ADF members reported having these thoughts for more than half the days over the previous two weeks (0.4%, 95% CI 0.4, 0.5) and nearly every day (0.2%, 95% CI 0.2, 0.3). Clearly, both of these latter groups are at a high risk of further suicidal outcomes.

An examination of the response category of 'several days or more' indicated that Navy personnel were significantly more likely than Army (Army v Navy: OR 0.78, 95% CI, 0.66, 0.93) or Air Force (OR 1.43, 95% CI 1.21, 1.69) to endorse this response category as were other ranks compared to officers (OR 1.29, 95% CI 1.08, 1.54) and males.

Table 1.45: *Estimated percentage of ADF personnel who had felt so low in the previous 12 months that they thought about attempting suicide, by sex, Service, sex by Service, rank and deployment status*

	Total	No			Yes		
	n	N	%	95 % CI	N	%	95 % CI
	50,049	*48,106*	96.1	95.9–96.3	*1,943*	3.9	3.7–4.1
Males	43,241	*41,643*	96.3	96.1–96.5	*1,598*	3.7	3.5–3.9
Navy	9,508	*9,141*	96.1	95.6–96.7	*367*	3.9	3.3–4.4
Army	22,843	*21,975*	96.2	95.9–96.5	*868*	3.8	3.5–4.1
Air Force	10,890	*10,526*	96.7	96.3–97.0	*364*	3.3	3.0–3.7
Females	6,808	*6,463*	94.9	94.4–95.5	*345*	5.1	4.5–5.6
Navy	2,104	*2,000*	95.0	94.0–96.1	*104*	5.0	3.9–6.0
Army	2,513	*2,386*	94.9	94.0–95.9	*127*	5.1	4.1–6.0
Air Force	2,191	*2,078*	94.8	94.0–95.7	*113*	5.2	4.3–6.0
Service							
Navy	11,612	*11,141*	95.9	95.5–96.4	*471*	4.1	3.6–4.5
Army	25,356	*24,361*	96.1	95.8–96.4	*995*	3.9	3.6–4.2
Air Force	13,081	*12,603*	96.3	96.0–96.7	*478*	3.7	3.3–4.0
Rank							
Officers	12,034	*11,606*	96.4	96.1–96.8	*428*	3.6	3.2–3.9
Non-commissioned officers	22,319	*21,426*	96.0	95.7–96.3	*893*	4.0	3.7–4.3
Other ranks	15,696	*15,074*	96.0	95.5–96.6	*622*	4.0	3.4–4.5
Deployment							
Deployed never	19,347	*18,562*	95.9	95.6–96.3	*785*	4.1	3.7–4.4
Deployed ever	30,702	*29,543*	96.2	96.0–96.5	*1,159*	3.8	3.5–4.0

More specific thoughts about suicide were experienced in 3.9% of ADF members (95% CI 3.7, 4.1), representing 1,943 individuals. Females (5.1%, 95% CI 4.5, 5.6) were 40% more likely (OR 1.40, 95% CI 1.22, 1.60) than males (3.7%, 95% CI 3.5, 3.9) to report having serious thoughts of suicide. Serious thoughts of suicide were also 15% more likely (OR 1.15, 95% CI 1.03, 1.29) among non-commissioned officers (4.0%, 95% CI 3.7, 4.3) than officers (3.6%, 95% CI 3.2, 3.9).

1.6.1.2 Prevalence of ADF personnel making a suicide plan in the previous 12 months

Table 1.46: *Estimated percentage of ADF personnel who had made a suicide plan in the previous 12 months, by sex, Service, sex by Service, rank and deployment status*

	Total	No			Yes		
	n	N	%	% CI	N	%	% CI
	50,049	*49,503*	98.9	98.8–99.0	*546*	1.1	1.0–1.2
Males	43,241	*42,776*	98.9	98.8–99.1	*465*	1.1	0.9–1.2
Navy	9,508	*9,411*	99.0	98.7–99.3	*97*	1.0	0.7–1.3
Army	22,843	*22,574*	98.8	98.6–99.0	*269*	1.2	1.0–1.4
Air Force	10,890	*10,792*	99.1	98.9–99.3	*98*	0.9	0.7–1.1
Females	6,808	*6,726*	98.8	98.5–99.1	*82*	1.2	0.9–1.5
Navy	2,104	*2,079*	98.8	98.3–99.3	*25*	1.2	0.7–1.7
Army	2,513	*2,478*	98.6	98.1–99.2	*35*	1.4	0.8–1.9
Air Force	2,191	*2,169*	99.0	98.6–99.4	*22*	1.0	0.6–1.4
Service							
Navy	11,612	*11,490*	98.9	98.7–99.2	*122*	1.1	0.8–1.3
Army	25,356	*25,052*	98.8	98.6–99.0	*304*	1.2	1.0–1.4
Air Force	13,081	*12,961*	99.1	98.9–99.2	*120*	0.9	0.8–1.1
Rank							
Officers	12,034	*11,945*	99.3	99.1–99.4	*89*	0.7	0.6–0.9
Non-commissioned officers	22,319	*22,087*	99.0	98.8–99.1	*232*	1.0	0.9–1.2
Other ranks	15,696	*15,470*	98.6	98.2–98.9	*226*	1.4	1.1–1.8
Deployment							
Deployed never	19,348	*19,132*	98.9	98.7–99.1	*216*	1.1	0.9–1.3
Deployed ever	30,702	*30,371*	98.9	98.8–99.1	*331*	1.1	0.9–1.2

As reported in Table 1.46, approximately a quarter of those (N=546) with serious thoughts about suicide or 1.1% (95% CI 1.0–1.2) had made a suicide plan in the previous 12 months. Interestingly, although females were more likely to report suicidal ideation, there is no significant difference between the likelihood of males and females in the ADF making a suicide plan. Again, there is a representation of all ranks, forces, and sexes in this group. Other ranks were the most likely to report making a suicide plan, followed by non-commissioned officers, then officers. Other ranks were 96% more likely (OR 1.96, 95% CI 1.46, 2.63) than officers and 40% more likely (OR 1.40, 95% CI 1.07, 1.84) than non-commissioned officers to report making a suicide plan. Non-commissioned officers were 39% more likely (OR 1.39, 95% CI 1.10, 1.76) than officers to report making a suicide plan.

1.6.1.3 Prevalence of ADF personnel attempting suicide in the previous 12 months

Table 1.47: *Estimated percentage of ADF personnel who made a suicide attempt in the previous 12 months, by sex, Service, sex by Service, rank and deployment status*

	Total	No			Yes		
	n	N	%	95% CI	N	%	95% CI
	50,049	*49,837*	99.6	99.5–99.7	*212*	0.4	0.3–0.5
Males	43,241	*43,060*	99.6	99.5–99.7	*181*	0.4	0.3–0.5
Navy	9,508	*9,467*	99.6	99.4–99.8	*41*	0.4	0.2–0.6
Army	22,843	*22,746*	99.6	99.5–99.7	*97*	0.4	0.3–0.5
Air Force	10,890	*10,847*	99.6	99.5–99.7	*43*	0.4	0.3–0.5
Females	6,808	*6,776*	99.5	99.3–99.7	*32*	0.5	0.3–0.7
Navy	2,104	*2,092*	99.4	99.1–99.8	*12*	0.6	0.2–0.9
Army	2,513	*2,500*	99.5	99.1–99.9	*13*	0.5	0.1–0.9
Air Force	2,191	*2,184*	99.7	99.5–99.9	*7*	0.3	0.1–0.5
Service							
Navy	11,612	*11,559*	99.5	99.4–99.7	*53*	0.5	0.3–0.6
Army	25,356	*25,246*	99.6	99.4–99.7	*110*	0.4	0.3–0.6
Air Force	13,081	*13,031*	99.6	99.5–99.7	*50*	0.4	0.3–0.5
Rank							
Officers	12,034	*12,013*	99.8	99.8–99.9	*21*	0.2	0.1–0.2
Non-commissioned officers	22,319	*22,233*	99.6	99.5–99.7	*86*	0.4	0.3–0.5
Other ranks	15,696	*15,591*	99.3	99.1–99.5	*105*	0.7	0.5–0.9
Deployment							
Deployed never	19,348	*19,251*	99.5	99.3–99.7	*97*	0.5	0.3–0.7
Deployed ever	30,702	*30,586*	99.6	99.5–99.7	*116*	0.4	0.3–0.5

Table 1.47 highlights that 0.4% (95% CI 0.3, 0.5), or 212 individuals, in the ADF had attempted suicide in the previous 12 months. As was the case for suicide plans, other ranks (0.7%, 95% CI 0.5, 0.9) were the most likely to report having attempted suicide, followed by non-commissioned officers, then officers. Other ranks were three times more likely (OR 3.70, 95% CI 2.24, 6.09) than officers and 68% more likely (OR 1.68, 95% CI 1.13, 2.52) than non-commissioned officers to report having attempted suicide. Non-commissioned officers were twice as likely (OR 2.19, 95% CI 1.41, 3.41) as officers to report having attempted suicide.

1.6.1.4 Proportion of ADF members with a 12-month ICD-10 disorder reporting suicidal ideation

Tables 1.48 to 1.52 show the pattern of suicidal thoughts and behaviours associated with each of the following ICD-10 disorder groups: any ICD-10 anxiety disorder, any ICD-10 affective disorder, any ICD-10 alcohol disorder, any ICD-10 disorder, and no ICD-10 disorder. It should be noted that these estimates are based on the responses of the Composite International Diagnostic Interview sample, as opposed to all respondents. Therefore, the total numbers reporting suicidal thoughts and behaviours will not match those in the previous tables.

Table 1.48: *Estimated proportion of ADF members with a 12-month ICD-10 disorder who reported feeling that life was not worth living in the previous 12 months*

ICD-10 disorder	No			Yes		
	N	%	95% CI	N	%	95% CI
Any anxiety disorder	*5,786*	78.0	72.3–83.7	*1,570*	21.2	15.6–26.7
Any affective disorder	*3,217*	67.6	58.1–77.2	*1,514*	31.8	22.4–41.3
Any alcohol disorder	*1,954*	75.4	62.7–88.2	*625*	24.1	11.4–36.9
Any disorder	*8,318*	75.5	70.0–81.0	*2,634*	23.9	18.4–29.4
No disorder	*37,376*	95.8	94.6–96.9	*1,206*	3.1	2.2–4.0

Table 1.49: *Estimated proportion of ADF members with a 12-month ICD-10 disorder who had thoughts they would be better off dead or of hurting themselves in the previous 12 months*

ICD-10 disorder	Several days			More than half the days			Nearly every day		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Any anxiety disorder	*664*	8.9	5.8–12.1	*93*	1.3	0.0–2.6	*65*	0.9	0.2–1.6
Any affective disorder	*467*	9.8	5.6–14.1	*69*	1.4	0.1–2.8	*91*	1.9	0.0–3.8
Any alcohol disorder	*209*	8.1	2.8–13.4	*0*	0.0	–	*12*	0.4	0.0–1.3
Any disorder	*906*	8.2	5.8–10.7	*127*	1.2	0.2–2.2	*114*	1.0	0.2–1.9
No disorder	*629*	1.6	1.1–2.2	*86*	0.2	0.0–0.5	*19*	0.0	0.0–0.1

Table 1.50: *Estimated proportion of ADF members with a 12-month ICD-10 disorder who felt so low they thought about committing suicide in the previous 12 months*

ICD-10 disorder	No			Yes		
	N	%	95% CI	N	%	95% CI
Any anxiety disorder	*6,232*	84.0	79.1–88.8	*1,124*	15.1	10.4–19.9
Any affective disorder	*3,788*	79.6	72.3–87.0	*943*	19.8	12.6–27.1
Any alcohol disorder	*2,332*	90.0	84.8–95.3	*247*	9.5	4.4–14.7
Any disorder	*9,292*	84.4	80.3–88.4	*1,660*	15.1	11.1–19.0
No disorder	*37,969*	97.3	96.4–98.2	*613*	1.6	1.0–2.2

***Table 1.51:** Estimated proportion of ADF members with a 12-month ICD-10 disorder who made a suicide plan in the previous 12 months*

ICD-10 disorder	No			Yes		
	N	%	95% CI	N	%	95% CI
Any anxiety disorder	*7,006*	94.4	91.4–97.4	*334*	4.5	1.7–7.3
Any affective disorder	*4,309*	90.6	85.2–96.0	*423*	8.9	3.6–14.2
Any alcohol disorder	*2,539*	98.0	96.3–99.8	*39*	1.5	0.0–3.0
Any disorder	*10,322*	93.7	90.9–96.5	*614*	5.6	2.9–8.3
No disorder	*38,383*	98.3	97.6–99.1	*131*	0.3	0.0–0.6

***Table 1.52:** Estimated proportion of ADF members with a 12-month ICD-10 disorder who made a suicide attempt in the previous 12 months*

ICD-10 disorder	No			Yes		
	N	%	95% CI	N	%	95% CI
Any anxiety disorder	*7,245*	97.6	95.8–99.5	*111*	1.5	0.0–3.2
Any affective disorder	*4,528*	95.2	90.9–99.5	*204*	4.3	0.0–8.5
Any alcohol disorder	*2,579*	99.6	98.7–100.0	*0*	0.0	–
Any disorder	*10,649*	96.7	94.4–98.9	*303*	2.8	0.6–4.9
No disorder	*38,359*	98.3	97.2–99.4	*34*	0.1	0.0–0.2

As can be seen in tables 1.48 to 1.52, there is a strong association between mental disorders and suicidality. For example, of the 10,649 ADF members with a mental disorder, 2.8% (95% CI 0.6, 4.9) attempted suicide in the previous year compared to 0.1% (95% CI 0.0, 0.2) with no disorder. This means that 90% (95% CI 75%, 100%) of personnel who attempted suicide had a mental disorder within the previous 12 months.

In addition, 5.6% (95% CI 2.9, 8.3) of ADF members with a mental disorder had made a suicide plan in the previous 12 months, compared to 0.3% (95% CI 0.0, 0.6) with no disorder. The same pattern emerged for suicidal ideation.

For all types of suicidal ideation and behaviour, ADF personnel with an affective disorder appeared to be particularly at risk, with 8.9% (95% CI 3.6, 14.2) of this group making a suicide plan and 4.3% (95% CI 0.0, 8.5) making a suicide attempt. ADF personnel with an anxiety disorder were those next most at risk for suicide attempts, making a suicide plan and for serious thoughts about suicide. Interestingly, there was a trend for those with an alcohol disorder to be more likely to report feeling like life was not worth living than personnel with an anxiety disorder (24.1% v 21.2%). This may suggest the presence of a self-medication effect in those with less severe suicidal ideation.

1.6.2 Discussion

While completed suicide is a major contributor to death in the ADF and is of great concern in young adults, the validity of published completed suicide figures is questionable as they can potentially underestimate the true rate (Sainsbury & Jenkins, 1982). This error arises because suicides are often misreported as an accident, a death with an undetermined manner, or a death pending classification (Carr, Hoge,

Gardner, & Potter, 2004). A more accurate picture of suicide risk can be ascertained by anonymous self-report of attempted suicide, which is not subject to this misclassification (Carr et al., 2004). This section reports these data for an ADF population.

The 12-month prevalence of any suicidality in the ADF, at 4.0%, was higher than an age-, sex- and employment-adjusted sample of the Australian population, at 1.8%. This difference is primarily accounted for by ideation and plans, as the prevalence of attempts in the ADF was not significantly different to the national sample. The 12-month prevalence of females in the ADF, at 5.1%, was higher than in the Australian community, at 2.8%. Similarly, the 12-month prevalence of any suicidality in males in the ADF, at 3.8%, was higher than in the community, at 1.6%.

Females in the Australian community are at higher risk of having suicidal ideation but not of making plans or attempts (Slade et al., 2009). This was also found to be the case for the ADF.

In terms of rank, any suicidality and specific thoughts about suicide were more likely among non-commissioned officers than officers, whereas other ranks were more likely to report making a suicide plan and to have made a suicide attempt than non-commissioned officers and officers.

There were no significant differences between the Services on the prevalence of suicidal ideation plans or attempts in the ADF; however, Navy personnel were significantly more likely to than Army and Air Force to have had thoughts that they would be better off dead or of hurting themselves in some way for several days or more in the previous two weeks.

ADF personnel who had been deployed were less likely to report suicidal ideation than those who had never been on operational deployment.

Within the ADF, there was a strong association between mental disorders and suicidality. For example, 2.8% of ADF personnel with a mental disorder had attempted suicide in the previous year compared to 0.1% with no disorder. ADF personnel with an affective disorder appeared to be particularly at risk, with 8.9% of this group making a suicide plan and 4.3% attempting suicide.

It is important to emphasise that the substantial majority of individuals with mental disorders in the ADF are not suicidal. Therefore, policies should not discriminate against those with mental disorders on the assumption that they are a suicide risk.

1.6.2.1 Suicide risk and the relationship to psychiatric disorders of interest in the ADF

In the general community, approximately 90% of people who attempt suicide have a psychiatric disorder, particularly depression (Beautrais et al., 1996; King et al., 2001) or post-traumatic stress disorder (Krysinska & Lester, 2010; Marshall et al., 2001; Oquendo et al., 2005). Mood disorders (Kang & Bullman, 2008) are an antecedent to 30–90% of suicide mortalities (Arsenault-Lapierre, Kim, & Turecki, 2004; Isometsä, 2001; Rihmer, 2007). Substance-related disorders are present in 26–55% of those who die by suicide and are the second highest group of mental disorders associated with suicide (Rihmer, 2007). Post-traumatic stress disorder is also related to suicide, with 20% of community samples attempting suicide at least once (McFarlane, 2004; Sareen, Houlahan, Cox, & Asmundson, 2005).

Given that attempted suicide is significantly more common than completed suicide, investigation of the associated risk factors of suicidal ideation, particularly when accompanied by co-morbid psychiatric disorder, is an important issue for the ADF. Suicidal ideation is an integral part of the symptoms of a number of psychiatric disorders. Loss of self-esteem, inability to anticipate a future and loss of connectedness are common preoccupations in those who have a mental disorder. These states of mind lead into profound feelings of worthlessness and fleeting suicidal thoughts that lead to planning a suicide attempt. Hence these symptomatic states are obvious potential indicators of risk of suicide. Such warning symptoms should be investigated, particularly in those with a depressive disorder. The symptoms of emotional numbing of post-traumatic stress disorder are also important predictors (Guerra & Calhoun, 2011).

This study of the ADF aims to make estimates of the prevalence of individuals with psychiatric disorders with associated suicidal ideation, such as major depressive disorder and post-traumatic stress disorder. These findings will be used to develop more effective prevention strategies that focus on the assessment of psychiatric symptoms if an individual is suspected of being suicidal.

1.6.2.2 Comparison with international military literature

The data presented in this section need to be interpreted in relation to findings about suicide in defence force members from our major allies. Defence forces around the world have become increasingly preoccupied with the issue of suicide in recent years (Belik, Stein, Asmundson, & Sareen, 2010; Ritchie, Keppler, & Rothberg, 2003; Tien, Acharya, & Redelmeier, 2010). Historically, suicide mortality in the military has generally been lower than that in civilian populations (Kang & Bullman, 2009). In the United Kingdom, for example, active serving personnel had a lower rate of suicide than the UK civilian population (Fear et al., 2009). However, this study reported one important exception, namely for Army males under the age of 20, where there were 1.5 times more deaths than expected. Prior to the most recent report from the United States (Department of Defense, 2010), suicide was the second highest cause of death in its military: numbers ranged from 9 to 15 deaths per 100,000 serving personnel (Department of Defense, 2007; Ritchie et al., 2003). Suicide attempts in the military occur at a much greater rate than suicide fatalities and have an attempt to death ratio of 11 to 1 (Gahm & Reger, 2008). While the greatest point of risk of suicide was immediately following a psychiatric diagnosis being made, this remained elevated for five years after initial follow-up, indicating a long period of subsequent risk (Bell, Harford, Amoroso, Hollander, & Kay, 2010).

The findings from the United States have triggered concern that rates of suicide are increasing in military populations (Bell et al., 2010) and that they may surpass those in the general population (Kuehn, 2009). A study using a nationally representative cohort of veterans (defined as persons who served in active duty in the armed forces of the United States) found that male veterans were twice as likely to die by suicide when compared with a male non-veteran population (Kaplan, Huguet, McFarland, & Newsom, 2007). Further, subgroups of the operations Iraqi Freedom and Enduring Freedom were at an increased risk of suicide when compared with the general US population (Kang & Bullman, 2008), which provides some evidence to support this concern.

The Canadian Forces (2011) conducted a study that investigated individuals for a prolonged period after they had left the services. They found that, for both males and females, there were no differences in the suicide rates between the military and the general population. However, they did find that females in the military between the ages of 40 and 44 were twice as likely to die from suicide as their counterparts of the same age in the general population. These findings must be considered against a background where there was a significantly lower risk of death from reasons other than suicide for those in the military compared with the greater community (36% lower for males and 33% lower for females).

The significance of suicidal ideation in the ADF rests in the future risk of these individuals acting on their suicidal thoughts.

The importance of suicide attempts for the future mortality of military veterans has recently been examined (Weiner, Richmond, Conigliaro, & Wiebe, 2011). This study indicated that the 10-year cumulative mortality risk for veterans who had attended a veterans' affairs medical centre after a suicide attempt was 22.0%, or three times greater than expected. The cumulative survival probability after 10 years was 78.0% (95% CI 72.9%–83.1%). The three leading causes of death were heart disease (22.2%), suicide (13.1%) and unintentional injury (12.7%). The extent to which suicide accounted for the mortality of this group was significantly greater than in the US population, where suicide was the ninth leading cause. In women it was the leading cause (25%) and in men the second leading cause (12.7%). This highlights that suicide attempts are a matter that require significant long-term follow-up.

There are a number of risk factors associated with suicidal ideation in both the general community and military populations. Findings from studies reviewing Vietnam veterans, and veterans who have experienced war-related traumas, suggest an association between deployment to a war zone and suicide (Selby et al., 2010), particularly for those veterans who were hospitalised for a wound or wounded, who have at least double the risk (Kang & Bullman, 1996). In a post-deployment health assessment, 1.1 % of soldiers and Marines returning from deployment to Iraq reported 'some' suicidal ideation and 0.2% reported 'a lot' (Hoge, Auchterlonie, & Milliken, 2006).

Males in the United States have been reported to be four times more likely to commit suicide than females in the general population, independent of age or race (Centers for Disease Control and Prevention, 2005). In addition, suicide is the third leading cause of death for all males aged between 20 and 29 (Centers for Disease Control and Prevention, 2005). In a military setting, the rate of suicide in the US armed forces between 1980 and 1992 indicated that men on active duty were more than twice as likely to commit suicide as women on active duty (Helmkamp, 1995). Male veterans have also been shown to have a higher rate of suicide than civilian males (Kaplan et al., 2007).

The psychological and physical trauma associated with combat experiences may contribute to mental disorders and place military personnel at an increased risk of suicide (Yamane & Butler, 2009). A large proportion of returning veterans are screening positive for a mental disorder, with 20.3% to 42.4% of soldiers returning from Iraq requiring mental health treatment (Milliken, Auchterlonie, & Hoge, 2007). Another study showed that veterans of Iraq and Afghanistan presenting with mental disorders (including affective psychoses, neurotic disorders, alcohol/drug dependence, acute reactions to stress, adjustment disorders, and other depressive disorders) were at

an increased risk of suicide when compared with both veterans without a mental disorder and non-veterans (Kang & Bullman, 2008). Post-traumatic stress disorder has been shown to increase suicide rates in Vietnam veterans (Goodale, 1999; Fontana & Rosenheck, 1995).

An important issue to be considered in assessing suicide and its relation to military service is the differentiation of those on active service as against ex-serving personnel. It is predictable, for example, that veteran populations may be at greater risk because of the impact of ill health leading to discharge.

Belik and colleagues (2010) compared the Canadian armed forces with Canadian civilians as part of a Canadian community health study. They reported a significantly lower number of suicide attempts in the military compared to the civilian population (0.2% v 0.6%, OR 0.41, 95% CI 0.25–0.67); however, there were no significant differences between the prevalence of 12-month suicidal ideation in these groups (4.0% in civilians, 3.8% in the military). One possible explanation for this finding is that the availability of and attempts to increase the accessibility of mental health services in the military may have effectively intervened with this group. Importantly, this study demonstrated that there was a strong relationship between suicidal behaviours and depressive episodes, social phobia and alcohol dependence. In discussing their findings, the authors emphasised that their results may also be related to a 'healthy soldier' effect (Kang & Bullman, 1996, 2001; McLaughlin, Nielsen, & Waller, 2008).

1.6.3 Proposed further analyses

This section reports the analyses completed at the time of publication. Proposed further analyses include:

- examining the broad risk factors for suicide attempts, including deployment, prior trauma history, bullying and sex
- exploring the relationship between stigma and barriers to care, and effective interventions for suicide prevention
- studying the relationship between mental disorder and trauma exposure and the impact this has on suicidality
- studying the relationship between sub-threshold mental disorders and suicidality.

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SECTION 2
DETECTION OF MENTAL DISORDERS IN THE ADF

Contents

2.1 Overview of mental health screening in the ADF

The ADF currently uses three instruments for both screening and monitoring of mental health trends:

- Psychological distress is measured by the Kessler Psychological Distress Scale (K10).
- Post-traumatic stress is measured by the Posttraumatic Stress Disorder Checklist (PCL).
- Alcohol consumption is measured by the Alcohol Use Disorders Identification Test (AUDIT).

2.1.1 History of mental health screening in the ADF

The ADF introduced standardised operational mental health screening instruments into its operational mental health support continuum in 1999 (Steele & Goodman, 2006). These instruments are used in the ADF as a guide during screening interviews conducted by a mental health professional (Department of Defence, 2008).

As summarised in Figure 2.1, deployed ADF members are provided with a continuum of mental health support designed to enhance their ability to cope with the challenges of deployment and to improve their capacity for effective transition back to work and family life. Further, this continuum of care allows for early identification and intervention for those individuals considered to be at risk of developing a mental disorder. The process includes mental health screening after exposure to potentially traumatising events for high-risk groups, immediately before return to Australia and three to six months post-deployment.

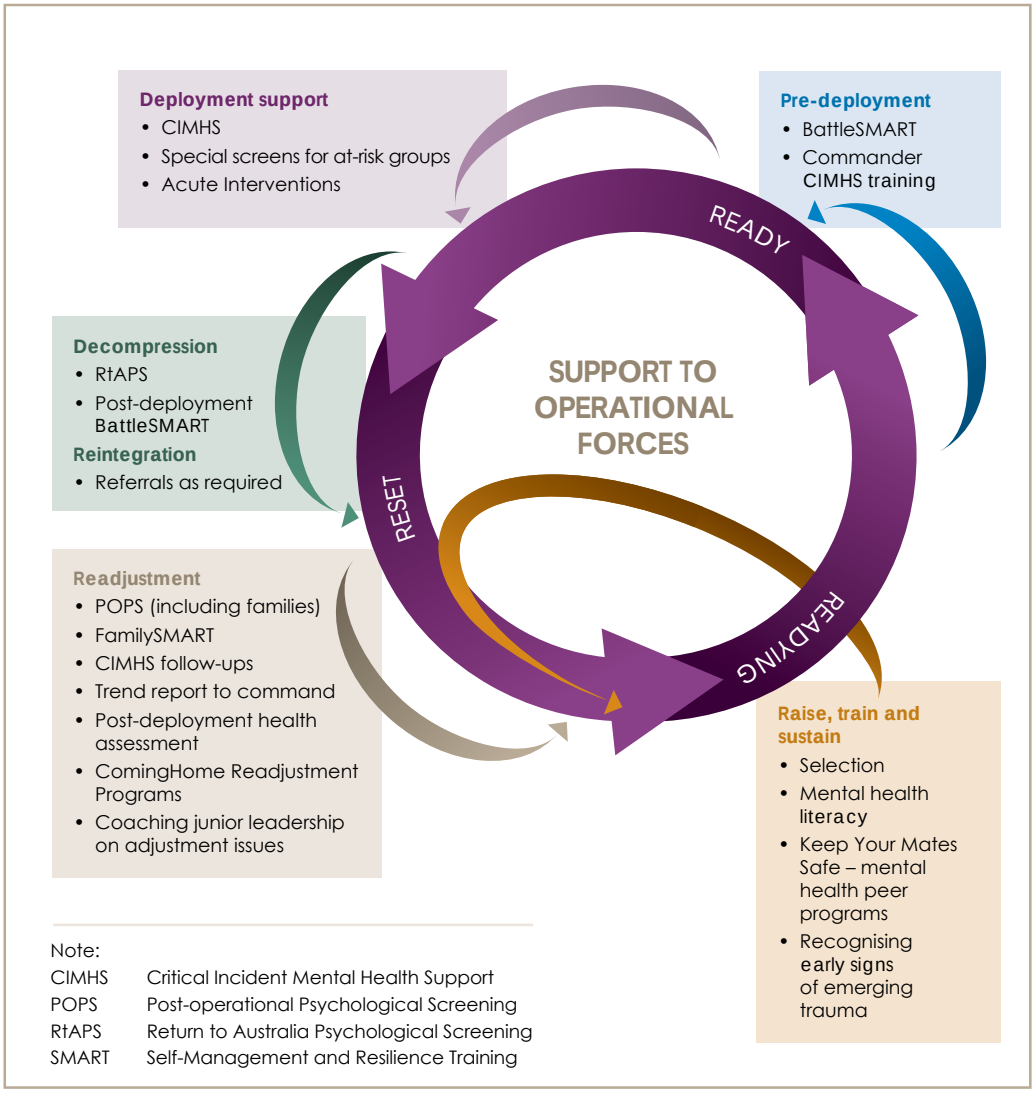
Before deployment to an operational theatre, ADF members are provided with psycho-educational training tailored to the potential risks that they will face. Should ADF members be exposed to a critical incident or potentially traumatic event while on deployment, commanders can activate a Critical Incident Mental Health Support (CIMHS) response, which can involve a screening interview with a mental health professional. Similarly, groups identified as being engaged in high-risk activities for extended periods of time (such as search engineers) may be offered a Special Psychological Screening interview mid-deployment.

A Return to Australia Psychological Screening (RtAPS) is provided immediately before or immediately after members depart the area of operations, while a Post-operational Psychological Screening (POPS) is conducted three to six months after an operation (Department of Defence, 2008). Both types of screening have four goals:

- **psycho-education** – to provide psycho-education about the realities of reintegration to the home environment
- **early intervention** – both RtAPS and POPS provide a single-session intervention to assist in managing low-level mental health and reintegration concerns
- **early identification** of at-risk individuals for referral for comprehensive diagnostic assessment and appropriate treatment

- **surveillance** – to capture information used by command to assist in the operational transition process, and for review of operational issues; and by defence psychologists to identify trends for incorporation into future pre-deployment preparation.

Figure 2.1: *ADF operational mental health support continuum*



In 2003, as the part of an initiative to achieve standardisation between clinical and operational screening, the Mental Health Screen for Casework was introduced into the ADF (Department of Defence 2009) and mental health screens were introduced into the periodic health screening process.

Table 2.1: *Summary of mental health screening for ADF personnel*

Screen	Mental health screens included	Screen introduced to Defence
Return to Australia Psychological Screening (RtAPS)	Kessler Psychological Distress Scale (K10), Traumatic Stress Exposure Scale-Revised (TSES-R), Posttraumatic Stress Disorder Checklist (PCL)	2002[a]
Post-operational Psychological Screening (POPS)	K10, PCL, Alcohol Use Disorders Identification Test (AUDIT)	2002[a]
Special Psychological Screen	K10, Acute Stress Disorder Scale (ASDS)	2006[b]
Critical Incident Mental Health Support (CIMHS) initial screen	ASDS, Mental Status Examination	2002[c]
Critical Incident Mental Health Support (CIMHS) follow-up screen	K10, PCL, AUDIT	2002[c]
Mental Health Screen for Casework	K10, PCL, AUDIT	2005
Annual Health Assessment (AHA)	2 stress items	2003 – replaced by PHE 2011
Comprehensive Periodic Health Assessment (CPHA)	2 stress items and AUDIT	2003 – replaced by PHE 2011
Periodic Health Examination (PHE)	AUDIT, K10	Oct 2011

a From 1999 to 2002 Defence administered post-operational screening questionnaires termed Post-Deployment Questionnaire (now RtAPS) and the Mental Health Screen (now POPS). While some measures (such as the PCL-C and AUDIT) have remained the same over time, others (for example, GHQ) have been removed.

b The Special Psychological Screen was modified in 2006. It has been administered in various forms since 2003.

c New policy and process implemented 2008.

As summarised in Table 2.1, there are three instruments used in both clinical and mental health screening in the ADF.

- **Kessler Psychological Distress Scale (K10)** is a 10-item measure used in the ADF to assess psychological distress and to monitor depressive and anxiety symptomatology (Andrews & Slade, 2001; Kessler et al., 2002). High scores on this instrument have been shown to have a strong association with the diagnosis of anxiety and affective disorders based on the World Mental Health Composite International Diagnostic Interview (CIDI) (Kessler & Üstün, 2004) (version 3.0) and a lesser but still significant association with the presence of any current mental disorder (Andrews & Slade, 2001).
- **Posttraumatic Stress Disorder Checklist (PCL)** is used to assess self-reported post-traumatic stress disorder symptoms. There are several versions of the PCL. The PCL-Military (PCL-M) covers particular military events, whereas the PCL-Specific (PCL-S) is a non-military version that refers to a specific traumatic event. As the PCL-Civilian (PCL-C) is not linked to a specific event and relates to more general traumatic exposure, this scale was considered the most appropriate for inclusion in ADF psychological screening (Nicholson, 2006; Steele & Goodman, 2006).
- **Alcohol Use Disorders Identification Test (AUDIT)** is used to assess and monitor alcohol consumption.

The efficacy of mental health screening programs for military populations is an area of controversy. Rona and colleagues in the United Kingdom, in particular, have argued that there is too great a likelihood of error or lack of demonstrated positive predictive ability in these programs. They argue that they should only be conducted when there are adequate treatment resources to provide care (Rona, Jones, French, Hooper, & Wessely, 2004).

Bliese and colleagues in the United States (Bliese, Wright, & Hoge, 2011), however, argue that a distinction needs to be made between mental health screening for purposes of personnel selection and screening to facilitate appropriate early assessment and treatment of personnel within an organisation or care-based screening. The lack of positive predictive power in mental health screening for selection purposes has the potential to harm an individual's self-esteem or career, particularly if that individual is incorrectly categorised as having a disorder when a disorder is not present. In care-based screening programs, however, such miscategorisation is less detrimental because it is likely to lead to more thorough follow-up. They argue that the benefits that come from early intervention care-based screening is worth the cost but that the predictive ability of the screens needs to be improved.

The Mental Health Prevalence and Wellbeing Study provides data that enable a detailed examination of ADF mental health screening and of clinical tools that facilitate early intervention for treatment and monitor the level of mental disorders. This report starts this process by identifying optimal cut-offs for ensuring that personnel who are likely to have a disorder are being referred for further assessment and treatment, as well as establishing estimates to allow monitoring of epidemiological trends.

Two sets of cut-offs were determined:

- the optimal screening cut-off, which is the value that maximises the sum of the sensitivity and specificity (the proportion of those with and without the disoder who are correctly classified) – this cut-off can be used to identify individuals who might need care and is designed to be more inclusive and should be used in screening settings.
- the optimal epidemiological cut-off, which is the value that brings the number of false positives (mistaken identifications of disorders) and false negatives (missed identifications of disorders) closest together, thereby counterbalancing these sources of error most accurately. Therefore, this cut-off would give the closest estimate of the true prevalence of 30-day ICD-10 disorder as measured by the CIDI and should be used to monitor disorder trends.

2.2 Psychological distress – Kessler Psychological Distress Scale (K10)

- 3.6% of ADF personnel reported in the very high risk category for psychological distress.
- Females reported significantly higher mean K10 scores than ADF males.
- ADF members reported an average of 1.5 days of lost productivity each per month due to symptoms of psychological distress.
- The Navy reported significantly higher mean scores on the K10 than both the Army and the Air Force, and reported significantly more days out of role.
- Other ranks reported significantly higher mean K10 scores than both officers and non-commissioned officers, and had significantly more days out of role but significantly more visits to the doctor.
- Deployed personnel reported significantly lower mean K10 scores than non-deployed personnel.
- The optimal screening cut-off on the K10 for the ADF is 17, and the optimal epidemiological cut-off is 25.

This section provides a detailed summary of the pattern of psychological distress reported by currently serving ADF members in the ADF population as measured by the K10. The distribution of psychological distress by the demographic categories of rank, sex, Service and deployment status is examined, together with the impairment and rates of help seeking associated with each of the scoring categories. Finally, this section provides the optimal psychometric cut-offs for use in the ADF to screen for and detect affective and anxiety disorders.

The K10 was designed as a short, easily administered screening instrument for psychological distress. The K10 is typically used to inform and complement clinical interviews and to quantify levels of distress in those who are in particular need of treatment.

Respondents were instructed to rate the amount of time they had experienced one of 10 emotional states during the previous four weeks (for example, tired for no good reason, nervous, hopeless, depressed). The 10 questions were scored from 1 to 5, whereby the respondent indicated how often they had been feeling that way, using one of the following response options: 'all of the time' (5), 'most of the time' (4), 'some of the time' (3), 'a little of the time' (2) or 'none of the time' (1). Scores for the 10 questions were then summed to give a total score between 10 and 50.

Two forms of scoring bands are reported in this report, including bands from the literature and scoring that has been developed specifically for the ADF. First, bands of low (10–15), moderate (16–21), high (22–29) and very high (30–50) used in this report are derived from the K10 cut-offs that were used in the Australian National Mental Health and Wellbeing Survey (Australian Bureau of Statistics, 2008; Slade et al., 2009). They are reported to allow comparison with other published research.

ADF bands are also reported to allow comparison with ADF surveillance reporting. The K10 bands used in the ADF post-operational screening process were reviewed in 2008 (Department of Defence 2009), when it was determined that an increase from a cut-off of 16 to 20 reduces the chance of falsely identifying a person as having an anxiety or depressive disorder from 22% to 8%.

The current K10 scoring bands used for post-operational screening are low (10–15), medium (16–19) and high (20+). For ADF post-operational surveillance reporting, a K10 cut-off of 20 is used. People scoring 20 or higher on the K10 have at least four times the population risk of having a depressive or anxiety disorder (Furukawa, Kessler, Slade, & Andrews, 2003). A cut-off of 20 aligns with that used by the 2001 National Health Survey (Australian Bureau of Statistics, 2003). The Mental Health Advice Book suggests that people seen in primary care who score below 20 are likely to be well (Australian Centre for Posttraumatic Mental Health, 2007).

Hence, K10 scores in this report were also categorised into two levels of psychological distress, low (10–19) and high (20–50), allowing comparison with ADF post-operational surveillance reports and also ADF health studies of deployed personnel (Bleier et al., 2011).

Receiver Operating Characteristic (ROC) analysis was also used to determine the optimal psychometric cut-off in the ADF to detect 30-day ICD-10 affective disorder, 30-day ICD-10 anxiety disorder and 30-day ICD-10 anxiety or affective disorder examined using the CIDI (version 3.0).

2.2.1 Distribution of psychological distress in the ADF

The distribution of psychological distress scores is summarised in Table 2.2.

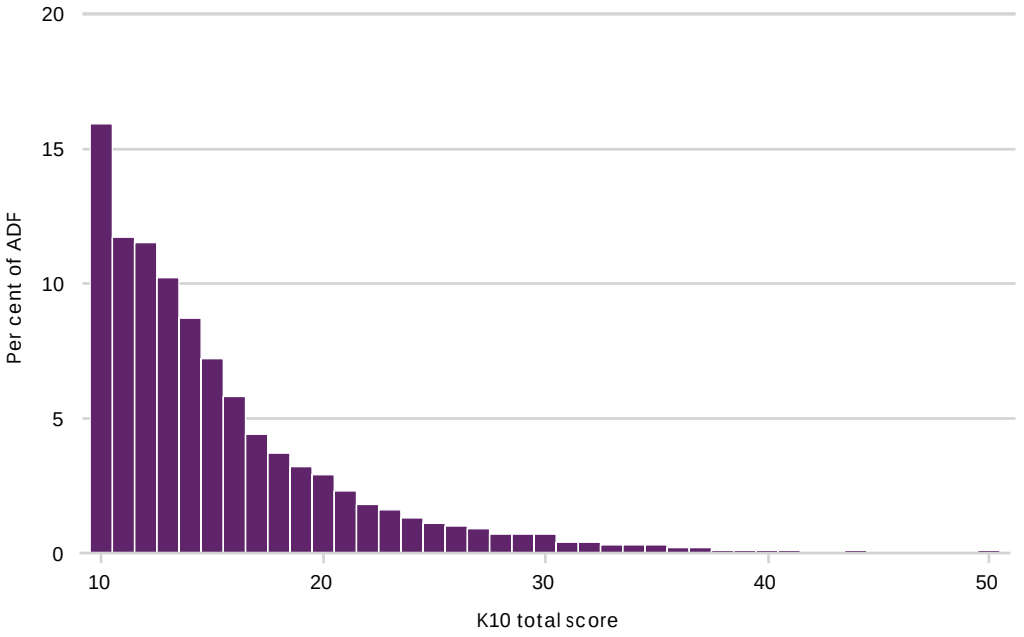
Table 2.2: *K10 quantiles for the ADF*

K10 score summary statistics	Estimate	95% CI
Minimum	10.0	
10%	10.0	10.0–10.0
25%	10.8	10.8–10.8
Median	13.2	13.1–13.2
Mean	15.4	15.3–15.5
75%	17.0	16.9–17.1
90%	22.6	22.4–22.8
95%	27.0	26.7–27.3
99%	35.2	34.7–35.8
Maximum	50.0	

Table 2.2 reports the K10 quantiles for the ADF and indicates that approximately 10% scored in the high to very high range using the banding as reported in the national study. Of the three scales being investigated, the K10 is the only one that can be directly compared with the Australian community sample from the 2007 ABS study. Using the age, sex and employment adjusted sample, the mean K10 score for the ADF (15.4) was significantly higher than the Australian national average (14.1) and this difference was consistent across males and females (ADF 15.3 versus ABS 14.0 for males and ADF 16.2 versus ABS 15.0 for females).

As can be seen in Table 2.2, the median score for currently serving ADF members is in the low group (13.2). The skewed nature of the distribution, or the fact that most of the ADF report a low level of distress, is demonstrated in Figure 2.2.

Figure 2.2: *Distribution of K10 total scores in the ADF*



2.2.2 K10 in the ADF and ABS by sex

A comparison of the K10 scoring bands for risk in the ADF for males and females is presented in Table 2.3.

Table 2.3: *K10 risk categories in the ADF, by sex*

	Males		Females		Total	
	%	95% CI	%	95% CI	%	95% CI
Low	65.7	65.1-66.3	58.5	57.2-59.8	64.7	64.1-65.3
Moderate	22.0	21.4-22.5	25.4	24.3-26.6	22.5	22.0-22.9
High	9.0	8.7-9.4	11.0	10.1-11.8	9.3	9.0-9.6
Very high	3.3	3.1-3.6	5.1	4.5-5.7	3.6	3.3-3.8

Overall in the ADF, 3.6% scored in the very high range on the K10, 9.3% scored in the high range and 22.5% scored in the moderate range.

A comparison of males and females in the ADF, using mean scores not reported in the table above, showed that ADF females reported significantly higher mean K10 scores than ADF males (16.21 versus 15.36; mean difference 0.85, 95% CI 0.67, 1.03). There was no significant interaction, however, between sex and Service on the mean K10 scores.

2.2.3 K10 in different population subgroups

2.2.3.1 Rank

Table 2.4: *K10 risk categories in the ADF, by rank*

	Officers			Non-commissioned officers			Other ranks		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Low	*8,353*	69.4	68.6–70.2	*14,723*	66.0	65.3–66.6	*9,304*	59.3	57.9–60.6
Moderate	*2,500*	20.8	20.1–21.5	*4,878*	21.9	21.3–22.5	*3,859*	24.6	23.4–25.8
High	*930*	7.7	7.3–8.2	*1,977*	8.9	8.5–9.3	*1,747*	11.1	10.3–12.0
Very high	*251*	2.1	1.9–2.3	*741*	3.3	3.1–3.6	*786*	5.0	4.4–5.6

When looking at the rank structure of the ADF, a notable finding is the high rates of distress among the other ranks, among whom 5% scored in the very high category, compared to 2.1% of officers.

In an analysis of mean scores, there was a significant effect of rank on the mean K10 scores: the other ranks reported significantly higher mean K10 scores than officers (16.3 versus 15.22; mean difference 1.08, 95% CI 0.90–1.27) and non-commissioned officers (16.3 versus 15.84; mean difference 0.47, 95% CI 0.28–0.66). Non-commissioned officers also reported significantly higher K10 scores than officers (15.84 versus 15.22; mean difference 0.61, 95% CI 0.50–0.73).

2.2.3.2 Service

Tables 2.5 to 2.7 report the K10 scoring bands for each of the three Services.

Table 2.5: *K10 risk categories in the Navy, by sex*

	Male			Female			Persons		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Low	*5,810*	61.1	59.7–62.5	*1,156*	54.9	52.2–57.6	*6,966*	60.0	58.7–61.2
Moderate	*2,347*	24.7	23.4–25.9	*537*	25.5	23.2–27.9	*2,884*	24.8	23.7–25.9
High	*979*	10.3	9.4–11.2	*268*	12.7	10.9–14.6	*1,247*	10.7	9.9–11.5
Very high	*372*	3.9	3.3–4.5	*144*	6.8	5.4–8.2	*516*	4.4	3.9–5.0

Table 2.6: *K10 risk categories in the Army, by sex*

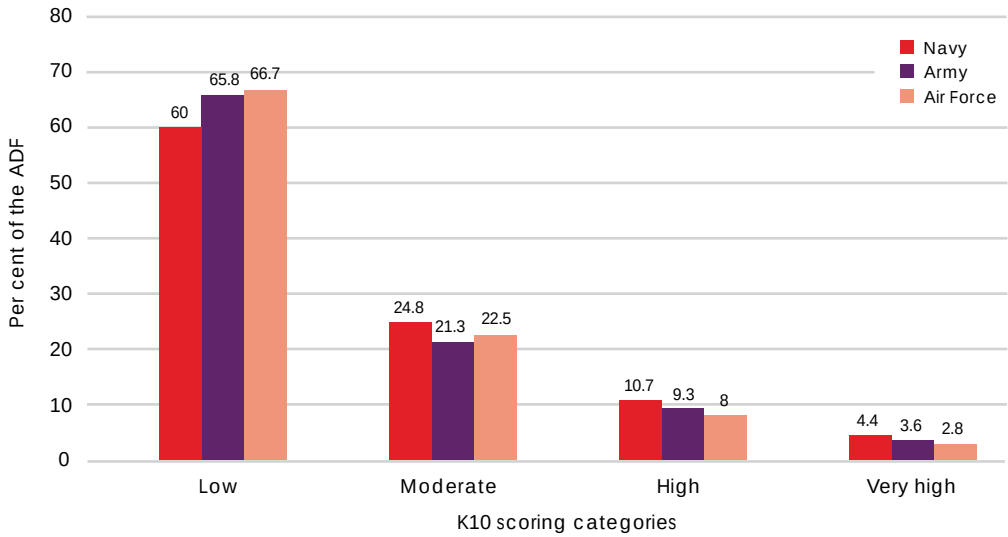
	Male			Female			Persons		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Low	*15,178*	66.4	65.5–67.4	*1,505*	59.9	57.8–62.0	*16,683*	65.8	65.0–66.6
Moderate	*4,788*	21.0	20.2–21.8	*625*	24.9	23.0–26.7	*5,413*	21.3	20.6–22.1
High	*2,093*	9.2	8.6–9.7	*266*	10.6	9.2–11.9	*2,359*	9.3	8.8–9.8
Very high	*784*	3.4	3.1–3.8	*118*	4.7	3.7–5.6	*901*	3.6	3.2–3.9

Table 2.7: *K10 risk categories in the Air Force, by sex*

	Male			Female			Persons		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Low	*7,409*	68.0	67.1–68.9	*1,322*	60.3	58.4–62.3	*8,731*	66.7	65.9–67.6
Moderate	*2,369*	21.8	20.9–22.6	*571*	26.1	24.3–27.8	*2,940*	22.5	21.7–23.2
High	*836*	7.7	7.2–8.2	*212*	9.7	8.5–10.9	*1,049*	8.0	7.5–8.5
Very high	*275*	2.5	2.2–2.8	*86*	3.9	3.1–4.7	*361*	2.8	2.5–3.0

In an analysis of mean scores, there was a significant effect of Service on the mean K10 scores: both the Navy (16.31 versus 15.33; mean difference 0.98, 95% CI 0.81, 1.15) and the Army (15.72 versus 15.33; mean difference 0.39, 95% CI 0.25, 0.52) reported significantly higher average K10 scores than the Air Force. The Army reported a significantly lower average K10 score than the Navy (15.72 versus 16.31; mean difference –0.59, 95% CI –0.78, –0.41). The proportion of the Navy, Army and Air Force scoring in each of the four K10 scoring categories is presented in Figure 2.3.

Figure 2.3: *Proportion of Navy, Army and Air Force scoring in each of the four K10 scoring zones*



2.2.3.3 Deployment

Table 2.8: *K10 risk categories in the ADF, by deployment status*

	Ever deployed			Never deployed		
	N	%	95% CI	N	%	95% CI
Low	*20,471*	68.5	67.8–69.2	*11,909*	59.0	58.1–60.0
Moderate	*6,008*	20.1	19.5–20.7	*5,228*	25.9	25.0–26.8
High	*2,481*	8.3	7.9–8.7	*2,174*	10.8	10.2–11.4
Very high	*918*	3.1	2.8–3.3	*859*	4.3	3.8–4.7

There was a significant effect of deployment status on K10 scores: those who had been on operational deployment reported significantly lower mean K10 scores than those who had never been on operational deployment (15.27 versus 16.30; mean difference –1.03, 95% CI –1.18, –0.88).

In addition to the four-level scoring system described above, K10 scores were also categorised into two levels of psychological distress, low (10–19) and high (20–50), to enable comparison with ADF post-operational screening surveillance reports (that is, reports on the trends from the RtAPS and POPS). A table showing these outcomes is presented in Annex B (see Table B.21).

Using this scoring classification, 18.1% (95% CI 17.6–18.5) (17.5% of males and 21.4% of females) of the ADF scored in the high-risk category. Of the ADF personnel who had been on operational deployment, 15.8% scored in the high-risk group. This is higher than rates seen in recently deployed groups to the Middle East Area of Operations (MEAO) (8%) and those deployed to major operations in 2009 across the three Services (with a range of 5.0 to 9.3%) (Benassi & Steele, 2011; Nicholson, 2010). Further detailed analyses of these differences will be conducted later.

A detailed table combining all data presented in Tables 2.3 to 2.8 is provided in Annex B for ease of comparison across all ADF population subgroups (see Table B.22).

2.2.4 Impact of K10 psychological distress on daily activities

Information on total and partial days out of role as a result of psychological distress reported on the K10 was obtained from the self-report questionnaire. Each ADF member was asked to nominate how many days in the previous four weeks they were totally unable to carry out their work, study or day-to-day activities due to feelings of psychological distress and how many days they had to cut down on their work, study or day-to-day activities due to feelings of psychological distress (measured using the K10). The mean number of days totally and partially out of role in the ADF are presented in Tables 2.9 and 2.10. Detailed tables reporting the total and partial days out of role in the previous four weeks (sub-grouped by weeks) are provided in Annex B.

Table 2.9: *Average number of days in the previous four weeks ADF personnel were totally unable to carry out their work, study or day-to-day activities due to psychological distress*

	Days in the previous four weeks totally unable to work	
	Mean	95% CI
Total	0.37	0.35–0.40
Males	0.36	0.33–0.39
Females	0.49	0.42–0.55
Navy	0.42	0.36–0.48
Male	0.38	0.31–0.44
Female	0.64	0.48–0.80
Army	0.40	0.36–0.44
Male	0.39	0.35–0.44
Female	0.46	0.38–0.55
Air Force	0.28	0.25–0.31
Male	0.26	0.23–0.30
Female	0.37	0.28–0.46
Officers	0.22	0.20–0.25
Non-commissioned officers	0.37	0.34–0.41
Other ranks	0.50	0.43–0.56
Ever deployed	0.34	0.31–0.37
Never deployed	0.42	0.38–0.47

Results from zero-inflated negative binomial regressions showed the following factors to be significant predictors of psychological distress, which could result in total days out of role:

- sex (females were twice as likely compared to males (OR 2.42, 95% CI 2.08–2.81) to report psychological distress)
- Service (Navy members were 23% more likely than Air Force (OR 1.23, 95% CI 1.05–1.44) and Army members were 19% more likely than Air Force members (OR 1.19, 95% CI 1.04–1.37))
- rank (non-commissioned officers were 41% more likely than officers (OR 1.41, 95% CI 1.25–1.60) and other ranks were 53% more likely than officers (OR 1.53, 95% CI 1.30–1.81))
- deployment status (those who had been deployed were 15% less likely than those who had not been deployed (OR 0.85, 95% CI 0.74–0.97)).

In relation to the number of total days out of role due to psychological distress, the following predictor variables emerged as significant:

- sex (for females, the expected number of days totally out of role due to psychological distress was 31% less than for males (OR 0.69, 95% CI 0.58–0.82))

- Service (for Navy members, the expected number of days totally out of role due to psychological distress was 24% more than for Air Force members (RR 1.24, 95% CI 1.02–1.50); for Army members, the expected number of days totally out of role due to psychological distress was 21% more than for Air Force members (RR 1.21, 95% CI 1.03–1.43))
- rank (for non-commissioned officers, the expected number of days totally out of role due to psychological distress was 29% more than for officers (RR 1.29, 95% CI 1.10–1.53); for other ranks, the expected number of days totally out of role due to psychological distress was 44% more than for officers (RR 1.44, 95% CI 1.17–1.76)).

Deployment, however, was not a significant predictor of number of total days out of role due to psychological distress. Those effects were estimated for those who could have had total days out of role to psychological distress. Figure 2.4 shows the distribution in the ADF of total days lost in the previous four weeks due to psychological distress. Not represented in this figure is the 93.19% of ADF personnel who reported zero days out of role in the previous four weeks.

Figure 2.4: *Proportion of ADF personnel reporting days totally unable to carry out their work, study or day-to-day activities due to psychological distress in the previous four weeks*

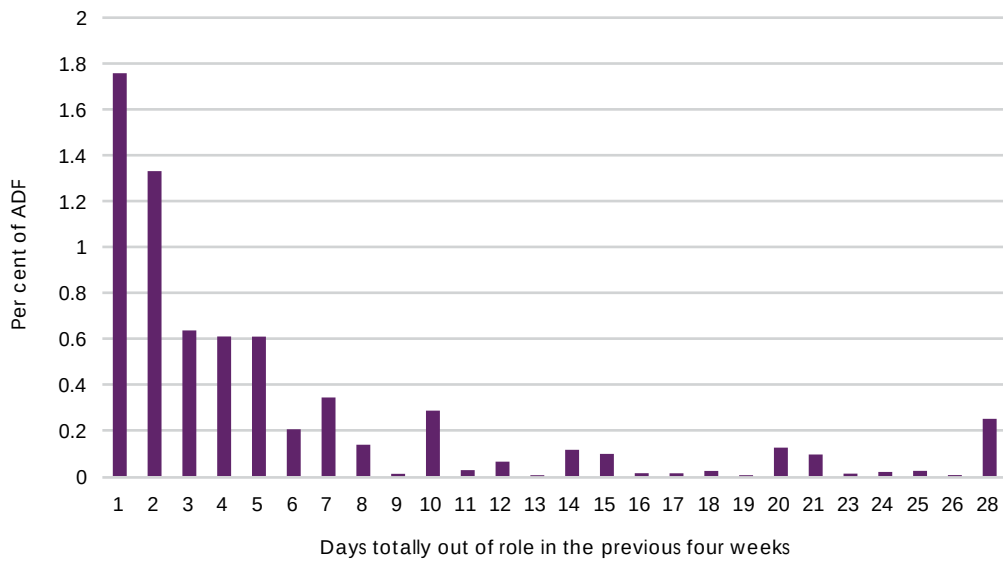


***Table 2.10:** Average number of days in the previous four weeks ADF personnel were partially unable to carry out their work, study or day-to-day activities due to psychological distress*

	Days in the previous four weeks partially out of role	
	Mean	95% CI
Total	1.17	1.12–1.22
Males	1.09	1.04–1.14
Females	1.67	1.54–1.80
Navy	1.33	1.22–1.44
Male	1.24	1.11–1.36
Female	1.75	1.50–2.00
Army	1.13	1.06–1.20
Male	1.05	0.98–1.13
Female	1.86	1.61–2.10
Air Force	1.10	1.03–1.16
Male	1.04	0.97–1.11
Female	1.38	1.21–1.55
Officers	0.96	0.90–1.02
Non-commissioned officers	1.26	1.19–1.32
Other ranks	1.21	1.09–1.33
Ever deployed	1.14	1.09–1.20
Never deployed	1.20	1.12–1.29

Results from zero-inflated negative binomial regressions showed the following factors to be significant predictors of psychological distress, which could result in partial days out of role:

- sex (females were 64% more likely compared to males (OR 1.64, 95% CI 1.51–1.79) to report psychological distress)
- Service (Navy members were 15% more likely than Air Force (OR 1.15, 95% CI 1.05–1.26) and Army members were 25% more likely than Navy members (OR 1.25, 95% CI 1.14–1.37))
- rank (other ranks were 13% less likely than officers (OR 0.87, 95% CI 0.78–0.96))
- deployment status (those who had been deployed were 12% less likely than those who had not been deployed (OR 0.88, 95% CI 0.81–0.95)).

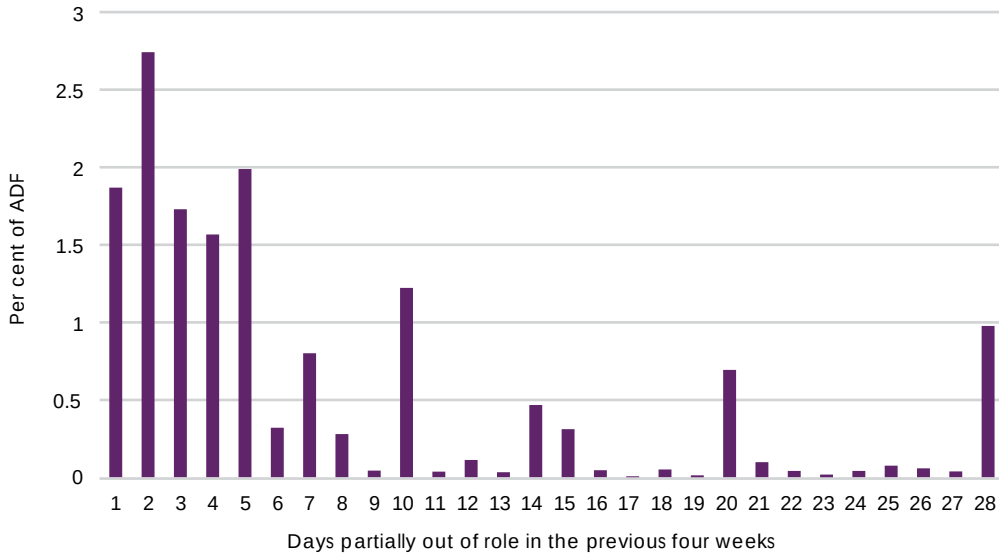
In relation to the number of partial days out of role due to psychological distress, the following predictor variables emerged as significant:

- sex by Service interaction (among Army personnel, the expected number of days partially out of role due to psychological distress was 21% more in females than males (RR 1.21, 95% CI 1.06–1.37); among females, the expected number of days partially out of role due to psychological distress was 38% more in the Army than the Air Force (RR 1.38, 95% CI 1.19–1.61))

- rank (for non-commissioned officers, the expected number of days partially out of role due to psychological distress was 39% more than for officers (RR 1.39, 95% CI 1.29–1.49); for other ranks, the expected number of days partially out of role due to psychological distress was 41% more than for officers (RR 1.41, 95% CI 1.27–1.57)).

Deployment, however, was not a significant predictor of number of partial days out of role due to psychological distress. Those effects were estimated for those who could have reported partial days out of role due to psychological distress. Figure 2.5 shows the distribution in the ADF of partial days lost in the previous four weeks due to psychological distress. Not represented in this figure is the 84.30% of ADF personnel who reported zero partial days out of role in the previous four weeks.

Figure 2.5: *Proportion of ADF personnel reporting days partially unable to carry out their work, study or day-to-day activities due to psychological distress in the previous four weeks*



2.2.4.1 Doctor visits for K10 psychological distress

Information on the number of times ADF personnel saw a doctor in the previous four weeks for symptoms of psychological distress according to ADF population characteristics is reported in Table 2.11. A detailed table reporting the number of times ADF personnel reported seeing a doctor in the previous four weeks presented as a frequency is provided in Annex B.

***Table 2.11:** Doctor visits over the previous four weeks for symptoms of psychological distress*

	Times seen a doctor in the previous four weeks	
	Mean	95% CI
Total	0.24	0.22–0.25
Males	0.21	0.20–0.22
Females	0.41	0.37–0.45
Navy	0.23	0.21–0.26
Male	0.19	0.16–0.21
Female	0.44	0.35–0.52
Army	0.26	0.24–0.28
Male	0.24	0.22–0.26
Female	0.43	0.36–0.51
Air Force	0.19	0.18–0.21
Male	0.16	0.15–0.18
Female	0.35	0.28–0.41
Officers	0.16	0.15–0.17
Non-commissioned officers	0.24	0.23–0.26
Other ranks	0.29	0.25–0.32
Ever deployed	0.24	0.22–0.26
Never deployed	0.23	0.22–0.25

Results from zero-inflated negative binomial regressions showed the following factors to be significant predictors of psychological distress, which could possibly result in a doctor visit:

- sex (females were twice as likely compared to males (OR 2.05, 95% CI 1.77–2.37) to report psychological distress)
- Service (Army members were 14% less likely than Air Force members (OR 0.86, 95% CI 0.75–0.98))
- rank (non-commissioned officers were 36% more likely than officers (OR 1.36, 95% CI 1.20–1.54) and other ranks were 45% more likely than officers (OR 1.45, 95% CI 1.23–1.71)).

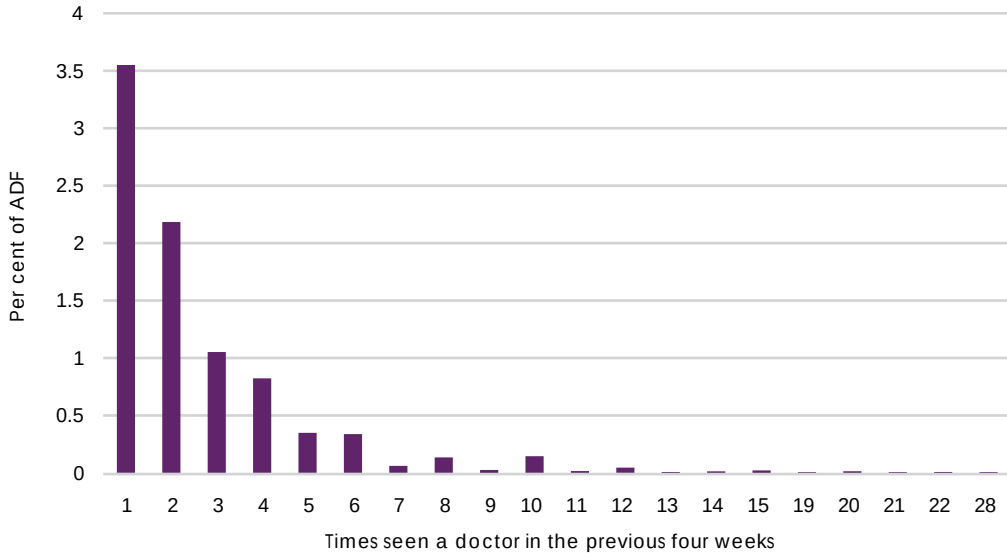
In relation to the number of visits to a doctor due to psychological distress, the following predictor variables emerged as significant:

- sex (for females, the expected number of doctor visits due to psychological distress was 22% more than for males (RR 1.22, 95% CI 1.05–1.43))
- Service (for Army members, the expected number of doctor visits due to psychological distress was 52% more than for Air Force members (RR 1.52, 95% CI 1.31–1.77) and 31% more than for Navy members (RR 1.31, 95% CI 1.13–1.54))

- rank (for non-commissioned officers, the expected number of doctor visits due to psychological distress was 20% more than for officers (RR 1.20, 95% CI 1.03–1.38); for other ranks, the expected number of doctor visits due to psychological distress was 32% more than for officers (RR 1.32, 95% CI 1.11–1.57)).

These effects were estimated for those who could have visited a doctor due to psychological distress. Deployment, however, was not a significant predictor of psychological distress that could result in a doctor visit or the number of visits to a doctor due to psychological distress. Figure 2.6 shows the distribution in the ADF of the number of visits to the doctor in the previous four weeks due to psychological distress. Not represented in this figure is the 91.19% of ADF personnel who reported zero visits to the doctor in the previous four weeks.

Figure 2.6: *Proportion of ADF personnel reporting visits to the doctor due to psychological distress in the previous four weeks*



2.2.5 K10 cut-offs

Receiver Operating Characteristic (ROC) analysis was used to determine the optimal cut-off in the ADF to detect 30-day ICD-10 anxiety disorder, ICD-10 affective disorder and ICD-10 anxiety or affective disorder (Tables 2.12 to 2.14 and Figures 2.7 to 2.9), examined using the CIDI.

Table 2.12: *Properties of the K10 optimal cut-offs for predicting 30-day ICD-10 anxiety disorder*

	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
Cut-off	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
17	0.68	0.49–0.87	0.72	0.68–0.75	0.16	0.13–0.20	0.96	0.94–0.99
26	0.30	0.19–0.40	0.95	0.93–0.96	0.31	0.23–0.39	0.94	0.92–0.97

ROC analysis found that the optimal cut-off for detecting any ICD-10 anxiety disorder was 17 (Table 2.12). This is the value that maximises the sum of the sensitivity and specificity (the proportion of those with and without the disease that are correctly classified). The area under the ROC curve was 0.75 (95% CI 0.60–0.89). Using the cut-off of 17, the sensitivity was 0.68 (95% CI 0.49–0.87), indicating that the K10 will detect 68% of those with an ICD-10 anxiety disorder. The specificity was 0.72 (95% CI 0.68–0.75), indicating that there is a 72% probability that those who do not have an ICD-10 anxiety disorder will score below the cut-off of 17 on the K10.

The second cut-off of 26 is the value that brings the number of false positives and false negatives closest together, counterbalancing these sources of error most accurately. Therefore, this cut-off would give the closest estimate to the true prevalence of 30-day ICD-10 anxiety as measured by the CIDI.

Figure 2.7: *Receiver Operating Characteristic curve based on the K10 total score and 30-day ICD-10 anxiety disorder*

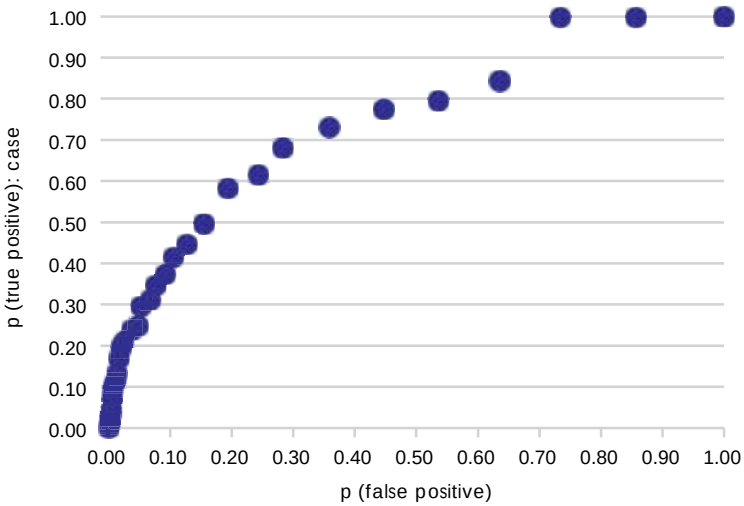


Figure 2.7 shows the ROC curve for the K10, using cut-off values to predict 30-day ICD-10 anxiety disorder. A more detailed table of the sensitivity, specificity, positive predictive value and negative predictive value for each of the cut-offs presented in this figure is provided in Annex B (see Table B.26).

Table 2.13: *Properties of the K10 optimal cut-offs for predicting 30-day ICD-10 affective disorder*

	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
Cut-off	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
19	0.75	0.59–0.91	0.79	0.76–0.82	0.09	0.06–0.11	0.99	0.98–1.00
31	0.23	0.13–0.33	0.98	0.97–0.98	0.21	0.13–0.30	0.98	0.97–0.99

As can be seen in Table 2.13, the K10 performs better at predicting 30-day ICD-10 affective disorder than ICD-10 anxiety disorder. ROC analysis found that the optimal cut-off for detecting any ICD-10 affective disorder was 19, which was slightly higher than the cut-off for detecting 30-day anxiety disorder. The area under the ROC curve was also higher (0.81) (95% CI 0.70–0.91). Using the cut-off of 19, the sensitivity was 0.75 (95% CI 0.59–0.91), indicating that the K10 will detect 75% of those with an ICD-10 affective disorder. The specificity was 0.79 (95% CI 0.76–0.82), indicating that there is a 79% probability that those who do not have an ICD-10 affective disorder will score below the cut-off of 19 on the K10.

The second cut-off of 31 is the cut-off that would give the closest estimate to the true prevalence of 30-day ICD-10 affective disorder as measured by the CIDI.

Figure 2.8: *Receiver Operating Characteristic curve based on the K10 total score and 30 day ICD-10 affective disorder*

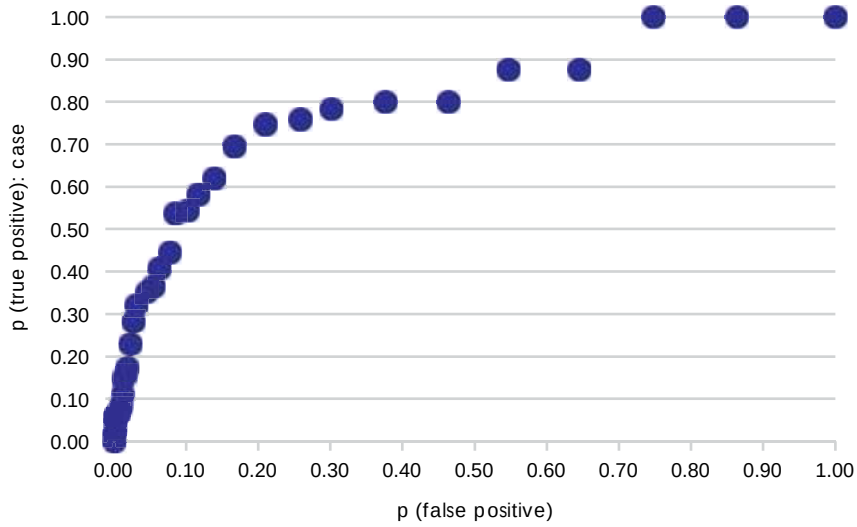


Figure 2.8 shows the ROC curve for the K10 using cut-off values to predict 30-day ICD-10 affective disorder. A more detailed table of the sensitivity, specificity, positive predictive value and negative predictive value for each of the cut-offs presented in this figure is provided in Annex B (see Table B.27).

Table 2.14: *Properties of the K10 optimal values for predicting 30-day ICD-10 anxiety or affective disorder*

	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
Cut-off	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
19	0.59	0.44–0.73	0.81	0.78–0.84	0.24	0.19–0.28	0.95	0.92–0.98
25	0.30	0.21–0.39	0.93	0.92–0.95	0.32	0.24–0.39	0.93	0.91–0.96

Finally, Table 2.14 reports the psychometric properties of the K10 in the detection of any 30-day ICD-10 anxiety or affective disorder. ROC analysis found that the optimal cut-off for detecting any ICD-10 anxiety or affective disorder was 19, the same cut-off for detecting 30-day affective disorder alone. The area under the ROC curve, however, was lower (0.75) (95% CI 0.63–0.86). Using the cut-off of 19, the sensitivity was substantially lower (0.59) (95% CI 0.44–0.73), indicating that the K10 will only detect 59% of those with an ICD-10 anxiety or affective disorder if a cut-off of 19 is used. The specificity, however, was higher (0.81) (95% CI 0.78–0.84), indicating that there is an 81% probability that those who do not have an ICD-10 anxiety or affective disorder will score below the cut-off of 19 on the K10.

The second cut-off of 25 is the cut-off that would give the closest estimate to the true prevalence of 30-day ICD-10 affective disorder as measured by the CIDI.

Figure 2.9: *Receiver Operating Characteristic curve based on the K10 total score and 30-day ICD-10 affective disorder or anxiety disorder*

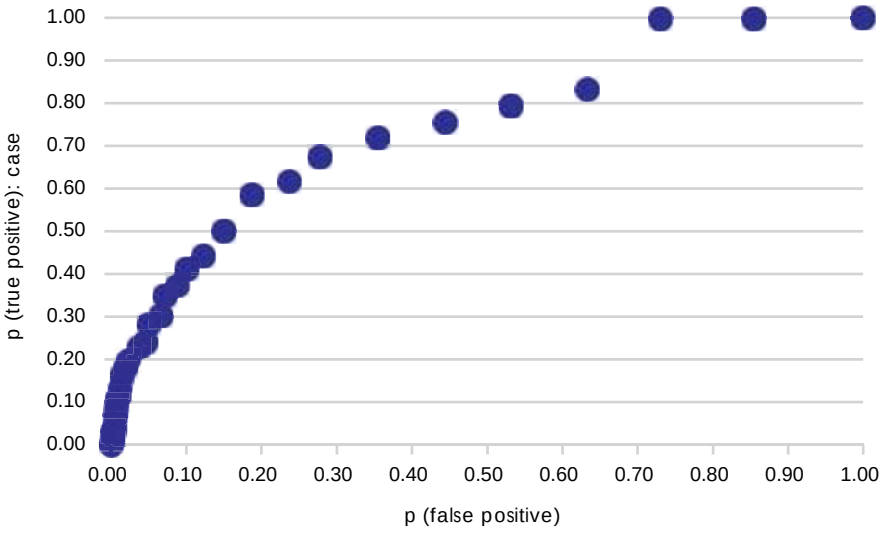


Figure 2.9 shows the ROC curve for the K10 using cut-off values to predict any 30-day ICD-10 affective disorder or any 30-day ICD-10 anxiety disorder. A more detailed table of the sensitivity, specificity, positive predictive value and negative predictive value for each of the cut-offs presented in this figure is provided in Annex B (see Table B.28).

2.2.6 Discussion

Overall, 3.6% of the ADF reported very high levels of psychological distress on the K10, 9.3% reported high levels of distress and 22.5% reported moderate levels of distress. Around two-thirds of the ADF reported nil or low levels of psychological distress. The average number of days out of role in the previous four weeks in the ADF due to psychological distress was 0.37 days. A further 1.17 mean days were associated with partial loss of productivity. This equated to an average of 1.5 days per ADF member of lost productivity due to symptoms psychological distress.

In Australia, the K10 was used in deployment health studies of personnel deployed in Bougainville, East Timor, Solomon Islands and the first Gulf War. In the Bougainville post-deployment health study, 5% of veterans reported very high levels of psychological distress, which was slightly lower than an ADF comparison group of 7% (McGuire, Waller et al., 2009a). Data from the East Timor study identified that 7% of veterans and 5% of the comparison group scored in the very high category (McGuire, Waller et al., 2009b). The Solomon Islands study demonstrated lower levels among the Solomon Islands veterans: 3.5% scored in the very high category, compared to 4.8% among the comparison group (McGuire, Waller, D'Este et al., 2009).

A recent study combining these datasets identified that deployment to Bougainville, East Timor or the Solomon Islands (jointly referred to as the Near North Areas of Influence) was associated with higher scores on the K10. Specifically, ADF personnel who were deployed for eight to 10 months were 1.5 times more likely to score above 20, compared to those who had been deployed for one to three months. Those who had been deployed at least twice were twice as likely to score above 20 than those who had never been deployed (Bleier et al., 2011).

In a study reporting K10 rates at POPS for personnel deployed to the MEAO in 2010, 8% of members reported K10 scores in the high risk category (K10 ≥ 20) (Benassi & Steele, 2011). Similarly, the proportion of ADF personnel deployed to major operations in 2009 reporting in the high risk category (K10 ≥20) for psychological distress ranged from 5.0 to 9.3% across the three Services (Nicholson, 2010).

2.2.6.1 Demographic characteristics

Females reported significantly higher mean K10 scores than ADF males; Army females reported more partial days out of role than Army males and Air Force females. There was no significant difference between the sexes, however, in total days out of role due to psychological distress. However, females were also more inclined to seek help from a doctor in relation to that psychological distress; the expected number of doctor visits due to psychological distress in the previous four weeks was 22% higher for females compared to males.

The Navy reported significantly higher mean scores on the K10 than both the Army and the Air Force and significantly more total days out of role due to this distress than Air Force members. Navy members also sought help from a doctor significantly fewer times than Army members.

In relation to rank, the other ranks reported significantly higher mean K10 scores than both officers and non-commissioned officers. Consistent with this finding, other ranks reported significantly more total days out of role in the previous four weeks than officers as a result of that psychological distress, and they also reported significantly more visits to the doctor than officers.

Of the ADF personnel who had been on operational deployment, 15.8% scored in the high-risk group (scores of 20 to 50 on the K10). This is higher than rates seen in recently deployed groups to the MEAO (8%) and across the three Services deployed to major operations in 2009 (with a range of 5.0 to 9.3%) (Benassi & Steele, 2011; Nicholson, 2010). This suggests that when completing identified screening instruments (such as the RtAPS and POPS), ADF personnel may be less likely to report psychological distress than when the survey is anonymous.

There was a significant effect of deployment status on K10 scores: those who had been on operational deployment reported significantly lower mean K10 scores compared to those who had never been on operational deployment. On the surface, this might suggest that there is no particular risk of psychological distress associated with operational service. It may be, however, that it is not until the nature of the deployment is examined (warlike or non-warlike deployments) that an effect may emerge. An alternative explanation is that the ADF Medical Classification System (MEC system) may have precluded individuals from being deployed due to medical or psychological conditions. As a consequence there may be slightly higher rates in the non-deployed sample. These are questions that need to be addressed in further analyses. There were no noteworthy differences between those who had been on deployment and those who had not been on deployment in relation to levels of impairment or number of visits to the doctor.

2.2.6.2 ADF-specific cut-offs

ROC analysis was used to examine the psychometric properties of the K10 in determining ICD anxiety and affective disorders. Previously, research has shown that the K10 performs adequately at predicting current and 12-month ICD-10/DSM-IV disorders within the Australian community (specifically affective and anxiety disorders) with area under the ROC curves ranging from 0.80 to 0.955 (Cairney, Veldhuizen, Wade, Kurdyak, & Streiner, 2007; Furukawa et al., 2003; Kessler et al., 2002; Oakley Browne, Wells, Scott, & McGee, 2010).

Using the standard K10 cut-off of 20 that is currently used in Defence for clinical screens, the K10 performs better at predicting 30-day affective disorder than 30-day anxiety disorder. Psychometric analysis of the K10 indicated that the optimal screening cut-off for affective disorder would be 19 and for anxiety disorder, 17. Therefore, to most effectively capture both disorders, the conservative cut-off of 17 should be used.

To determine epidemiological caseness, a more stringent cut-off needs to be applied to reduce the number of false diagnoses. For this purpose, in the ADF population a cut-off of 25 needs to be applied. This would provide the most accurate estimate of the number of personnel with either a current anxiety or current affective disorder.

In summary, the K10 is an instrument that is widely used in epidemiological studies to identify the levels of distress and possible psychological caseness within a population. Although self-reported psychological distress in the ADF was low, the K10 remains an appropriate screening tool for use in the ADF, particularly for ICD-10 affective disorders. A cut-off of 17 is recommended.

2.2.7 Proposed further analyses

This section reports the analyses completed at the time of publication. Proposed further analyses include:

- examining the psychometric properties and determining the most effective cut-off for detecting ICD-10 mood disorders (depressive episodes and dysthymia only) compared to ICD-10 affective disorders. This is in response to recent studies that suggest that the K10 may be a better predictor of affective disorders, which do not include mania or hypomania
- establishing optimal cut-offs on the K10 for each gender and Service in the ADF
- examining the relationship between K10 scores and lifetime ICD-10 affective and anxiety disorders
- examining the relationship between K10 scores and 12-month ICD-10 affective and anxiety disorders
- examining the relationship between K10 scores and sub-threshold anxiety and affective disorder
- examining the relationship between K10 scores and DSM-IV disorders and determining cut-offs for 30-day, 12-month and lifetime affective and anxiety disorders
- examining the relationship between K10 scores obtained from the Mental Health Prevalence Study and other datasets, such as the RtAPS and POPS
- establishing different cut-offs for each type of anxiety disorder and affective disorder
- examining the nature of the distress in ADF personnel who score high on the K10 but do not have a diagnosable disorder based on the CIDI.

2.3 Posttraumatic Stress Disorder Checklist (PCL)

- Of ADF personnel, 6.7% reported in the high to very high risk category for PTSD.
- For both males and females, the Navy reported significantly higher mean PCL scores than the Air Force.
- Army males reported significantly higher mean PCL scores than Navy males.
- Air Force females reported significantly higher mean PCL scores than Air Force males.
- Non-commissioned officers were most at risk, reporting significantly higher mean PCL scores than both commissioned officers and other ranks.
- Deployed personnel reported significantly higher mean PCL scores than non-deployed personnel.
- A PCL-C cut-off of 29 is recommended for screening for PTSD in ADF populations.
- A PCL-C cut-off of 53 is recommended for reporting diagnosable PTSD.

This section provides a detailed summary of self-report post-traumatic symptoms in the ADF population reported by currently serving ADF members. This section examines the distribution of symptomatology by the demographic categories of rank, sex, Service and deployment status. Receiver Operating Characteristic (ROC) analyses were used to determine the optimal psychometric cut-offs for use in the ADF to screen for and detect 30-day ICD-10 post-traumatic stress disorder.

The 17 questions of the PCL were scored from 1 to 5 and summed to give a total score from 17 to 85. To allow comparison with the broader military literature, the PCL scores were grouped into four risk levels: low (17 to 29), moderate (30 to 39), high (40 to 49) and very high (50 to 85), which reflect the risk of post-traumatic stress disorder. These same risk groupings are used in post-operational screening surveillance reports (Weathers, Litz, Herman, Huska, & Keane, 1993).

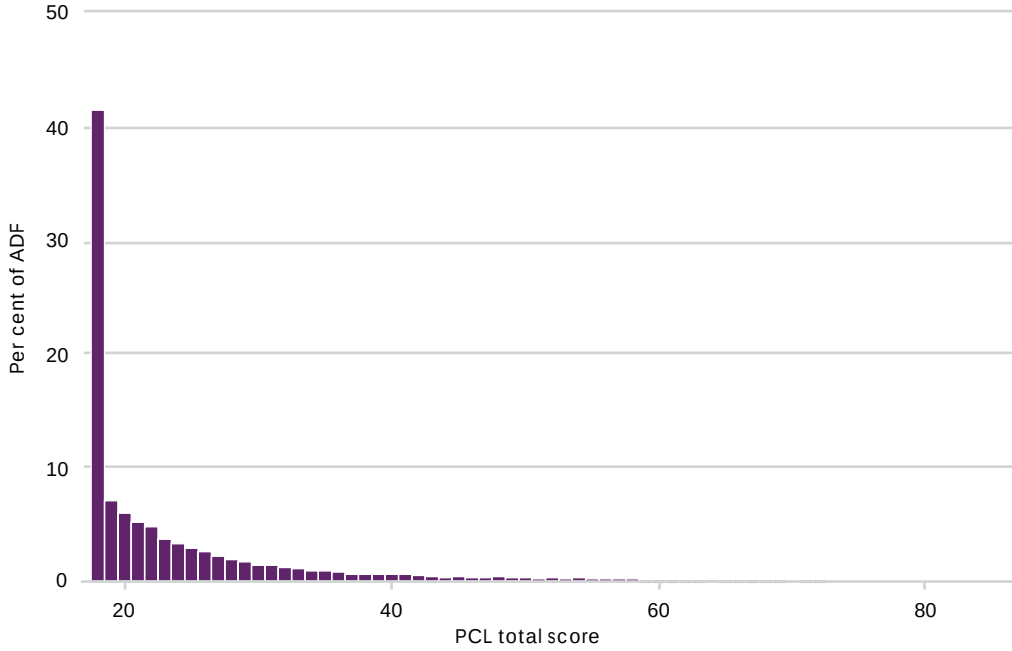
2.3.1 Distribution of post-traumatic symptoms within the ADF

Examining the data of the total PCL-C scores (Table 2.15) using the four risk levels – low (17 to 29), moderate (30 to 39), high (40 to 49) and very high (50 to 85) – less than 5% of the ADF would be considered very high risk. The mean PCL total score for the ADF was 22, which is in the low-scoring category. The distribution of PCL total scores for the entire ADF is presented in Figure 2.10.

Table 2.15: *PCL score summary statistics*

	Estimate	95% CI
Minimum	17.0	
10%	17.0	17.0–17.0
25%	17.0	17.0–17.0
Median	18.1	18.0–18.2
Mean	22.7	22.6–22.8
75%	24.0	23.8–24.2
90%	33.8	33.5–34.2
95%	42.6	42.0–43.3
99%	60.2	59.1–61.3
Maximum	85.0	

Figure 2.10: *Distribution of PCL total scores in the ADF*



2.3.1.1 PCL in the ADF by sex

A comparison of the PCL scoring bands in the ADF for males and females is presented in Table 2.16.

Table 2.16: *PCL risk categories in the ADF, by sex*

	Males		Females		Total	
	%	95% CI	%	95% CI	%	95% CI
Low	84.7	65.1–66.3	84.0	83.1–84.9	84.6	84.3–85.0
Moderate	8.7	8.3–9.0	9.0	8.3–9.7	8.7	8.4–9.0
High	3.7	3.4–3.9	4.0	3.5–4.4	3.7	3.5–3.9
Very high	2.9	2.7–3.1	3.0	2.6–3.5	3.0	2.8–3.1

Overall in the ADF, 3.0% scored in the very high range on the PCL, 3.7% scored in the high range and 8.7% scored in the moderate range.

From the analysis of PCL score (not presented), there was a significant sex by Service interaction; therefore, the individual effect of sex will not be reported in this section.

2.3.2 PCL in different population subgroups

2.3.2.1 Rank

Table 2.17 reports the PCL risk categories by rank.

Table 2.17: *PCL risk categories in the ADF, by rank*

	Officers			Non-commissioned officers			Other ranks		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Low	*10,513*	87.4	86.8–87.9	*18,498*	82.9	82.4–83.4	*13,352*	85.1	84.2–86.0
Moderate	*937*	7.8	7.4–8.2	*2,134*	9.6	9.2–9.9	*1,290*	8.2	7.5–8.9
High	*930*	7.7	7.3–8.2	*1,977*	8.9	8.5–9.3	*1,747*	11.1	10.3–12.0
Very high	*266*	2.2	2.0–2.4	*739*	3.3	3.1–3.5	*472*	3.0	2.6–3.4

From the multiple regression of PCL scores, non-commissioned officers were most at risk, reporting significantly higher mean PCL scores than both officers (23.25 versus 22.06; mean difference 1.19, 95% CI 1.01–1.37) and other ranks (23.25 versus 22.4; mean difference 0.76, 95% CI 0.49–1.03). Personnel in the other ranks also reported significantly higher mean K10 scores than officers (22.49 versus 22.06; mean difference 0.43, 95% CI 0.16–0.70).

2.3.2.2 Service

Tables 2.18 to 2.20 report the PCL scoring bands for each of the three Services by sex.

Table 2.18: *PCL risk categories in the Navy, by sex*

	Male			Female			Persons		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Low	*8,022*	84.4	83.4–85.3	*1,731*	82.3	80.4–84.1	*9,753*	84.0	83.1–84.8
Moderate	*846*	8.9	8.2–9.6	*214*	10.2	8.7–11.7	*1,060*	9.1	8.5–9.8
High	*351*	3.7	3.2–4.2	*103*	4.9	3.9–5.9	*454*	3.9	3.5–4.4
Very high	*289*	3.0	2.6–3.5	*57*	2.7	1.9–3.5	*345*	3.0	2.6–3.4

Table 2.19: *PCL risk categories in the Army, by sex*

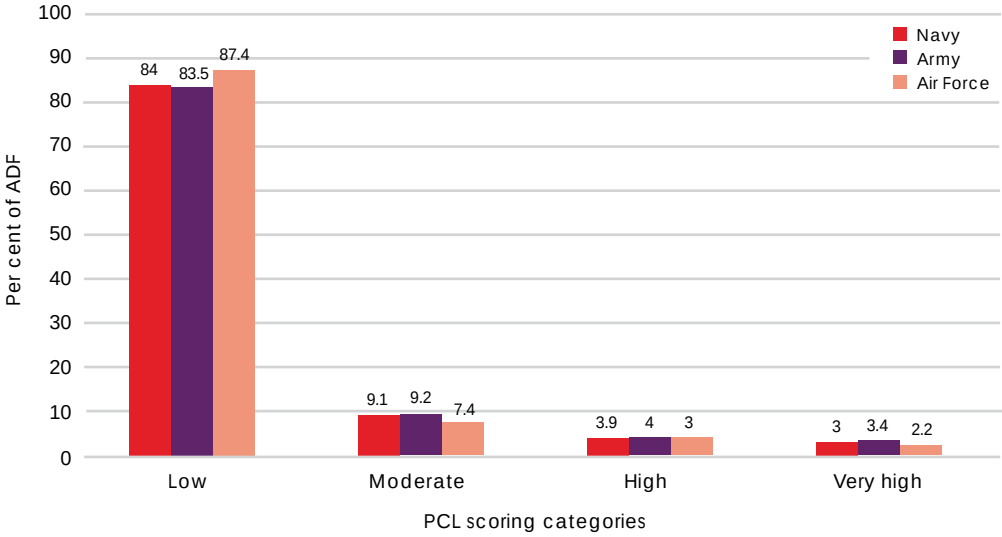
	Male			Female			Persons		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Low	*19,058*	83.4	82.8–84.1	*2,114*	84.1	82.7–85.5	*21,173*	83.5	82.9–84.1
Moderate	*2,100*	9.2	8.7–9.7	*227*	9.0	7.9–10.2	*2,327*	9.2	8.7–9.6
High	*910*	4.0	3.7–4.3	*96*	3.8	3.1–4.6	*1,006*	4.0	3.7–4.3
Very high	*774*	3.4	3.1–3.7	*75*	3.0	2.3–3.7	*850*	3.4	3.1–3.6

Table 2.20: *PCL risk categories in the Air Force, by sex*

	Male			Female			Persons		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Low	*9,564*	87.8	87.2–88.4	*1,874*	85.5	84.3–86.7	*11,438*	87.4	86.9–88.0
Moderate	*803*	7.4	6.9–7.8	*170*	7.8	6.8–8.7	*973*	7.4	7.0–7.9
High	*317*	2.9	2.6–3.2	*71*	3.3	2.6–3.9	*388*	3.0	2.7–3.2
Very high	*206*	1.9	1.7–2.1	*75*	3.4	2.8–4.0	*282*	2.2	1.9–2.4

From the multiple regression of PCL scores, there was a significant sex by Service interaction. Within the Air Force, females reported significantly higher mean PCL scores than males (22.44 versus 21.63; mean difference 0.81, 95% CI 0.46, 1.16). Within males, both the Army (22.90 versus 21.63; mean difference 1.27, 95% CI 1.06, 1.49) and the Navy (22.7 versus 21.63; mean difference 1.07, 95% CI 0.79, 1.35) reported significantly higher mean PCL scores than the Air Force. Within ADF females, the only significant effect was for the Navy compared to the Air Force: Navy females reported significantly higher mean scores (23.15 versus 22.44; mean difference 0.71, 95% CI 0.15, 1.26). Due to the significant sex by Service interaction, separate Service effects will not be reported in this section; however, the proportion of Navy, Army and Air Force personnel scoring in each of the four PCL scoring categories is presented in Figure 2.11.

Figure 2.11: *Proportion of Navy, Army and Air Force scoring in each of the four PCL scoring zones*



2.3.2.3 Deployment

Post-traumatic risk categories in the ADF by deployment status are summarised in Table 2.21.

Table 2.21: *PCL risk categories in the ADF, by deployment status*

	Ever deployed			Never deployed		
	N	%	95% CI	N	%	95% CI
Low	*25,954*	84.1	83.7–84.6	*16,410*	85.5	84.8–86.1
Moderate	*2,815*	9.1	8.8–9.5	*1,545*	8.0	7.5–8.6
High	*1,140*	3.7	3.5–3.9	*708*	3.7	3.3–4.0
Very high	*941*	3.0	2.8–3.3	*536*	2.8	2.5–3.1

There was a significant effect of deployment status on PCL scores: those who had been on operational deployment reported significantly higher mean PCL scores compared to those who had never been on operational deployment (22.75 versus 22.45; mean difference 0.31, 95% CI 0.09–0.53).

A detailed table combining all data presented in Tables 2.16 to 2.21 is provided in Annex B for ease of comparison across all ADF population subgroups (see Table B.29).

2.3.3 Optimal PCL cut-offs

Receiver Operating Characteristic (ROC) analysis was used to determine the optimal cut-off in the ADF to detect 30-day ICD-10 PTSD (Table 2.22), examined using the CIDI.

Table 2.22: *Properties of the optimal PCL cut-offs for predicting 30-day ICD-10 PTSD*

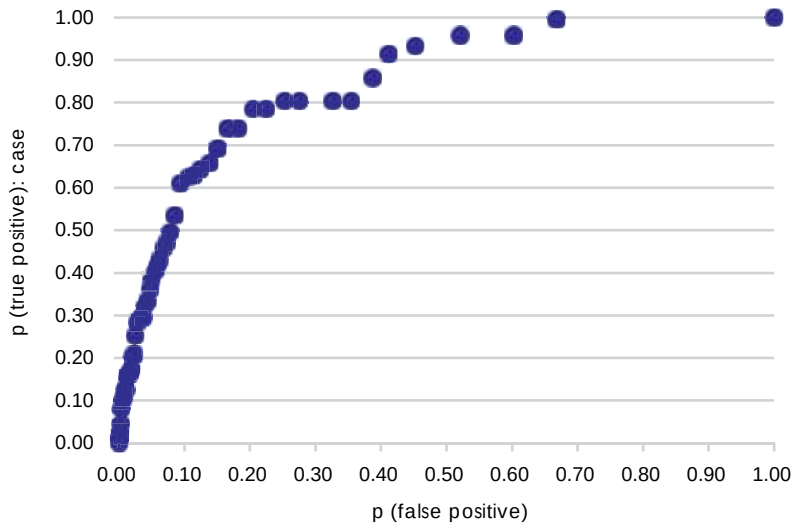
Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
29	0.79	0.65–0.92	0.80	0.77–0.82	0.12	0.09–0.15	0.99	0.98–1.00
53	0.25	0.15–0.35	0.97	0.97–0.98	0.26	0.16–0.36	0.97	0.97–0.98

ROC analysis found that the optimal cut-off for detecting any ICD-10 PTSD was 29, which is similar to the cut-off of 30 used in the ADF operational screening environment to warrant an interview with a psychologist and possible referral. This value of 29 maximised the sum of the sensitivity and specificity (the proportion of those with and without the disorder who are correctly classified). The area under the ROC curve was 0.85 (95% CI 0.79–0.91). Using a cut-off of 29, the sensitivity was 0.79 (95% CI 0.65–0.92), indicating that 79% of those with ICD-10 PTSD would be detected. The specificity was 0.80 (95% CI 0.77–0.82), indicating that there was an 80% probability that those who did not have an ICD-10 PTSD would score below the cut-off of 29 on the PCL-C.

The second cut-off of 53 is the value that brings the number of false positives and false negatives closest together, counterbalancing those sources of error most accurately. Therefore, this cut-off would give the closest estimate to the true prevalence of 30-day ICD-10 PTSD as measured by the CIDI.

Figure 2.12 shows the ROC curve for the PCL using cut-off values to predict any 30-day ICD-10 PTSD.

Figure 2.12: *Receiver Operating Characteristic curve based on the PCL total score and 30-day ICD-10 PTSD*



A more detailed table of the sensitivity, specificity, positive predictive value and negative predictive value for each of the cut-offs presented in this figure is provided in Annex B (see Table B.30).

2.3.4 Discussion

Overall in the ADF, 3.0% scored in the very high range on the PCL, 3.7% scored in the high range and 8.7% scored in the moderate range.

2.3.4.1 Demographic characteristics

There was a significant sex by Service interaction from the multiple regression for PCL scores. Within both males and females, the Navy reported significantly higher mean PCL scores than the Air Force. In addition, Army males reported significantly higher mean PCL scores than Navy males. The only difference within Service to be observed was for the Air Force, in which females reported significantly higher mean PCL scores than males.

In relation to rank, non-commissioned officers were most at risk, reporting significantly higher mean PCL scores than both officers and other ranks.

Finally, there was a significant effect of deployment status on PCL scores. Those who had been on operational deployment reported significantly higher mean PCL scores compared to those who had never been on operational deployment.

2.3.4.2 ADF-specific cut-offs

Using a cut-off of 50 on the self-report PCL, 3.0% of the ADF population was likely to be at risk for developing post-traumatic stress disorder. This is notably lower than rates between 4.0% and 25.6% identified in other military samples and the estimated 12-month ICD-10 PTSD rate of 8.3% reported in Section 1 of this report.

One of the challenges in interpreting data from the PCL-C is determining the optimal cut-off for case identification of PTSD. Based on work with Vietnam combat veterans, the instrument's developers (Weathers et al., 1993) recommended a cut-off of 50 to indicate those likely to be diagnosed with PTSD. Forbes et al. (2001) in a study of Australian Vietnam veterans also recommended a cut-off of 50. A cut-off of 50 on the PCL has been used in a number of major deployment studies (Barrett et al., 2002; Fear et al., 2010; Hoge et al., 2004; Thomas et al., 2010). Hoge and colleagues, for example, reported a PTSD prevalence of 6.2% in US Afghan veterans and 12.9% in US Iraq veterans (Hoge et al., 2004). The rate of PTSD following deployment to Iraq and Afghanistan among UK forces has been reported as 4% (Fear et al., 2010). Other studies have reported higher rates, such as the US study of the National Guard, in which 25.6% scored above the cut-off for PTSD one year post-deployment (Thomas et al., 2010). It is important to note that differences in reported rates may be partially explained by systematic response bias or measurement issues.

In the Australian context, a PCL cut-off of 50 has been used to examine PTSD in military personnel returning from deployment in Bougainville, East Timor and the first Gulf War. In the Bougainville post-deployment health study, 6.5% of veterans were at risk of PTSD using a cut-off score of 50, compared to 8% in those who had not been deployed (McGuire, Waller et al., 2009a). Data from the East Timor study identified a risk rate for PTSD of 7.0% in the veterans and 6.0% in the comparison sample (McGuire, Waller et al., 2009b). Following the first Gulf War, a rate of 7.9% was found among the Gulf War veterans and 4.6% among the comparison group (McKenzie et al., 2004). A large proportion of participants in the latter study, however, were no longer active serving members of the ADF.

Post-deployment screening data for personnel returning from deployment to the Middle East Area of Operations (MEAO) in 2010 have shown that the majority of personnel report in the low risk category (91.3%) (Benassi & Steele, 2011). Only 1% of ADF personnel reported in the very high risk group (50+) and 1.4% of ADF personnel reported in the high risk group (40 to 49).

There is increasing evidence in the literature that a score of 50 is not the optimal cut-off for all populations or settings. Research has focused in particular on military populations, where under-reporting may occur because of the perception that the impact of seeking treatment will affect the individual's employability.

A recent study by Bliese and colleagues (2008) on combat forces identified that a more efficient cut-off for the PCL with US forces was between 30 and 34. Specifically, that study reported that with a cut-off score of 50 the positive predictive value for identifying PTSD was 0.56, with a specificity of 0.98 and a sensitivity of 0.24. In contrast, the positive predictive value for a cut-off score of 30 was 0.38, with a specificity of 0.88 and a sensitivity of 0.78. Although false positives and false negatives will always exist, ideally a cut-off should be associated with a specificity of approximately 0.90, while maintaining sensitivity values above 0.70.

Bliese and colleagues (2008) suggest that the cut-off score of 50 might be too high in a military primary care or post-deployment setting (because mental health stigmas result in symptom under-reporting), but that such a score may be suitable for treatment-seeking mental health populations.

Recent guidance from the US Department of Veterans Affairs National Center for PTSD states that 'a lower cut-off should be considered when screening or when it is desirable to maximise detection of possible cases' (Department of Veterans Affairs, 2010). A higher cut-off should be considered when attempting to make a definite diagnosis or to minimise false positives.

While the ADF originally employed a PCL-C cut-off of 50 for post-operational screening, a review by Nicholson (2006) prompted a change in mid-2008 (Department of Defence 2009). Policy was changed to recommend that deployed ADF personnel reporting scores between 30 and 39 were of medium risk and warranted further assessment or examination by a psychologist and possible referral, and that members reporting scores over 40 were of high risk and required more thorough assessment and may need further intervention such as counselling.

When using the cut-off of 40 recommended by the ADF in post-operational screening to warrant assessment and possible counselling, 6.7% of ADF personnel in the study reported in this risk range. In addition, using a cut-off of 30, 15.4% of ADF personnel reported PTSD symptomatology. These findings support the need to retain the bands recommended in the current ADF policy to ensure that members are being identified and treated appropriately.

To determine the optimal cut-off for detecting 30-day ICD-10 PTSD, ROC analysis was performed. Using this method, the optimal cut-off was 29, which maximised the sum of the sensitivity and specificity. This score is only slightly lower than the cut-off of 30 suggested by Nicholson (2006).

To report prevalence rates and for clinical diagnosis, a PCL-C cut-off of 53 is recommended (noting the importance of there being a trauma exposure and reaction (Criterion A) in a diagnosis of PTSD).

2.3.5 Proposed further analyses

This section reports the analyses completed at the time of publication. Proposed further analyses include:

- establishing optimal cut-offs on the PCL specific to each sex and Service in the ADF
- examining the symptom factor structure of PTSD (that is, re-experiencing [cluster B], avoidance/numbing [cluster C], and hyperarousal [cluster D]) in the ADF. We note that the three-factor structure of PTSD has been called into question by theorists and empirical findings. It has been repeatedly suggested that a four-factor model may best represent the latent structure of PTSD
- examining the relationship between PCL scores and lifetime ICD-10 PTSD
- examining the relationship between PCL scores and 12-month ICD-10 PTSD
- examining the relationship between the PCL and sub-threshold PTSD
- examining the relationship between PCL scores and DSM-IV disorder and determine cut-offs for 30-day, 12-month and lifetime DSM-IV PTSD
- examining the relationship between PCL scores obtained from the Mental Health Prevalence Study and other datasets, such as the RtAPS and POPS, to better map longitudinally emerging patterns of PTSD
- providing a detailed analysis of the psychometric differences between the PCL methodology used in the non-MEAO subpopulation and that used in the MEAO subpopulation
- examining the relationship between trauma exposure and scores on the PCL
- examining the nature of distress in ADF personnel who score high on the K10 but do not have a diagnosable disorder based on the CIDI.

2.4 Alcohol consumption – Alcohol Use Disorders Identification Test (AUDIT)

- 40% of the ADF reported drinking an alcoholic drink at least twice a week.
- 29% of the ADF drank more than five alcoholic drinks on a typical day when they were drinking.
- The number of self-reported problems with alcohol was low.
- 3.7% of personnel scored within a high risk category, indicating the need for counselling or treatment.
- Males showed a consistent pattern of greater alcohol consumption and alcohol-related problems compared to females across all Services.
- Air Force personnel were the least likely to report alcohol misuse.
- Other ranks most often scored in the risk categories that indicated hazardous or harmful alcohol use.
- Whether or not an individual had been on operational deployment had no significant impact on the amount of alcohol consumed on a typical day.
- The AUDIT is a useful tool for mapping patterns of consumption and the risky use of alcohol in the ADF.
- An AUDIT cut-off of 8 is effective as a clinical screening instrument to maximise the number of personnel identified for further assessment.
- Binge drinking rather than alcohol dependence may be a primary target for behavioural change in the ADF.

This section provides a detailed summary of the pattern of self-report alcohol use within the ADF population. It also summarises the optimal cut-offs in the ADF to detect 30-day ICD-10 any alcohol disorder, ICD-10 alcohol harmful use and ICD-10 alcohol dependence.

The Alcohol Use Disorders Identification Test (AUDIT) (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993) is a brief self-report instrument that is widely used in epidemiological and clinical practice for defining at-risk patterns of drinking. It was developed by the World Health Organization (WHO) for primary care setting after an extensive six-nation validation trial that included Australia (Babor, Higgins-Biddle, & Saunders, 2001).

The AUDIT examines the quantity and frequency of alcohol consumption, possible symptoms of dependence, and the reactions or problems related to alcohol. The first eight questions use a five-item continuous scale (scored 0 to 4), while the last two questions use a three-item scale (scored 0, 2 or 4). A final score is reached by summing across all 10 questions.

The AUDIT has been used by the ADF as an educational, epidemiological and clinical tool since the start of the ADF Mental Health Strategy. It was officially recognised as a tool to 'identify people whose drinking may pose a risk to their health, or who are already experiencing alcohol-related problems, including dependence' in ADF Health

Bulletin Number 15/2003 (Department of Defence, 2003). The ADF chose to use the AUDIT due to its extensive use across the world, its brevity and the large amount of supportive research (Swann, 2005). Members can self-score the AUDIT on the Mental Health Strategy website and learn about alcohol-related harm. It is also used in periodic health screening and in clinical settings. It has been part of the Post-operational Psychological Screen (POPS) process since its introduction in 1999 (Steele & Goodman, 2006). Due to its widespread use by Defence, it is important that the most appropriate cut-offs be applied to ensure that early detection and optimal care can be provided.

Currently, the recommended WHO risk categories are used with ADF populations and are the cut-offs used in the study. This process identifies four zones of risk:

- **Zone I** (scores of 0 to 7) represents those who would benefit from alcohol education.
- **Zone II** (scores of 8 to 15) represents those who are likely to require simple advice.
- **Zone III** (scores of 16 to 19) represents those for whom counselling and continued monitoring is recommended.
- **Zone IV** (scores of 20 to 40) requires diagnostic evaluation and treatment (Babor, de la Fuente, Saunders, & Grant, 1989; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001).

It should be recognised, however, that several other scoring methods and cut-off scores have also been developed and used in the Australian community for other populations (Adewuya, 2005; Pal, Jenar, & Yadav, 2004).

Receiver Operating Characteristic (ROC) analyses were used to determine the optimal cut-off in the ADF to detect 30-day ICD-10 any alcohol disorder, ICD-10 alcohol harmful use and ICD-10 alcohol dependence, examined using the CIDI.

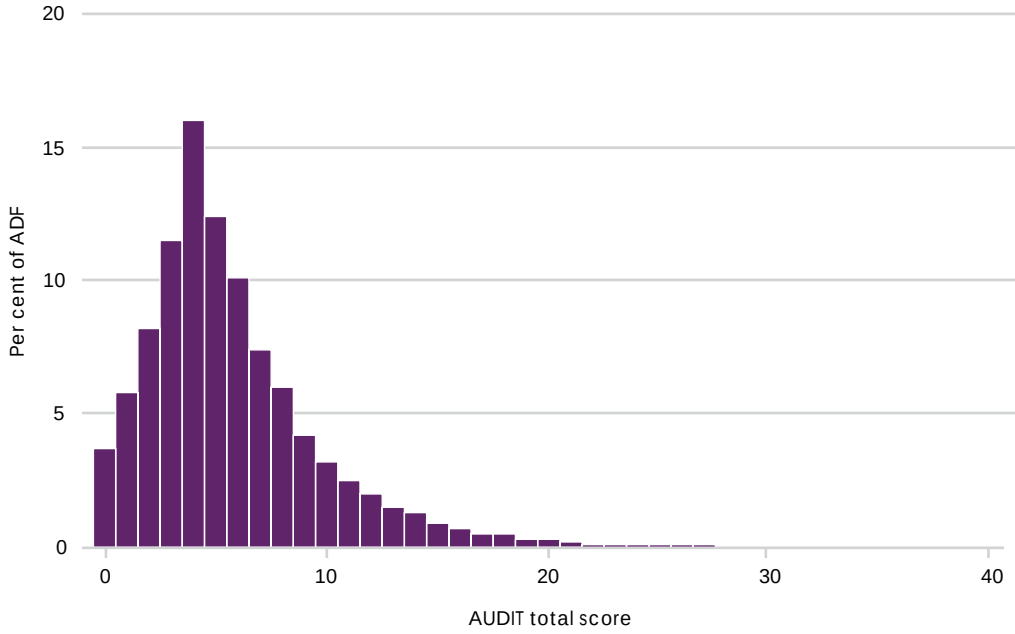
2.4.1 The distribution of AUDIT scores in the ADF

Table 2.23: *AUDIT score summary statistics*

	Estimate	95% CI
Minimum	0.0	
10%	1.1	1.0–1.1
25%	2.7	2.7–2.8
Median	4.5	4.5–4.6
Mean	6.0	5.9–6.0
75%	7.2	7.1–7.3
90%	10.9	10.8–11.0
95%	13.7	13.5–13.9
99%	20.3	19.7–20.8
Maximum	39.0	

Examination of the data on the AUDIT score quantiles chart (Table 2.23) suggests that about 25% of the ADF population has an audit score above 8, warranting some intervention, including simple advice, while less than 5% of the ADF population requires counselling or treatment. The distribution of AUDIT total scores for the entire ADF is presented in Figure 2.13.

Figure 2.13: *Distribution of AUDIT total scores in the ADF*



2.4.2 AUDIT in the ADF by sex

A comparison of the AUDIT risk categories in the ADF for males and females is presented in Table 2.24.

Table 2.24: *AUDIT risk categories in the ADF, by sex*

	Males		Females		Total	
	%	95% CI	%	95% CI	%	95% CI
Zone I	71.9	71.3–72.5	71.9	71.3–72.5	73.6	73.1–74.2
Zone II	24.1	23.5–24.7	24.1	23.5–24.7	22.7	22.2–23.2
Zone III	2.5	2.3–2.8	2.5	2.3–2.8	2.3	2.1–2.5
Zone IV	1.5	1.3–1.7	1.5	1.3–1.7	1.4	1.2–1.5

Overall in the ADF, 1.4% scored in Zone IV, indicating that diagnostic evaluation and treatment are required, and 2.3% scored in Zone III and hence should be recommended to receive counselling and continued monitoring. Most of the ADF (73.6%) scored in the lowest-scoring group.

From the multiple regression for AUDIT scores, there was a significant sex by Service interaction; therefore, the individual effect of sex will not be reported in this section.

2.4.3 AUDIT in different population subgroups

2.4.3.1 Rank

Table 2.25 provides a summary of AUDIT risk zones by rank.

Table 2.25: *AUDIT risk categories in the ADF, by rank*

	Officers			Non-commissioned officers			Other ranks		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Zone I	*9,667*	80.3	79.7–81.0	*16,878*	75.6	75.0–76.3	*10,303*	65.6	64.3–67.0
Zone II	*2,103*	17.5	16.8–18.1	*4,774*	21.4	20.8–22.0	*4,468*	28.5	27.2–29.8
Zone III	*204*	1.7	1.5–1.9	*408*	1.8	1.6–2.0	*561*	3.6	3.0–4.1
Zone IV	*59*	0.5	0.4–0.6	*260*	1.2	1.0–1.3	*365*	2.3	1.9–2.8

From the analysis of AUDIT scores, the personnel in the other ranks demonstrated the riskiest patterns of drinking, reporting significantly higher mean AUDIT scores than both officers (6.04 versus 4.77; mean difference 1.27, 95% CI 1.12–1.42) and non-commissioned officers (6.04 versus 5.04; mean difference 1.00, 95% CI 0.85–1.15). Officers were least likely to report risky patterns of drinking and significantly lower mean AUDIT scores than non-commissioned officers (4.77 versus 5.04; mean difference 0.27, 95% CI 0.18–0.35).

2.4.3.2 Service

Tables 2.26 to 2.28 report the AUDIT risk zones for each of the three Services by sex.

Table 2.26: *AUDIT risk categories in the Navy, by sex*

	Male			Female			Persons		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Zone I	*6,872*	72.3	70.9-73.6	*1,721*	81.8	79.7-83.9	*8,594*	74.0	72.9-75.2
Zone II	*2,228*	23.4	22.2-24.7	*346*	16.4	14.4-18.5	*2,574*	22.2	21.1-23.3
Zone III	*240*	2.5	2.0-3.0	*23*	1.1	0.5-1.7	*263*	2.3	1.8-2.7
Zone IV	*168*	1.8	1.3-2.2	*14*	0.6	0.2-1.1	*182*	1.6	1.2-1.9

Table 2.27: *AUDIT risk categories in the Army, by sex*

	Male			Female			Persons		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Zone I	*15,428*	67.5	66.6–68.5	*2,098*	83.5	81.9–85.1	*17,526*	69.1	68.3–70.0
Zone II	*6,251*	27.4	26.5–28.3	*366*	14.6	13.0–16.1	*6,617*	26.1	25.3–26.9
Zone III	*720*	3.2	2.8–3.5	*43*	1.7	1.1–2.3	*762*	3.0	2.7–3.3
Zone IV	*444*	1.9	1.7–2.2	*6*	0.2	0.0–0.4	*450*	1.8	1.5–2.0

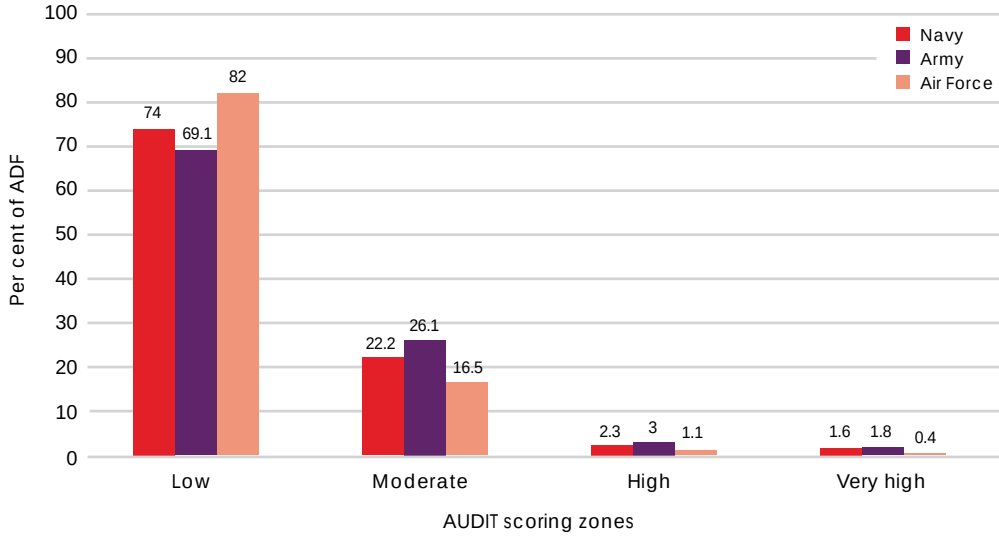
Table 2.28: *AUDIT risk categories in the Air Force, by sex*

	Male			Female			Persons		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Zone I	*8,772*	80.6	79.8–81.3	*1,956*	89.3	88.1–90.5	*10,728*	82.0	81.3–82.7
Zone II	*1,937*	17.8	17.0–18.6	*217*	9.9	8.7–11.0	*2,154*	16.5	15.8–17.1
Zone III	*132*	1.2	1.0–1.4	*15*	0.7	0.4–1.0	*147*	1.1	0.9–1.3
Zone IV	*49*	0.5	0.3–0.6	*3*	0.1	0.0–0.4	*52*	0.4	0.3–0.5

From the multiple regression of AUDIT scores, there was a significant sex by Service interaction. Within all three Services – the Navy (4.74 versus 6.29; mean difference –1.55, 95% CI –1.79, –1.31), the Army (4.75 versus 6.56; mean difference –1.81, 95% CI –1.98, –1.63) and the Air Force (4.03 versus 5.33; mean difference –1.30, 95% CI –1.44, –1.16) – females reported significantly lower mean AUDIT scores compared to males.

Within males, both the Navy (6.29 versus 5.33; mean difference 0.97, 95% CI 0.82, 1.12) and the Army (6.56 versus 5.33; mean difference 1.23, 95% CI 1.11, 1.34) reported significantly higher mean AUDIT scores than the Air Force. Army members were at the greatest risk, also reporting significantly higher mean AUDIT scores than the Navy (6.56 versus 6.29; mean difference 0.26, 95% CI 0.10, 0.42). Within ADF females, a similar pattern emerged: both Navy females (4.74 versus 4.03; mean difference 0.72, 95% CI 0.49, 0.95) and Army females (4.75 versus 4.03; mean difference 0.72, 95% CI 0.52, 0.91) reported significantly higher mean AUDIT scores than Air Force females. Due to the significant sex by Service interaction, separate Service effects will not be reported in this section; however, Figure 2.14 shows the distribution of AUDIT scores across the three Services.

Figure 2.14: *Proportion of Navy, Army and Air Force scoring in each of the four AUDIT scoring zones*



2.4.3.3 Deployment

Audit risk categories by deployment status are summarised in Table 2.29.

Table 2.29: *AUDIT risk categories in the ADF, by deployment status*

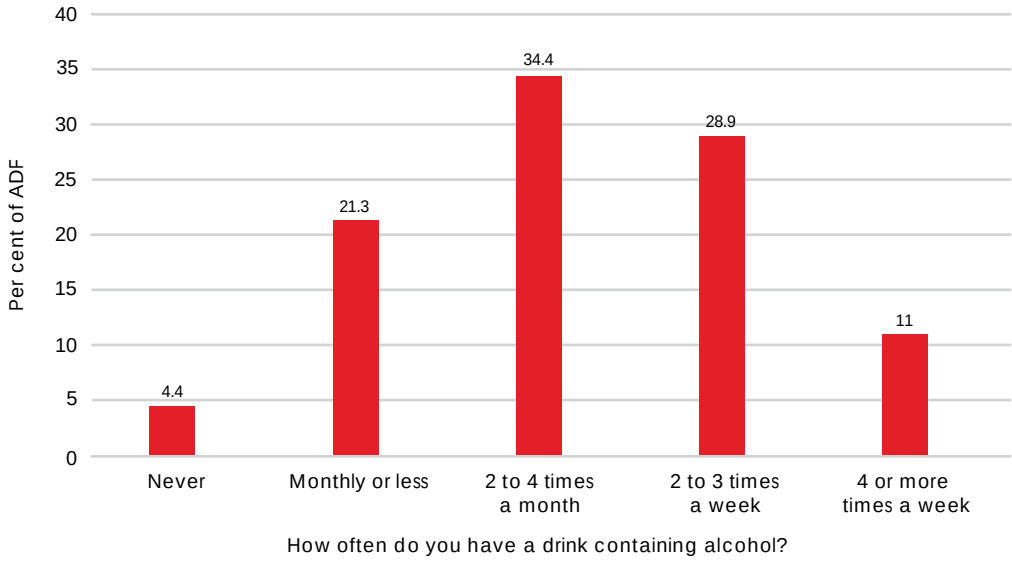
	Ever deployed			Never deployed		
	N	%	95% CI	N	%	95% CI
Zone I	*22,971*	74.0	73.4–74.7	*13,877*	73.0	72.0–74.0
Zone II	*6,951*	22.4	21.8–23.0	*4,394*	23.1	22.2–24.0
Zone III	*713*	2.3	2.1–2.5	*459*	2.4	2.0–2.8
Zone IV	*404*	1.3	1.1–1.5	*280*	1.5	1.2–1.8

There was no significant effect of deployment status on AUDIT scores.

A detailed table combining all data presented in Tables 2.24 to 2.29 is provided in Annex B for ease of comparison across all ADF population subgroups (see Table B.31).

2.4.4 Frequency of alcohol consumption in the ADF

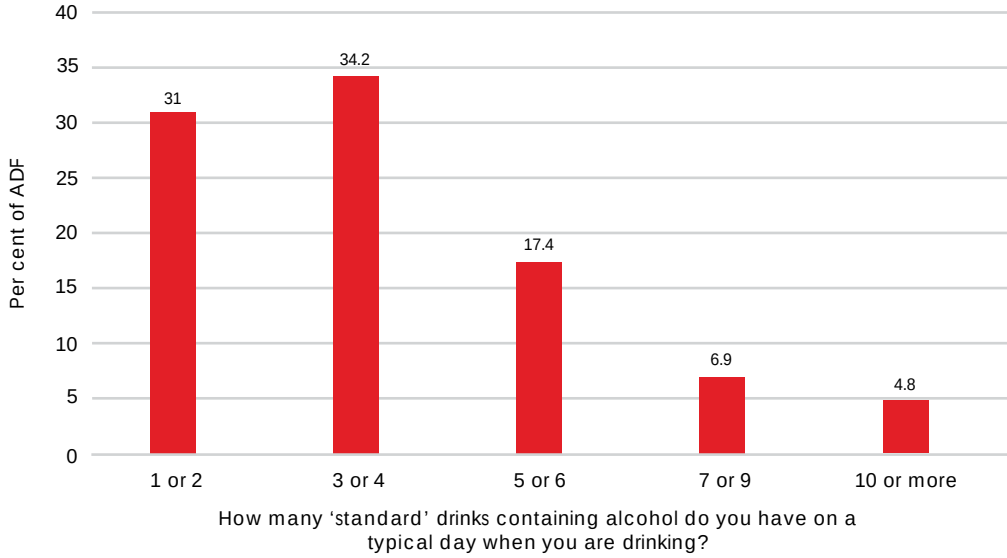
Figure 2.15: *Frequency of alcohol consumption in the ADF in a typical month*



As can be seen in Figure 2.15, most ADF personnel (34.4%) consume alcohol on average once a week or once a fortnight; 28.9% drink alcohol two to three times a week; and 11% drink four or more times a week. A small proportion of the ADF never drink alcohol (4.4%). A more detailed table of the frequency of alcohol consumption by sex, Service, rank and deployment is provided in Annex B (see Table B.32).

2.4.5 Quantity of alcohol consumed in the ADF

Figure 2.16: *Number of standard alcoholic drinks consumed by ADF personnel on a typical day*



On a typical day, most ADF personnel consume between one and four alcoholic beverages (65.2%); 17.4% of ADF personnel consume five or six drinks; and 11.7% consume more than seven drinks per day. A more detailed table of the quantity of alcohol consumed in the ADF by sex, Service, rank, and deployment is provided in Annex B (see Table B.33).

2.4.6 Self-reported drinking problem

Figure 2.17: *Percentage of ADF personnel reporting a problem with drinking*

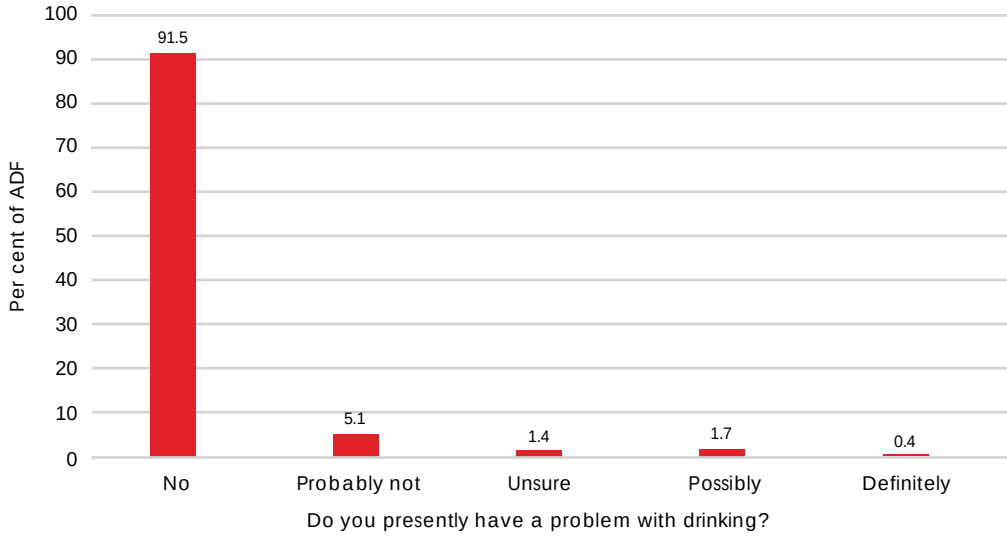
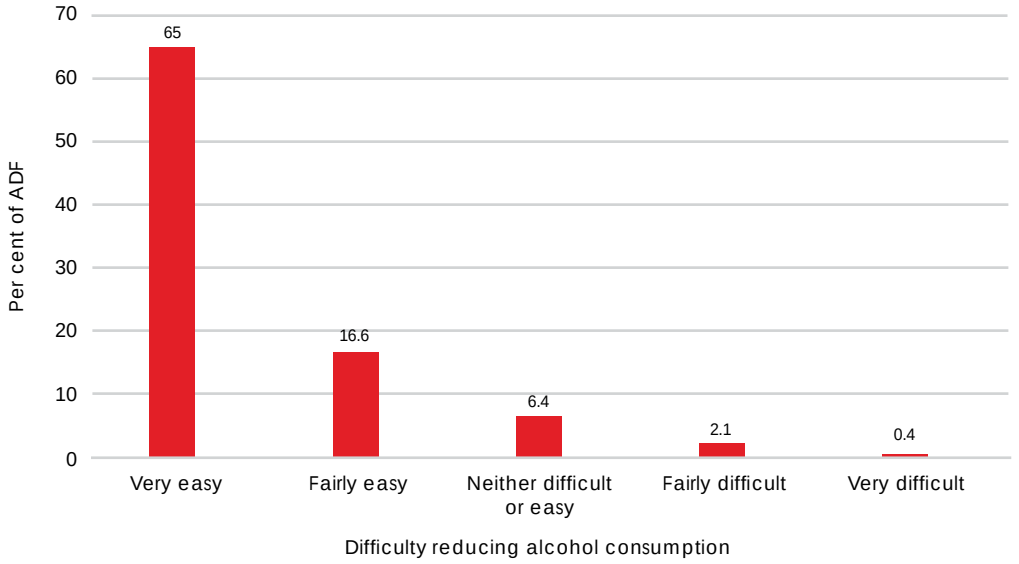


Figure 2.17 reports the percentage of ADF who reported a problem with drinking. Only a small proportion of the ADF reported possibly or definitely having a problem. Over 91.5% responded 'no' to presently having a problem. Further detail on the prevalence of self-reported drinking problems in the ADF by sex, Service, rank, and deployment is provided in Annex B (see Table B.34).

2.4.6.1 Self-reported difficulties reducing alcohol consumption

Figure 2.18: *Percentage of ADF members reporting anticipating difficulty reducing their alcohol intake over the next three months*



Finally, ADF members were asked to quantify how difficult they would find it to cut down or stop drinking in the next three months. Once again only a small proportion (2.5%) anticipated having some difficulty reducing their alcohol consumption. Further detail on the proportion of ADF personnel reporting difficulty reducing alcohol consumption by sex, Service, rank, and deployment is provided in Annex B (see Table B.35).

2.4.7 AUDIT cut-offs

Receiver Operating Characteristic (ROC) analysis was used to determine the optimal cut-off in the ADF to detect 30-day ICD-10 any alcohol disorder (Table 2.30), ICD-10 alcohol harmful use (Table 2.31) and ICD-10 alcohol dependence (Table 2.32), examined using the CIDI.

Table 2.30: *Properties of AUDIT optimal cut-offs for predicting 30-day ICD-10 any alcohol disorder*

	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
Cut-off	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
8	0.95	0.89–1.00	0.76	0.73–0.78	0.04	0.02–0.06	1.00	1.00–1.00
20	0.19	0.02–0.37	0.99	0.99–1.00	0.22	0.03–0.41	0.99	0.99–1.00

ROC analysis found that the optimal cut-off for detecting any ICD-10 alcohol disorder was an AUDIT score of 8 (matching the WHO recommended cut-off). This is the value that maximises the sum of the sensitivity and specificity (the proportion of those with and without the disorder who are correctly classified). The area under the ROC curve was 0.91 (95% CI 0.87–0.96). Using the cut-off of 8, the sensitivity was 0.95 (95% CI 0.89–1.00), indicating that the AUDIT is a good screening instrument to detect any ICD-10 alcohol disorder, because it will detect 95% of those with either alcohol abuse or alcohol dependence. The specificity, however, was slightly lower at 0.76 (95% CI 0.73–0.78), indicating that there is a 76% probability that those who do not have an ICD-10 alcohol disorder will score below the cut-off of 8 on the AUDIT.

The second cut-off of 20 is the value that brings the number of false positives and false negatives closest together, counterbalancing these sources of error most accurately. Therefore, this cut-off would give the closest estimate to the true prevalence of any 30-day ICD-10 alcohol disorder as measured by the CIDI.

Figure 2.19 shows the ROC curve for the AUDIT using cut-off values to predict any 30-day ICD-10 alcohol disorder. A more detailed table of the sensitivity, specificity, positive predictive value and negative predictive value for each of the cut-offs presented in this figure is provided in Annex B (see Table B.36).

Figure 2.19: *Receiver Operating Characteristic curve based on the AUDIT total score and any 30-day ICD-10 alcohol disorder*

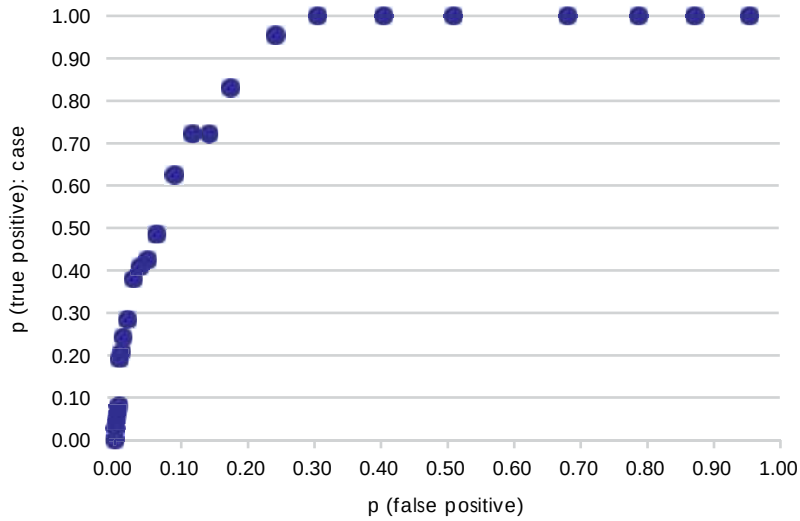


Table 2.31: *Properties of AUDIT optimal cut-offs for predicting 30-day ICD-10 alcohol harmful use*

	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
Cut-off	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
8	1.00	1.00–1.00	0.75	0.73–0.78	0.01	0.00–0.02	1.00	1.00–1.00
26	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	1.00	1.00–1.00

As reported in Table 2.31, ROC analysis found that the optimal cut-off for detecting ICD-10 alcohol harmful use was 8. The area under the ROC curve was slightly lower at 0.87 (95% CI 0.72–0.98). Using the cut-off of 8, the sensitivity was 1.00 (95% CI 1.00–1.00), indicating that 100% of ADF members with ICD-10 alcohol harmful use will score 8 or above on the AUDIT. Once again, the specificity was slightly lower at 0.75 (95% CI 0.73–0.78).

A cut-off of 26 would give the closest estimate to the true prevalence of any 30-day ICD-10 alcohol harmful use as measured by the CIDI.

Figure 2.20 shows the ROC curve for the AUDIT using cut-off values to predict 30-day ICD-10 alcohol harmful use. A more detailed table of the sensitivity, specificity, positive predictive value and negative predictive value for each of the cut-offs presented in this figure is provided in Annex B (see Table B.37).

Figure 2.20: *Receiver Operating Characteristic curve based on the AUDIT total score and 30-day ICD-10 harmful alcohol use*

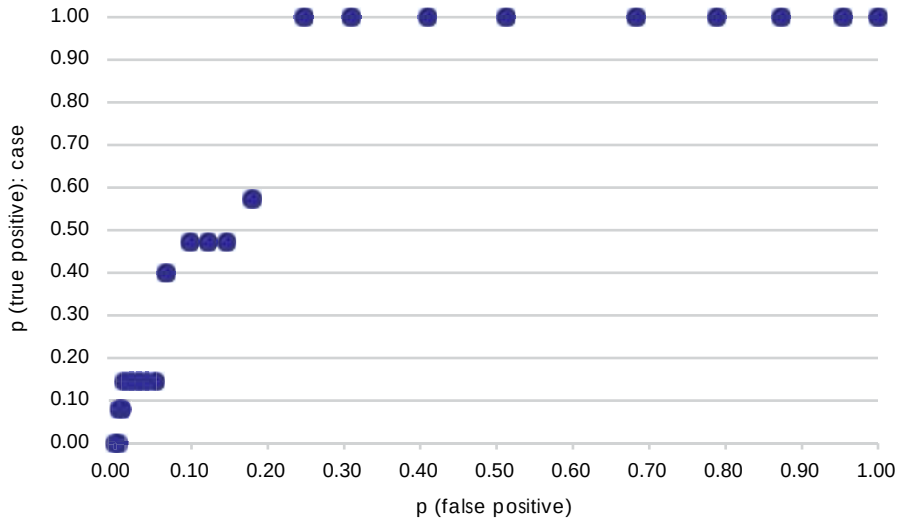


Table 2.32: *Properties of AUDIT optimal cut-offs for predicting 30-day ICD-10 alcohol dependence*

	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
Cut-off	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
9	0.91	0.81–1.00	0.83	0.81–0.85	0.04	0.02–0.06	1.00	1.00–1.00
21	0.08	0.01–0.18	0.99	0.99–1.00	0.09	0.02–0.19	0.99	0.99–1.00

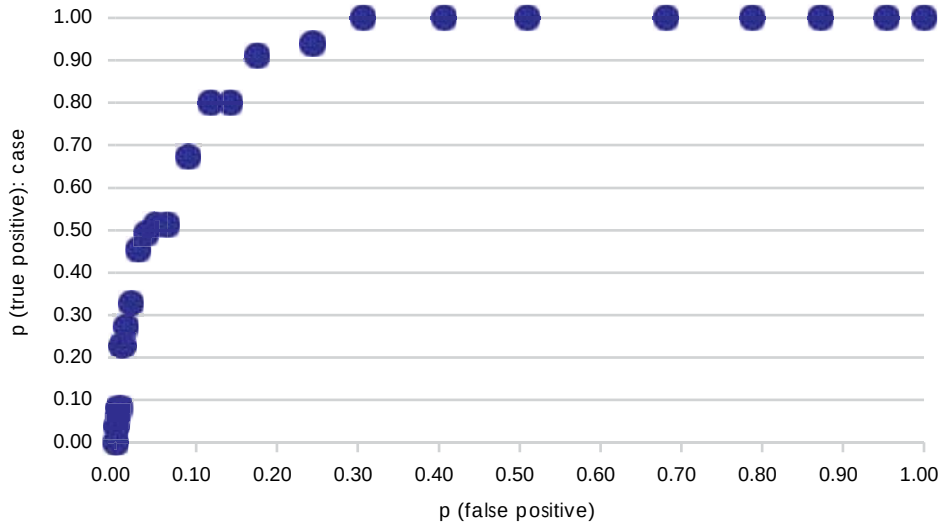
Finally, the psychometric properties of the AUDIT for detecting ICD-10 Alcohol Dependence are presented in Table 2.32. The optimal cut-off for detecting any ICD-10 alcohol dependence was 9, slightly higher than the optimal cut-off for ICD-10 alcohol harmful use. The area under the ROC curve was 0.93 (95% CI 0.89–0.97). Using the cut-off of 9, the sensitivity was 0.91 (95% CI 0.81–1.00), indicating that 91% of

ADF members with ICD-10 alcohol dependence will score 9 or above on the AUDIT. Once again, the specificity was slightly lower at 0.83 (95% CI 0.81–0.85).

A cut-off of 21 would give the closest estimate to the true prevalence of any 30-day ICD-10 alcohol dependence as measured by the CIDI.

Figure 2.21 shows the ROC curve for the AUDIT, using cut-off values to predict 30-day ICD-10 alcohol dependence. A more detailed table of the sensitivity, specificity, positive predictive value and negative predictive value for each of the cut-offs presented in this figure is provided in Annex B (Table B.38).

Figure 2.21: *Receiver Operating Characteristic curve based on the AUDIT total score and 30-day ICD-10 alcohol dependence*



2.4.8 Discussion

Although ADF members are regularly consuming significant quantities of alcohol, the number of self-reported problems is low. Forty per cent of the ADF report drinking an alcoholic drink at least twice a week and 29% of the ADF drink more than five alcoholic drinks on a typical day when they are drinking.

The study found that 3.7% of personnel scored within a high to very high risk category on the AUDIT, indicating the need for counselling or treatment.

2.4.8.1 Demographic characteristics

Males show a consistent pattern of significantly greater alcohol consumption and alcohol-related problems compared to females across all three Services.

Air Force personnel were the least likely to report alcohol misuse. Within both males and females, both Army and Navy personnel reported significantly higher average AUDIT scores compared to the Air Force.

In relation to rank, it is other ranks who most often score in risk categories that indicate hazardous or harmful alcohol use. The other ranks reported significantly higher average AUDIT scores than both officers and non-commissioned officers. Officers were least at risk, and had lower mean AUDIT scores than non-commissioned officers.

There was no significant difference between groups who had been deployed versus those who had not: 3.6% of deployed personnel reported in the high to very high risk category on the AUDIT. This is still higher than results from post-deployment screening data, in which a small proportion of people reported drinking at harmful (0.7%) or dependent (0.4%) levels in the reintegration phase (three to six months) following return from deployment to the MEAO. This suggests that when the AUDIT is administered by Defence personnel, members under-report levels of risky drinking.

The absence of a deployment effect in these data merits discussion. It contrasts with the results of several studies of US veterans of the Afghan and Iraq conflicts that indicated higher rates of alcohol misuse in the deployed versus non-deployed military personnel (Hoge, 2006; Jacobson et al., 2010; Seal et al., 2009) . The estimates for alcohol misuse among these veterans range from 12% to 40% (Burnett-Zeigler et al., 2011).

Since the scale was developed, numerous studies have confirmed the recommended cut-off of 8. Most studies have found favourable sensitivity and lower but acceptable specificity; however, there has been research improving detection of alcohol disorders by either lowering or raising the cut-off by one to two points. Studies examining the psychometric properties of the AUDIT are summarised in a review paper by de Meneses Gaya and colleagues (de Meneses Gaya, Zuardi, Loureiro, & Crippa, 2009).

There has been very little research in the validity of the AUDIT with an Australian military population. In one of the few studies in an Australian context, McKenzie and colleagues (McKenzie et al., 2006) examined the issue of caseness in 1,232 male Royal Australian Navy Gulf War Veterans. Using Receiver Operating Characteristic (ROC) analysis, they reported the optimal cut-off of 10 or greater to detect 12-month DSM-IV alcohol use or dependence. They found that the area under the ROC curve was 0.88 (95% CI 0.84–0.92), and that the optimal cut-off had a sensitivity of 0.85 (95% CI 0.73–0.80) and specificity of 0.77 (95% CI 0.75–0.79). Using this cut-off, 4.5% of the sample met criteria for DSM-IV alcohol use or dependence in the previous 12 months.

Subgroups particularly at risk of scoring above the cut-off included former smokers or those who had never smoked of lower rank who were not married or who were married and had a current diagnosis of major depression. Other studies examining the psychometric properties of the AUDIT are summarised in a review paper by de Meneses Gaya and colleagues (de Meneses Gaya et al., 2009).

Post-deployment screening data for personnel returning from deployment to the Middle East Area of Operations (MEAO) in 2010 showed that the majority of personnel reported in the low-risk Zone 1 (83.4%) (Benassi & Steele, 2011). Less than 1% reported drinking at harmful (0.7%) or dependent (0.4%) levels in the reintegration phase (three to six months) following return from deployment to the MEAO.

In interpreting the data from different nations and forces, the issue of the cut-offs for the definition of heavy drinking and/or substance abuse requires careful analysis. For example, Jacobson and colleagues (Jacobson et al., 2010) defined heavy weekly drinking as more than 14 drinks for males and more than seven drinks for females. Binge drinking was also defined as drinking four or more drinks for men and

four or more drinks for women at least one day of the week or on at least one day or occasion a year. Heavy weekly drinking was identified as being present in 4.8% of non-deployed troops and 6% of those who had been deployed with combat exposure. Binge drinking was identified in 19.3% of non-deployed and 26.6% of those deployed with combat exposure.

Within the ADF population, the AUDIT is a very effective measure for detecting individuals with an ICD-10 alcohol disorder (especially alcohol harmful use) and, therefore, with a cut-off of 8 it is a very effective screening instrument. However, at that cut-off it also identifies individuals who do not have the disorder. This highlights a limitation in using the AUDIT to determine prevalence of alcohol disorder if such a low cut-off is implemented. In contrast to other disorders, which are associated with very disorder-specific symptoms, the drinking patterns of many individuals identified using the AUDIT imitate the symptoms of abuse and dependence even though those individuals do not meet criteria for these disorders. This is emphasised by the very low positive predictive value in all three analyses and can be especially problematic when using the AUDIT to determine population prevalence estimates because it may lead to inflated results if such a low cut-off is implemented.

Rona and colleagues (Rona et al., 2010) highlighted a similar problem in their paper on alcohol use in the UK armed forces. In particular, when comparing the levels of function impairment in those consuming alcohol using the Short Form 36 Health Survey (SF36), they identified that scores greater than or equal to 20 on the AUDIT were consistently associated with impairment (OR 1.8, 95% CI 1.4–2.3), whereas AUDIT scores of less than 20 were not associated with increased impairment. In fact, moderate drinkers with an AUDIT score of 8 to 15 perceived their functioning to be better than that of those with an AUDIT score of less than 8. This suggests that, although a cut-off of 8 may be effective in detecting all cases of alcohol disorder, it is not until AUDIT scores reach 20 or more that significant impairment and mental health co-morbidity occur and that this may be where the true disorder lies.

This finding aligns very well with the current practice in the ADF of reporting AUDIT scores within bands. Each band has a tailored response based on the severity of the drinking behaviour. For those scoring between 8 and 15, brief intervention using simple advice and health education materials is recommended as the most appropriate course of action. For those reporting scores between 16 and 19, the initial plan is for a combination of simple advice, brief counselling and continued monitoring by a health or allied health professional. Finally, for those reporting AUDIT scores over 20 the ADF recommends that individuals be referred to specialist alcohol and other drug providers to consider withdrawal, pharmacotherapy and/or other more intensive treatments. These strategies are supported by the data analyses in this report.

The data summarised in this chapter confirm that the AUDIT is a useful tool for mapping patterns of consumption and the risky use of alcohol in the ADF. It indicated that a cut-off of 8 is effective as a clinical screening instrument to maximise the number of personnel identified for further assessment.

2.4.9 Proposed further analyses

This section reports the analyses completed at the time of publication. Proposed further analyses include:

- establishing optimal cut-offs on the AUDIT specific to each sex and Service in the ADF
- examining the symptom factor structure of the AUDIT in the ADF and its relationship to at-risk drinking
- examining the relationship between AUDIT scores and lifetime ICD-10 disorders, and the evidence for self-medication and the aggravation of mental disorders
- examining the relationship between AUDIT scores and 12-month ICD-10 disorders
- examining the relationship between AUDIT scores and DSM-IV disorders and determining cut-offs for 30-day, 12-month and lifetime DSM-IV alcohol abuse and dependence
- examining the relationship between AUDIT scores obtained from the Mental Health Prevalence Study and other datasets, such as the RtAPS and POPS, to better map longitudinally emerging patterns of alcohol consumption and mental disorders generally
- providing a detailed analysis of the psychometric differences between the AUDIT methodology used in the non-MEAO subpopulation and that used in the MEAO subpopulation
- examining the relationship between trauma exposure and scores on the AUDIT
- examining the patterns of drinking and associated risks and distress of those with high levels of consumption in the absence of mental disorder.

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SECTION 3
EXPLORING OCCUPATIONAL MENTAL HEALTH ISSUES

Contents

3.1 Overview of occupational mental health issues

The ADF Mental Health Prevalence and Wellbeing Study was designed to explore the range of predictive factors and outcomes for health and wellbeing that affect mental health in a military environment. This section of the report seeks to better understand some of the specific factors, through an investigation of the potential barriers to care and stigma in the ADF environment (section 3.2) and the significant risks associated with deployment and trauma exposure (section 3.3).

3.1.1 A military occupational mental health approach

Mental health and wellbeing in a military environment is unique, as military service is an occupation where personnel are selected, trained and prepared to face adverse, stressful and potentially traumatising situations. Meeting the demands these situations entail requires an approach that focuses on both strengthening resilience and enabling recovery. Defence not only has a duty of care to its members but also needs to ensure that any impairment does not compromise the operational capacity of the ADF (McFarlane & Bryant, 2007). The ADF is therefore developing an occupational approach to managing mental health and wellbeing.

A military occupational mental health and wellbeing framework is being developed by the five-nation Technical Cooperation Program panel on psychological and operational effectiveness, with Australia as the lead in this key collaborative area.

The framework provides a blueprint for developing interventions and research programs to meet the demands of military service. In order to meet the aims of strengthening resilience and enabling recovery in this model, command, the individual and the health care system must share responsibility. This joint approach allows the development of interventions in four key areas.

- **Foundation strengths.** Personnel need to have the foundation strengths to meet the challenges of military service. Interventions to ensure this include effective selection strategies, comprehensive training to develop confidence in occupational skills and knowledge, a command climate that builds cohesive and effective leader behaviours, a culture that reduces stigma and breaks down barriers to care, and training to build resilience and strengthen coping skills.
- **Risk reduction.** Effective interventions need to be in place to identify risks, monitor impact and facilitate mitigation strategies. These interventions range from use of trained peers who are literate in mental health and can identify and assist 'mates' requiring assistance through to comprehensive e-health surveillance systems.
- **Early intervention.** Supporting personnel exposed to high risk requires access to early intervention strategies for the individual, command and health care personnel. These include ensuring that personnel are trained in mental health first aid; that mental health screening programs are available that both identify individuals for referral and also identify issues and trends to command; that command has the support to conduct ceremonies and activities that promote mental health and wellbeing; and that evidence-based psycho-education is available.
- **Treatment and recovery.** Some individuals will suffer injuries; for these individuals, evidence-based treatment and rehabilitation programs that focus on the individual returning to work are essential and, where this is not possible, individuals should be supported through the transition process. Systems must be in place that fully

engage command, family and support networks in the care of the individual. Systems also need to be easily accessible and structured to encourage personnel to seek care.

One of the strengths of the Mental Health Prevalence and Wellbeing Study was its ability to explore occupational issues that contribute to the interventions in this model. The study focused on factors predictive of mental disorders and issues, as well as on wellbeing and health outcomes. The factors in the study covered a range of issues that were identified as priorities for Defence and as emerging issues from the international military literature.

Table 3.1: *Summary of occupational issues explored in the ADF Mental Health Prevalence and Wellbeing Study*

Goal 3: Occupational issues – Explore the impact of occupational stressors on the mental health and wellbeing of the ADF population	
Predictive factors	**Wellbeing outcomes**
Deployment history	Help seeking
Trauma exposure	Resilience
Level of social support	Physical health
Bullying	Mild traumatic brain injury
Recognition of service	Sleep and anger
Stigma and barriers to care	Family relationships
Dietary supplements	Support networks
Caffeine and tobacco use	Quality of life

From a management perspective, it is important that individuals have a range of core or foundation strengths. These include having the resilience and coping skills to deal with the challenges of an environment with significant occupational stress (Plat, Frings-Dresen, & Sluiter, 2011; van Wyk & Pillay-Van Wyk, 2010), which may relate to workload and relationships with supervisors. The ability to manage interpersonal conflict in the work environment and to form effective relationships with work colleagues is critical to general morale and cohesion and underscores the importance of developing effective leadership (Bartone, Ursano, Wright, & Ingraham, 1989).

During the course of an ADF member's career, a variety of significant exposures need to be documented. The risks associated with both warlike and non-warlike deployments to an individual's physical and psychological health are widely recognised (Hoge, 2010; McFarlane, 2010b; Sareen et al., 2007; Sareen et al., 2010). The exposure to trauma experienced by personnel on deployment is well documented and regularly assessed through ADF mental health screening processes.

Preventive medicine has been developed as an essential part of the responsibilities and activities of Defence medical practitioners. Practitioners assess the specific toxicological, infectious and other physical risks to the health of ADF members. An issue of particular importance in the environment of the wars in Afghanistan and Iraq is the exposure to improvised explosive devices. Considerable concern has been expressed in the literature about the prevalence of and potential for mild traumatic brain injury

(Iverson, Langlois, McCrea, & Kelly, 2009; Polusny et al., 2011). The systematic collection of information about the frequency of such exposures and their health consequences in ADF members has only just begun. These risks need to be assessed in the setting of the broader physical health of ADF members who have been deployed.

There is a longstanding history of concern about the physical health of veterans and their risk of post-deployment syndromes, whose aetiology is poorly understood (Gray, Gackstetter, Kang, Graham, & Scott, 2004; McFarlane, Ellis, Barton, Browne, & Van Hooff, 2008; H. V. Thomas, Stimpson, Weightman, Dunstan, & Lewis, 2006; Wessely, 2001). Monitoring the patterns of health behaviour and documenting possible exposures of importance is critical to an effective health approach in the ADF environment.

In the non-deployed environment, training schedules and the sex and age characteristics of the ADF population mean that there is a particular risk of motor vehicle accidents and interpersonal violence (Bryant et al., 2010; Creamer, McFarlane, & Burgess, 2005). Given the potential adverse health consequences of such exposure, profiling these risks in the ADF environment creates an opportunity for primary and secondary prevention. There are also occupational issues in a hierarchical system – such as bullying and harassment in the workplace – that have the potential to sap morale and present a major reputational risk for the ADF.

The psychological wellbeing of ADF members also needs to be considered in the context of their family and social relationships (Riviere & Merrill, 2011). ADF service involves the repeated dislocation of individuals from their social networks because of the need to be moved to different bases. The prolonged separations during deployment and military exercises create specific and unusual strains on domestic relationships. It is important for Defence to have an accurate appraisal of the consequences of such separations for the social support networks and family relationships of ADF members. A complex two-way relationship exists between mental health and social support. An effective social network that nurtures an individual's identity is critical to wellbeing. Equally, when an individual becomes depressed or develops a post-traumatic stress disorder or another anxiety disorder, those disorders can disrupt the individual's ability to use their social networks to ensure their wellbeing.

The known stresses in the ADF environment present opportunities to promote healthy behaviours and manage minor health concerns. Sleep disturbance and increased difficulties with anger modulation are well recognised in the post-deployment environment (Elbogen, Wagner, Fuller, Calhoun, & Kinneer, 2010; Seelig et al., 2010). At present, there is little visibility in the ADF about the prevalence and difficulties that they present to the general quality of life of those who have been deployed. A better understanding of these behaviours provides opportunities to develop programs and interventions that might enhance the wellbeing of ADF members, particularly given the potential for the self-reinforcing escalation of those problems.

The creation of programs that extend beyond the classical health consultation model is also important to address stigma and barriers to care. These complex health behaviours need to be well documented and understood if the systems of care developed in an occupational health environment are to be effective. Therefore, it is important to assess these issues systematically and document their association with particular disorders.

Finally, a series of behaviours that contribute to health outcomes can be modified and monitored in the ADF environment. These include the use of tobacco, caffeine and dietary supplements. While these are acceptable behaviours in the broader community, major public health interventions have focused on decreasing tobacco use, for example. The effectiveness of such strategies in the ADF environment has not been systematically examined. One example is the use of dietary supplements in a population that prizes physical fitness and is often on strenuous training regimes. The potential for hazardous use of such supplements requires careful examination.

3.1.2 Help seeking, stigma and barriers to care

Given the prevalence of mental disorders in the ADF, we must ask why so few military personnel receive care. Increasingly in military environments, strategies such as psycho-educational programs and post-deployment screening have been put in place to overcome barriers to care. However, certain cultural and attitudinal issues in the military intensify the reluctance to seek assistance (Gould et al., 2010).

Research indicates that two main factors contribute to the low uptake of mental health care: the fear of stigma and perceived barriers to care.

Stigma has been defined by Corrigan and Penn (1999) as negative and incorrect attitudes resulting from the acceptance and internalisation of 'prejudice or negative stereotyping' (p. 765). Greene-Shortridge, Britt and Castro (2007) further categorise stigma as public stigma, defined as the generalised negative societal attitude towards people with mental health issues, and self-stigma, in which attitudes are internalised and believed by the individual. Both forms of stigma can lead to low self-confidence and a sense of shame because the individual experiences symptoms that are perceived to be negatively viewed by peers, unit leadership and the general public (Harman & Lee, 2010).

Barriers to care are the organisational and procedural or administrative aspects of access to mental health care that may preclude or reduce access to mental health treatment and support. Barriers may include issues associated with confidentiality, anonymity and confidence in mental health service providers, and are influenced to varying degrees by the internalised stigma regarding access to care and the consequences of asking for help.

Stigma and barriers to care have been identified in a large number of studies. In a study of Royal Navy personnel, Langston et al. (2010, p. 13) noted the following inhibiting beliefs: that stress symptoms would not be taken seriously, that the person displaying stress would be perceived as weak, that the person would be suspected of malingering, and that it was against the cultural practice of not talking about problems. These views were widely reflected in the other studies that investigated personnel access to mental health care.

Major stigma issues in the reviewed literature (Britt et al., 2008; Gould et al., 2010; Greene-Shortridge et al., 2007; Hoge et al., 2004; Kim, Thomas, Wilk, Castro, & Hoge, 2010; Langston et al., 2010; Visco, 2009) include:

- embarrassment
- fear that accessing help would harm their career
- fear that members in their fighting units would treat them differently or have less confidence in them

- fear that the leaders of their fighting unit would treat them differently
- fear that unit leaders would blame them for the problem
- fear that they would be seen as weak.

The major barriers to care that were identified in these studies include:

- not knowing where to access help
- inability to schedule an appointment to access mental health services
- lack of transportation
- difficulty in getting time off work for an appointment
- costs of accessing mental health services
- concerns about confidentiality
- lack of confidence in mental health care professionals
- unwillingness to talk to civilian mental health providers because of a perceived lack of empathy regarding the deployment experience.

The types of practitioners that were accessed by personnel in these studies included mental health professionals, medical doctors, chaplains and clergy members, in either a military or civilian environment (Hoge et al., 2004; Visco, 2009). In general, consultation and treatment from general practitioners was found to be less stigmatised.

3.1.2.1 Factors contributing to stigma and barriers to care

One important cultural impediment addressed in all studies is the 'macho culture' of the military, which, during training, emphasises resilience, strength, toughness and self-sufficiency. Behaviours such as admitting psychological symptoms and expressing the need for care or assistance are traditionally not widely encouraged or accepted (Garcia, Finley, Lorber, & Jakupcak, 2011; Harman & Lee, 2010; Langston et al., 2010). The degree to which these attitudes are internalised will influence the extent that personnel feel able to access support for mental health issues (Maguen & Litz, 2006; Schnurr, Friedman, Sengupta, Jankowski, & Holmes, 2000; Wright et al., 2009). This is particularly pertinent in light of recent research suggesting a greater reported experience and expectation of stigma in those with significant mental and emotional stress who become aware of their need for help (Britt et al., 2008; Corrigan & Matthews, 2003; Gould et al., 2010; Greene-Shortridge et al., 2007; Hoge et al., 2004; Kim et al., 2010; Langston et al., 2010; Visco, 2009).

In the military environment, the consequences of accessing care need to be considered. Personnel who are suspected of suffering from a mental disorder may immediately be prevented from carrying weapons or piloting aircraft. The type of restrictions applied often identifies them as a 'head case'. Thus, the impact of administrative restrictions on individuals with mental disorders may serve as a further barrier to care to other personnel with similar problems.

The literature also reports that the type of symptoms or disorder experienced by a person affects whether or not they access care. Iversen et al. (2010) examined help seeking among UK service personnel. While 80% of service personnel sought some help to deal with their symptoms, most made use of informal sources of support, such as their spouse and friends, rather than seeking professional help. Only 23% of people with alcohol problems sought professional help, while those with depression

and post-traumatic stress disorder did so at higher rates. That difference highlights the same general reluctance to seek care by those with alcohol-related disorders in the civilian population.

Stigma and barriers to care have been identified in civilian workplaces as well (Fikretoglu, Guay, Pedlar, & Brunet, 2008; Wang, 2006). Wang (2006), for example, has shown that 80% to 96% of those employees who might benefit from care do not seek it because their workplace has failed to recognise their treatment needs. This barrier is in addition to the issues of accessibility and acceptability.

Section 3.2 explores patterns of help seeking, stigma and barriers to care identified by ADF members both with and without mental disorders. These issues were explored within each of the Services as well, to determine whether different issues emerged according to rank and sex.

3.1.3 Impact of multiple deployments and trauma exposure on reported psychological distress

There has been an ongoing interest in the impact of repeated deployments as a result of the operational tempo in the Middle East Area of Operations (MEAO). Particularly in the United States, there have been concerns about the number and duration of deployments of personnel and the impact this may have on the development of mental disorders. However, it remains unclear whether the adverse effects of multiple deployments are consequences of the duration of time in the combat zone, the number of deployments that a soldier has experienced, or the amount of traumatic stress the individual has been exposed to.

A study of 5,547 regular troops from the United Kingdom in 2003 found that individuals who had been deployed for 13 months or longer over a three-year period had a significantly greater risk (odds ratio (OR) = 1.5) of developing post-traumatic stress disorder (Rona et al., 2007). Similar trends were found for general psychiatric distress, severe alcohol problems and multiple physical symptoms. They found that the duration of deployment rather than the number of deployments was the critical factor. Other studies that have examined this question have focused on single deployments only and therefore do not clarify this issue (Ballone et al., 2000; Castro & Adler, 1999; Pierce, 1997; Ritzer, Campbell, & Valentine, 1999).

A more recent study examined the association between the number of deployments to Iraq and mental health outcomes in US forces (Reger, Gahm, Swanson, & Duma, 2009). Results of the study showed a significant association between the number of deployments and mental health outcomes, which included depression, post-traumatic stress disorder and alcohol usage. Soldiers with two deployments (OR=1.6, p=0.001) were more likely to report post-traumatic stress disorder than soldiers with one deployment. However, the study did not examine the relationship between combat exposures and multiple deployments.

Another study of US troops deployed to Afghanistan and Iraq (Hoge, Auchterlonie, & Milliken, 2006), rather than examining the impact of multiple deployments, investigated the relationship between the intensity of combat exposure and psychiatric morbidity. They found that the intensity of the combat experience was directly related to the mental health outcomes following deployment.

The US study contrasted with a study of UK troops deployed to Iraq (Iversen et al., 2009). The latter study reported no adverse health effects, namely post-traumatic stress disorder and general psychological distress, in deploying regular forces. In the study, the deployments to Iraq were compared with other deployments; however, combat exposures and other traumas that the non-MEAO veterans had experienced were not taken into account.

A further issue to consider is the typical longitudinal trajectory of symptoms and the role this might play in the development of psychopathology following deployment. Delayed onset of post-traumatic stress disorder is a well-documented phenomenon (McFarlane, 2010a). As a consequence, it is important to follow populations over time before prematurely making conclusions about the absence of an effect of deployment on health. For example, in a follow-up study of active and National Guard soldiers in the US following combat in Iraq (J. L. Thomas et al., 2010), rates of post-traumatic stress disorder, depression, alcohol misuse and aggressive behaviour remained stable for the active service soldiers, but the duration of the disorders increased by all forms of case definition from three to 12 months in the National Guard soldiers. This indicates that there may be some quite different trends in subgroups of serving personnel. However, those individuals with significant symptomatology are also at risk of being discharged, which means that these types of longitudinal studies focusing on active service components will miss the most affected individuals.

It is also important to establish longitudinal relationships for a range of disorders. For example, Marx et al. (2009) found that when the neuropsychological changes from deployment were followed up, it was only post-traumatic stress disorder that was associated with significant longer-term neuropsychological deficits. The same effect was not apparent for individuals with depression. Also, alcohol usage and deployment-related head injury were not related significantly to neuropsychological outcomes.

While there is a substantial literature demonstrating the relationship between the severity of exposure to traumatic stress and the risk of developing post-traumatic stress disorder (McFarlane, 2010a, 2010b), this relationship has not been examined in relation to multiple traumatisation. It remains a fundamentally important question whether multiple trauma exposures progressively sensitise an individual and increase the risk of subsequent psychiatric disorders. The only major literature on this question has examined the effects of childhood abuse and neglect on the risks of adult psychopathology. This relationship is well accepted (Houston, Shevlin, Adamson, & Murphy, 2011; Zinzow et al., 2011).

One of the most significant studies examining this question involved a longitudinal follow-up study of a community sample of children. It highlighted the prevalence of traumatic events in the community and found that a history of multiple traumas increased the risks of psychopathology (Copeland, Keeler, Angold, & Costello, 2007). Furthermore, it has been shown that subsequent trauma exposures significantly affect the remission of post-traumatic stress disorder (Perkonigg et al., 2005). Hence, the lifetime history of traumatic events is a critical issue in determining the outcome and probability of post-traumatic stress disorder and a range of other psychological disorders (Storr, Ialongo, Anthony, & Breslau, 2007).

While the current study did not examine the underlying mechanisms of psychological disorder, there is a substantial body of literature about the mechanisms of sensitisation and kindling which are core underlying principles to understanding the mechanisms and consequences of the progressive recruitment of symptomatology. A related construct, for example, is that of allostatic load (McFarlane, 2009).

Section 3.3 examines the impact of multiple deployments on the continuous measures of psychopathology used in this study, covering post-traumatic stress disorder symptoms, psychological distress, alcohol use and abuse, and depression. The relationship between these symptoms and the number of deployments experienced by ADF members is examined. Second, the number of traumatic stresses is examined in the participants of the survey who had not been deployed to the MEAO.

3.2 Help seeking, stigma and barriers to care

- Almost one in five ADF members in the sample reported seeking help in the past 12 months for a stress-related, emotional, mental health or family problem.
- Other ranks and non-commissioned officers were significantly more likely to seek help than officers.
- Personnel who had been deployed were significantly more likely to seek help.
- The highest rated barrier to care was concern that seeking help would reduce deployability.
- Few ADF personnel reported not knowing where to get help or difficulty in getting time off work.

A fundamental component of the ADF mental health strategy has been the development and implementation of mental health literacy programs. The focus of these programs has been to inform personnel when, where and how to seek care. This section provides insight into the effectiveness of these programs by exploring patterns of help seeking, stigma and barriers to care. The data presented are self-reported data from a weighted sample of ADF personnel who had not been deployed to the MEAO (N=30,848) or the Health and Wellbeing Survey sample (see Annex B for details). Associated demographic predictors, including sex, rank and Service status, are described. Finally, a summary is provided of how these rates compare to national and international literature.

Help seeking was assessed in the sample using the question: 'Have you sought help for a stress, emotional, mental health or family problem in the last 12 months?'

Stigma and barriers to care were explored by asking the sample to rate on a five-point scale (strongly disagree, disagree, uncertain, agree, strongly agree) how much each of the concerns listed below might affect their decision to seek help. The response categories of 'strongly agree' and 'agree' were then combined to produce the prevalence rates for each of the six types of stigma and barriers to care.

Three types of stigma were covered in this study:

- It would harm my career or career prospects.
- People would treat me differently.
- I would be seen as weak.

Three types of barriers to care were covered in this study:

- I wouldn't know where to get help.
- I would have difficulty getting time off work.
- It would stop me from being deployed.

3.2.1 Prevalence of help seeking in the health and wellbeing sample

Table 3.2 summarises help seeking in currently serving ADF members for the demographic predictors of sex, rank and Service status for personnel who had not been deployed to the MEAO.

Table 3.2: *Estimated percentage of the non-MEAO sample who had sought help for a stress-related, emotional, mental health or family problem in the previous 12 months*

		Number (N=30,848)	%	95% CI
Total sought help in past 12 months		5,522	17.9	17.3–18.5
Males		4,190	16.0	15.4–16.7
Navy		1,019	16.2	14.9–17.5
Army		2,183	15.9	15.0–16.9
Air Force		988	16.0	14.9–17.0
Females		1,332	28.5	27.0–29.9
Navy		403	26.9	24.1–29.7
Army		508	27.7	25.4–30.0
Air Force		420	31.2	28.7–33.7
Navy		1,422	18.3	17.1–19.5
Army		2,692	17.3	16.4–18.2
Air Force		1,408	18.7	17.7–19.7
Officers		1,126	16.0	15.2–16.9
Non-commissioned officers		2,042	18.3	17.4–19.1
Other ranks		2,354	18.6	17.5–19.8
Deployed	Never	3,277	17.9	17.1–18.7
	Ever	2,246	17.9	17.0–18.8
K10 caseness	Very high	707	56.3	52.2–60.5
	High	1,174	35.9	33.5–38.3
	Moderate	1,607	20.8	19.5–22.1
	Low	1,948	10.7	10.1–11.4

A total of 17.9% of ADF members reported seeking help for a stress, emotional or mental health problem in the previous 12 months, with females being significantly more likely to seek help (p=0.02).

In relation to rank, the overall proportion of personnel who sought help ranged from 16.0% to 18.6%. There was a significant effect of rank on help seeking; non-commissioned officers were 14% more likely to have sought help than officers (OR 1.14, 95% CI 1.04–1.3), and other ranks were 12% more likely to have sought help than officers (OR 1.12, 95% CI 1.01–1.25).

Deployment history was also a significant predictor of help seeking. Those who had been deployed were 10% more likely to have sought help than those who had never been deployed (OR=1.10, 95% CI 1.00–1.22, p=0.0497).

There were no significant differences in the help-seeking behaviour of men across the three Services. When compared to Air Force females, females in the Army were 23% less likely to have sought help (OR 0.77, 95% CI 0.65–0.92) and Navy females were 35% less likely (OR 0.65, 95% CI 0.53–0.80).

To assess the impact of psychological distress on help-seeking behaviour, the proportion of ADF personnel who were very high, high, moderate and low scorers on the Kessler Psychological Distress Scale (K10 – which measures psychological distress) and who sought help were examined. There was a significant difference between the help-seeking behaviour of ADF personnel with different K10 caseness ($p<0.001$). Those with very high K10 scores were 10 times more likely to have sought help over the past 12 months than those with low K10 scores (OR=10.53, 95% CI 9 8.78–12.61). Likewise, those with high K10 scores were four times more likely to have sought help than those with low K10 scores (OR=4.67, 95% CI 4.12–5.29). Finally, ADF personnel who scored in the moderate range were twice as likely to have sought help as those in the low range (OR=2.16, 95% CI 1.95–2.40). Discussion of results and suggested avenues for further research into the study findings are provided in section 3.2.3.

3.2.2 Prevalence of stigma and barriers to care in the health and wellbeing sample

Tables 3.3–3.6 and figures 3.1–3.4 report the perceived stigma and barriers to care in currently serving ADF members who had not been deployed to the MEAO, categorised by sex, rank, Service and deployment history. To simplify interpretation, the response options of 'strongly agree' and 'agree' have been collapsed together in all tables and figures, and the prevalence rates were based on this combined percentage.

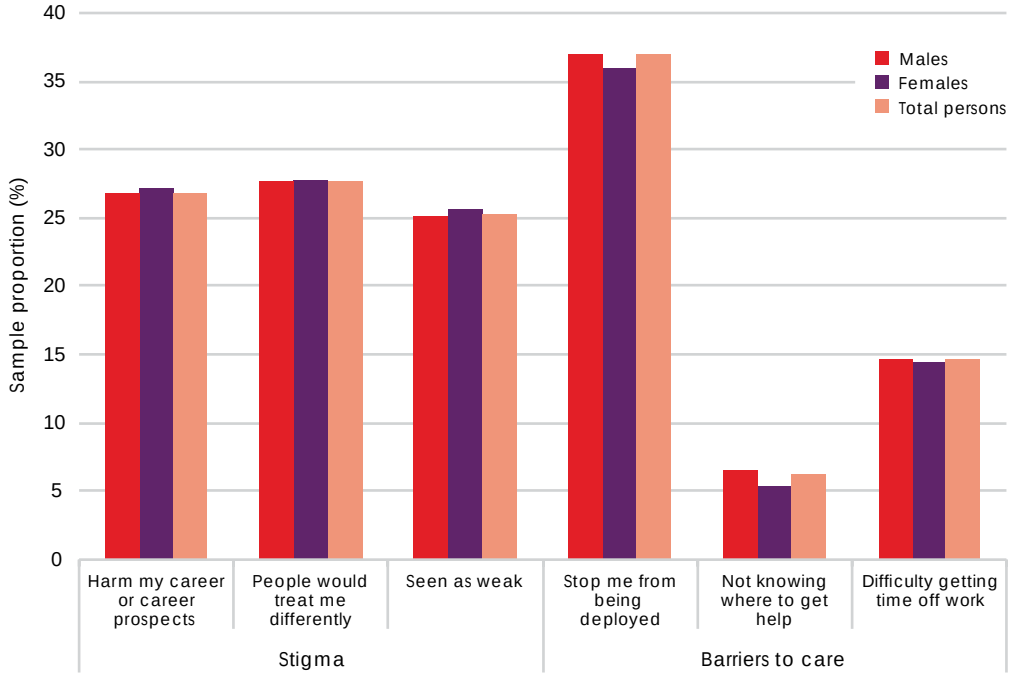
3.2.2.1 Sex

Table 3.3 and Figure 3.1 report the prevalence of stigma and barriers to seeking care for each of the three ranking groups: officers, non-commissioned officers and other ranks.

Table 3.3: *Estimated prevalence of reported stigma and barriers to care in the non-MEAO subpopulation, by type and sex*

	Males (N=26,169)			Females (N=4,679)			Persons (N=30,848)		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Not knowing where to get help	1,689	6.5	(6.0, 6.9)	255	5.4	(4.7, 6.2)	1,943	6.3	(5.9, 6.7)
Difficulty getting time off work	3,853	14.7	(14.0, 15.4)	676	14.5	(13.3, 15.6)	4,529	14.7	(14.1, 15.3)
Harm my career or career prospects	7,032	26.9	(26.1, 27.7)	1,274	27.2	(25.8, 28.7)	8,306	26.9	(26.2, 27.7)
People would treat me differently	7,213	27.6	(26.7, 28.4)	1,299	27.8	(26.3, 29.3)	8,513	27.6	(26.9, 28.3)
Seen as weak	6,593	25.2	(24.4, 26.0)	1,198	25.6	(24.2, 27.0)	7,791	25.3	(24.5, 26.0)
Stop me from being deployed	9,691	37.0	(36.1, 37.9)	1,684	36.0	(34.4, 37.6)	11,376	36.9	(36.1, 37.7)

Figure 3.1: *Proportion of combined 'agree' and 'strongly agree' responses to stigma and barriers to care, by type and sex*



As can be seen in both Table 3.3 and Figure 3.1, the highest rated barrier to ADF personnel seeking help for a stress, emotional or mental health problem was the concern that help seeking would reduce their opportunity to deploy. A total of 36.9% of ADF personnel (36.0% of females and 37.0% of males) agreed that this was a concern.

The highest rated perceived stigma was fear that seeking help would result in people treating them differently (27.6%, CI 95% 26.9, 28.3). This was followed closely by concerns that help seeking would harm their career or career prospects (26.9%, CI 95% 26.2, 27.7) and fear that they would be seen as weak (25.5%, CI 95% 24.5, 26.0).

Awareness of where to seek help was widespread, and most people indicated that they thought they could get time off work to seek help. Only 6.3% of ADF personnel reported not knowing where to get help as a barrier to seeking help, and only 14.7% reported that they would have difficulty getting time off work.

The only significant difference for sex in relation to stigma and barriers to care was that females were 21% more likely than males to know where to get help (OR 0.79, 95% CI 0.67–0.94).

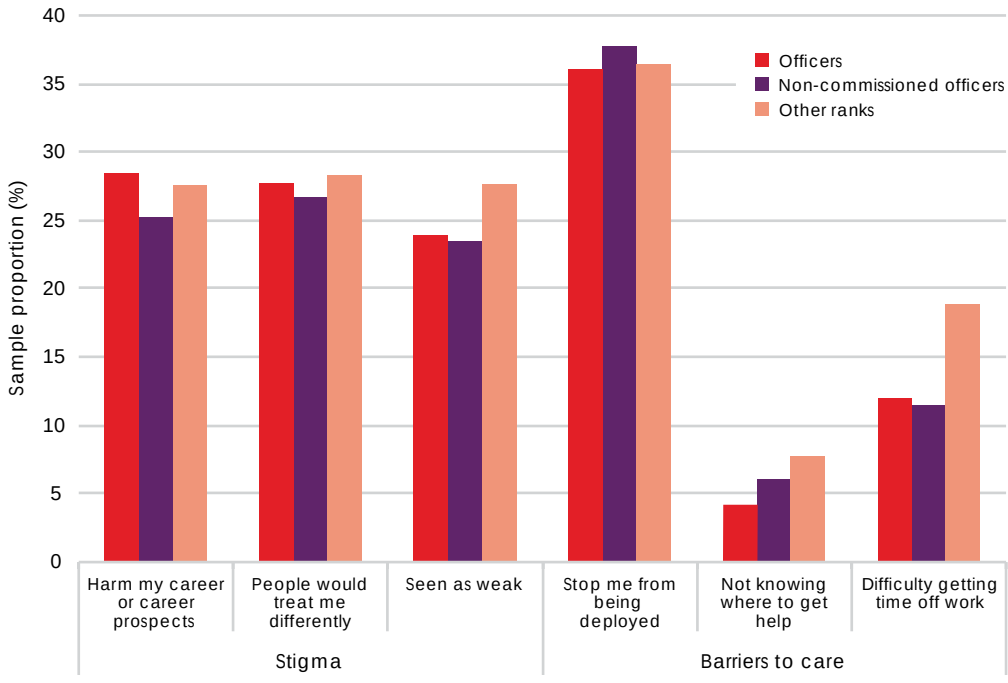
3.2.2.2 Rank

Table 3.4 and Figure 3.2 report the prevalence of stigma and barriers to seeking care for each of the three ranking groups: officers, non-commissioned officers and other ranks.

Table 3.4: *Prevalence of reported stigma and barriers to care in the ADF, by type and rank*

Wellbeing outcomes	Officers N=7,017			Non-commissioned officers N=11,188			Other ranks N=12,643		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Not knowing where to get help	295	4.2	(3.7, 4.7)	677	6.1	(5.5, 6.6)	971	7.7	(6.8, 8.5)
Difficulty getting time off work	844	12.0	(11.2, 12.8)	1,292	11.5	(10.8, 12.3)	2,393	18.9	(17.7,20.2)
Harm my career or career prospects	1,992	28.4	(27.3, 29.5)	2,832	25.3	(24.4, 26.3)	3,482	27.5	(26.1, 29.0)
People would treat me differently	1,945	27.7	(26.6, 28.8)	2,982	26.7	(25.7, 27.6)	3,585	28.4	(26.9, 29.8)
Seen as weak	1,683	24.0	(22.9, 25.0)	2,624	23.5	(22.5, 24.4)	3,485	27.6	(26.1, 29.0)
Stop me from being deployed	2,539	36.2	(35.0, 37.4)	4,227	37.8	(36.7, 38.8)	4,610	36.5	(34.9, 38.0)

Figure 3.2: *Proportion of combined 'agree' and 'strongly agree' responses to stigma and barriers to care, by rank*



Although the primary barrier to care for all ranks was concern about not being able to deploy, this was not significantly different across the rank groups. Generally, other ranks were significantly more likely to report barriers to care while officers, significantly, were more likely to report stigma.

In terms of barriers, other ranks were 85% more likely not to know where to get help compared to officers (OR 1.85, 95% CI 1.55–2.20) and 29% less likely than non-commissioned officers (OR 1.29, 95% CI 1.10–1.51). Non-commissioned officers were also 43% less likely than officers not to know where to seek care (OR 1.43, 95% CI 1.23–1.68).

Other ranks were 45% more like to agree that they would have difficulty getting time off work than officers (OR 1.45, 95% CI 1.29–1.62) and 65% more likely than non-commissioned officers (OR 1.65, 95% CI 1.47–1.85). However, non-commissioned officers were 12% less likely than officers to agree that they would have difficulty (OR 0.88, 95% CI 0.79–0.98).

In terms of stigma, officers were 83% more likely to agree that seeking help would harm their career compared to other ranks (OR 0.83, 0.75–0.91) and 77% more likely than non-commissioned officers (OR 0.77, 95% CI 0.71–0.83). Similarly, officers were 88% more likely than other ranks to agree that they would be treated differently (OR 0.88, 95% CI 0.80–0.97) and 86% more likely than non-commissioned officers (OR 0.86, 95% CI 0.79–0.93).

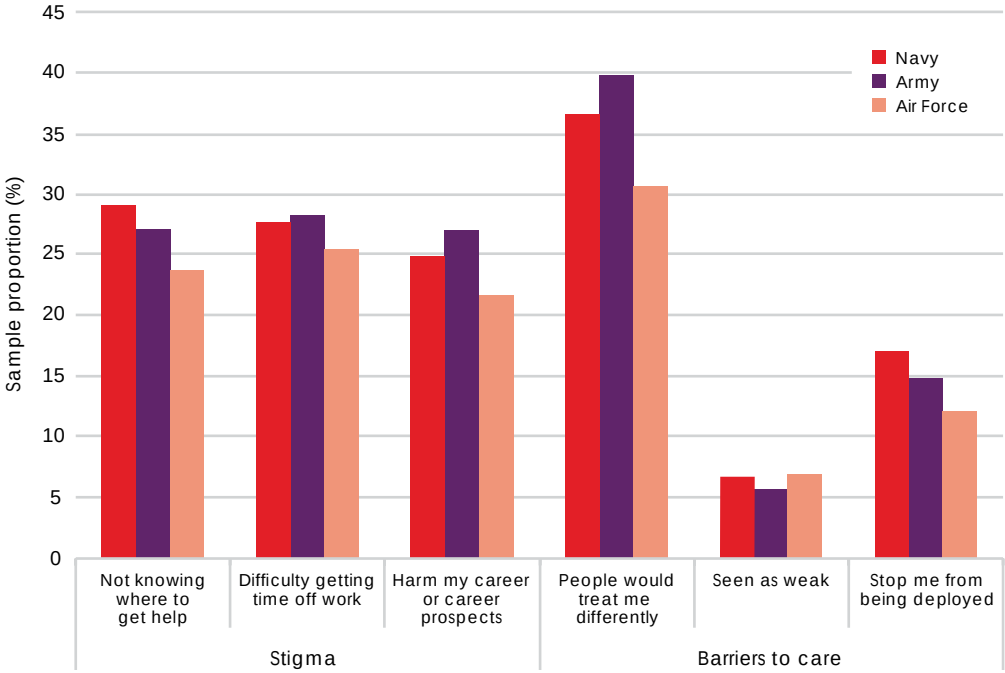
3.2.2.3 Service

Table 3.5 and Figure 3.3 summarise the prevalence of stigma and barriers to seeking care for each of the single Services: Navy, Army and Air Force.

Table 3.5: *Prevalence of reported stigma and barriers to care in the ADF, by type and Service*

	Navy (N=7,784)			Army (N=15,526)			Air Force (N=7,538)		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Not knowing where to get help	528	6.8	(5.9, 7.6)	889	5.7	(5.1, 6.3)	526	7.0	(6.3, 7.7)
Difficulty getting time off work	1,320	17.0	(15.7, 18.2)	2,299	14.8	(13.9, 15.8)	910	12.1	(11.2, 12.9)
Harm my career or career prospects	2,273	29.2	(27.7, 30.7)	4,239	27.3	(26.2, 28.4)	1,793	23.8	(22.7, 24.9)
People would treat me differently	2,168	27.9	(26.4,29.3)	4,413	28.4	(27.3, 29.6)	1,931	25.6	(24.5, 26.7)
Seen as weak	1,938	24.9	(23.5, 26.3)	4,215	27.1	(26.0, 28.3)	1,638	21.7	(20.7, 22.8)
Stop me from being deployed	2,859	36.7	(35.2, 38.3)	6,202	39.9	(38.7, 41.2)	2,315	30.7	(29.5, 31.9)

Figure 3.3: *Proportion of combined 'agree' and 'strongly agree' responses to stigma and barriers to care, by type and Service*



Air Force personnel, in general, were the least likely to report stigma and barriers to care. This pattern was consistent for both males and females.

Army personnel were 29% less likely than those in the Air Force to know where to get help (OR 0.71, 95% CI 0.60–0.84).

Personnel in the Army were 21% more likely than those in the Air Force to agree that they would have difficulty getting time off work (OR 1.21, 95% CI 1.07–1.37), while those in the Navy were 32% more likely than those in the Air Force (OR 1.32, 95% CI 1.17–1.50).

Those in the Army were 16% more likely than those in the Air Force to agree that seeking help would harm their career or career prospects (OR 1.16, 95% CI 1.06–1.27). Those in the Navy were 21% more likely to agree than those in the Air Force (OR 1.21, 95% CI 1.09–1.34).

Those in the Army were 14% more likely than those in the Air Force to agree that people would treat them differently (OR 1.14, 95% CI 1.04–1.24).

Those in the Army were 30% more likely than those in the Air Force to agree that they would be seen as weak (OR 1.30, 95% CI 1.19–1.43). Those in the Army were 23% more likely than those in the Navy to agree that they would be seen as weak (OR 1.23, 95% CI 1.11–1.36).

Those in the Army were 40% more likely than those in the Air Force to agree that seeking support would stop them from being deployed (OR 1.40, 95% CI 1.29–1.52). Those in the Navy were 21% more likely than those in the Air Force to agree that it would stop them from being deployed (OR 1.21, 95% CI 1.10–1.27). Those in the Army were 16% more likely than those in the Navy to agree that it would stop them from being deployed (OR 1.16, 95% CI 1.06–1.27).

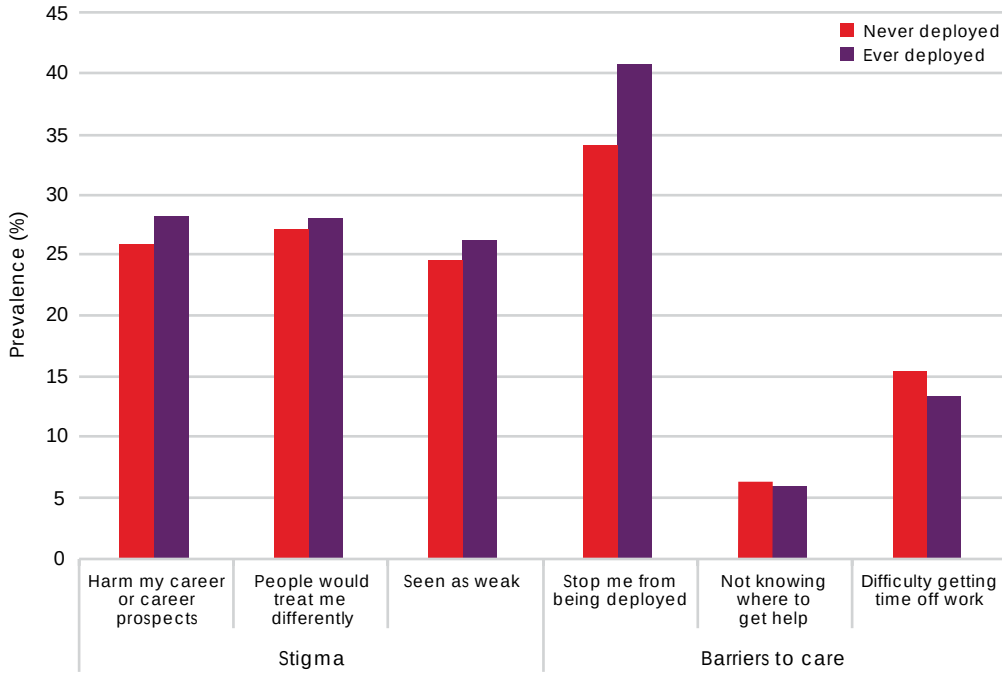
3.2.2.4 Deployment history

Table 3.6 and Figure 3.4 compare the stigma and barriers to care in ADF members who had been on an operational deployment (deployed) and those who had not (never deployed).

Table 3.6: *Prevalence of reported stigma and barriers to care in the ADF, by type and deployment history*

	Never deployed (N=16,966)			Deployed (N=12,899)		
	N	%	95% CI	N	%	95% CI
Not knowing where to get help	1,187	6.5	(5.9, 7.0)	757	6.0	(5.4, 6.6)
Difficulty getting time off work	2,836	15.5	(14.7, 16.3)	1,693	13.5	(12.6, 14.4)
Harm my career or career prospects	4,752	26.0	(25.0, 26.9)	3,553	28.3	(27.2, 29.5)
People would treat me differently	4,993	27.3	(26.3, 28.2)	3,520	28.1	(27.0, 29.2)
Seen as weak	4,497	24.6	(23.6, 25.5)	3,294	26.3	(25.2, 27.4)
Stop me from being deployed	6,252	34.1	(33.1, 35.2)	5,124	40.9	(39.7, 42.1)

Figure 3.4: *Prevalence of reported stigma and barriers to care in the ADF, by type and deployment history*



Those who had been deployed were 15% more likely to indicate that seeking help would harm their career prospects than those who had never been deployed (OR 1.15, 95% CI 1.05–1.25).

Those who had been deployed were 25% more likely to agree that it would stop them from being deployed than those who had never been deployed (OR 1.25, 95% CI 1.16–1.35).

Those who had been deployed were 12% more likely to agree that they would be seen as weak than those who had never been deployed (OR 1.12, 95% CI 1.02–1.22).

3.2.3 Discussion

Almost one in five ADF members in the sample (17.9%) reported that they had sought help for a stress-related, emotional, mental health or family problem in the last 12 months. Female personnel were more likely to have sought help than males, and non-commissioned officers and the other ranks were significantly more likely to have sought help than officers. Deployment history was also a significant predictor of help seeking. Those who had been deployed were 10% more likely to have sought help than those who had never been deployed. In relation to Service differences, there was no difference for males, but Air Force females were more likely to have sought help than their Army and Navy counterparts.

The strongest finding was the relationship between help seeking and psychological distress. ADF members with high levels of psychological distress (measured using the K10) were more than 10 times more likely to have sought help in the past 12 months than those with low levels of psychological distress.

The highest rated barrier to personnel seeking help for a stress-related, emotional, mental health or family problem was concern that seeking help would reduce their deployability. The highest rated perceived stigmas were that people would treat them differently and that seeking care would harm their careers.

These perceptions have implications for the ADF, and consideration is required as to what administrative steps and processes could assist in uncoupling the rationale that equates mental health concerns with negative and perceived punitive results for social and personal status within the unit or group and career opportunities. From an organisational perspective, the risks should be counterbalanced between deploying individuals and having them attend work with mental disorders that are undiagnosed and untreated versus ensuring that treatment is received while the individual continues in their role. Deployment is an important part of military service; the fact that it is also the most common barrier preventing ADF personnel from seeking care is a matter that requires careful consideration. The challenge is to develop a system where an individual can seek care but there is no effect on the capability of a unit if a less-than-ready person is deployed.

On a more positive note, the responses suggest that people have adequate information about where to access help and that difficulty getting time off work in order to access services is not a common concern. This indicates that information on resources is easily accessible to most ADF members.

An interesting finding is the similar proportions of females and males who are concerned with being seen as ‘weak’. This finding contradicts previous research, which has traditionally focused on issues of hyper-masculinity among military males. The findings in this section suggest that military expectations regarding resilience, strength, toughness and so on are internalised by females as well as males, and that both fear ‘loss of face’ by being seen as weak.

Air Force personnel were, in general, the least likely to report stigma and barriers to care. This pattern was consistent for both males and females. The only concern that was more prevalent among Air Force personnel was not knowing where to get help. This implies a need for a greater focus on de-stigmatisation of mental problems in both the Army and the Navy.

3.2.3.1 Comparison with international militaries

The help-seeking behaviours, as well as stigma and barriers to care, identified in the ADF show a similar pattern to those reported in other military samples. International research suggests that, although a significant proportion of personnel report mental disorders following deployment, a relatively small percentage of these personnel access mental health support and intervention (Gould et al., 2010; Hoge et al., 2004; Kim et al., 2010).

In their study of Army and Marine veterans returning from combat deployments in Iraq and Afghanistan, Hoge et al. (2004) found that, while the percentage of personnel with mental health issues following deployment ranged from 17.1% to 19.5%, only 23–40% of that sample had sought help for their symptoms in the 12 months post-deployment. Similarly, Kim et al. (2010) found, in a study of active duty and National Guard personnel returning from deployments to Iraq, that although 33–45% of personnel reported mental health issues in the three months post-deployment, only 13–17% of that population accessed any form of mental health care within that time. Similarly, of those reporting mental health issues in the 12 months post-deployment, only 13–27% of the sample accessed care.

3.2.4 Proposed further analyses

This section reports the analyses completed at the time of publication. Proposed further analyses include:

- identifying the barriers to care that exist within medical and psychological services relating to assessment and appropriate referral
- identifying and contrasting the characteristics of those individuals who are able to access care and those who identify barriers
- examining the relationship between stigma and barriers to care in those with and without disorders.

3.3 Impact of multiple deployments and trauma

This section examines the impact of multiple deployments on the continuous measures of psychopathology used in this study, covering post-traumatic stress disorder symptoms, psychological distress, and alcohol use and abuse. The relationship between these symptoms and the number of deployments experienced by the ADF population is examined. Second, the number of traumatic stresses is examined in the participants of the survey who had not been deployed to the MEAO or the Health and Wellbeing Survey sample.

Self-reported post-traumatic stress was assessed using the Posttraumatic Stress Disorder Checklist (PCL) (Weathers, Litz, Herman, Huska, & Keane, 1993). The 17 questions of the PCL are scored from 1 to 5 and are summed to give a total score of between 17 and 85. PCL scores are categorised into four risk levels: low (17–29), moderate (30–39), high (40–49) and very high (50–85), which provide an indication of the risk of post-traumatic stress disorder.

General psychological distress was assessed using the Kessler Psychological Distress Scale (K10), a short 10-item screening questionnaire for psychological distress that was developed in the context of the US national co-morbidity study (Kessler et al., 2002). The 10 questions of the K10 are scored from 1 to 5 and are summed to give a total score of between 10 and 50. The categories of low (10–15), moderate (16–21), high (22–29) and very high (30–50) that are used in this report are derived from the cut-offs of the K10 that were used in the Australian national Mental Health and Wellbeing Survey (Slade, Johnston, Oakley Browne, Andrews, & Whiteford, 2009).

Alcohol consumption and problem drinking were examined using the Alcohol Use Disorders Identification Test (AUDIT) (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993), a brief self-report screening instrument developed by the World Health Organization. This instrument consists of 10 questions that examine the quantity and frequency of alcohol consumption (questions 1 to 3), possible symptoms of dependence (questions 4 to 6), and the reactions or problems related to alcohol (questions 7 to 10). The AUDIT is an instrument that is widely used in epidemiological and clinical practice for defining at-risk patterns of drinking. Babor et al. (2001), in describing the significance of the different zones of risk, suggest that scores of 0–7 (Zone I) represent those who would benefit from alcohol education; scores of 8–15 (Zone II), those who are likely to require simple advice; scores of 16–19 (Zone III), those for whom counselling and continued monitoring is required; and scores of 20–40 (Zone IV), those who require diagnostic evaluation and treatment.

The total numbers of major operations that ADF members had been deployed on was obtained from the self-report questionnaire. These operations were defined according to the following criteria: warlike, peacekeeping, peace-monitoring or humanitarian support. The lifetime number of deployments was categorised as follows: 0, 1, 2, 3, 4, 5, 6 or more.

Lifetime exposure to trauma was examined as part of the post-traumatic stress module of the Composite International Diagnostic Interview. The events examined were combat (military or organised non-military group); being a peacekeeper in a war zone or place of ongoing terror; being an unarmed civilian in a place of war, revolution, military coup or invasion; living as a civilian in a place of ongoing terror for political, ethnic, religious or other reasons; being a refugee; being kidnapped or held captive;

being exposed to a toxic chemical that could cause serious harm; being in a life-threatening automobile accident; being in any other life-threatening accident; being in a major natural disaster; being in a man-made disaster; having a life-threatening illness; being beaten by a parent or guardian as a child; being beaten by a spouse or romantic partner; being badly beaten by anyone else; being mugged, held up, or threatened with a weapon; being raped; being sexually assaulted; being stalked; having someone close to you die; having a child with a life-threatening illness or injury; witnessing serious physical fights at home as a child; having someone close experience a traumatic event; witnessing someone badly injured or killed or unexpectedly seeing a dead body; accidentally injuring or killing someone; purposefully injuring, torturing or killing someone; seeing atrocities or carnage such as mutilated bodies or mass killings; experiencing any other traumatic event; and experiencing any other event that the participant did not want to talk about. The number of total lifetime events experienced by each individual was initially categorised in the same way as deployments. In addition, the number of traumatic events was treated as a continuous variable (see figures 3.5–3.9).

3.3.1 Number of deployments

The tables in this section summarise the impact of multiple deployments on self-reported psychological distress (K10), self-reported post-traumatic stress (PCL) and self-reported alcohol abuse and dependence (AUDIT).

3.3.1.1 Psychological distress (K10)

Table 3.7: *Odds ratio (CI) for levels of psychological distress for number of deployments compared to deployment status*

No. of deployments	At least 'very high'	At least 'high'	At least 'moderate'
6+ versus 0	0.76 (0.59, 1.00)	0.71 (0.62, 0.82)	0.59 (0.54, 0.65)
5 versus 0	0.56 (0.38, 0.84)	0.59 (0.49, 0.72)	0.65 (0.57, 0.74)
4 versus 0	0.55 (0.39, 0.76)	0.64 (0.54, 0.75)	0.70 (0.63, 0.78)
3 versus 0	0.82 (0.66, 1.03)	0.71 (0.62, 0.81)	0.65 (0.59, 0.71)
2 versus 0	0.48 (0.39, 0.61)	0.64 (0.57, 0.72)	0.62 (0.57, 0.66)
1 versus 0	0.79 (0.65, 0.96)	0.77 (0.69, 0.86)	0.69 (0.64, 0.74)
p-value	p<0.001	p<0.001	p<0.001

The data in Table 3.7 indicate that there is a significant effect, with more distress being associated with a lower number of deployments.

In particular, if psychological distress is considered to be at least moderate compared to low, it can be concluded that individuals with at least one deployment are less likely to have very high, high or moderate psychological distress compared to those who have never been deployed.

In other words, the probability of obtaining a low psychological distress score appears to be greater for those who have been deployed than for those who have never been deployed. This indicates that, for the various level of psychological distress as measured by the K10, more deployments are associated with lower scores.

For example, the probability of having a score of at least moderate was 31% (OR 0.69, 95% CI 0.64, 0.74) less likely than a K10 score of low after one deployment compared to those who had never been deployed. With six or more deployments, compared to those that have never been deployed, the probability of scoring at least moderate on the K10 was 41% (OR 0.59, 95% CI 0.54, 0.65) less likely than a K10 score of low. This can be more easily seen in the predicted probabilities presented in Table 3.8 and Figure 3.5.

Table 3.8: *Predicted probabilities for each level of K10 for each deployment category*

	0	1	2	3	4	5	6+
Very high	4.3%	3.4%	2.1%	3.5%	2.4%	2.4%	3.3%
High	10.8%	8.6%	8.0%	7.6%	7.7%	7.0%	7.9%
Moderate	25.9%	20.2%	19.7%	19.7%	22.5%	21.7%	18.0%
Low	59.1%	67.8%	70.2%	69.1%	67.4%	68.9%	70.9%

Figure 3.5: *Stacked area plot of the probability of K10 caseness for each level of deployment*

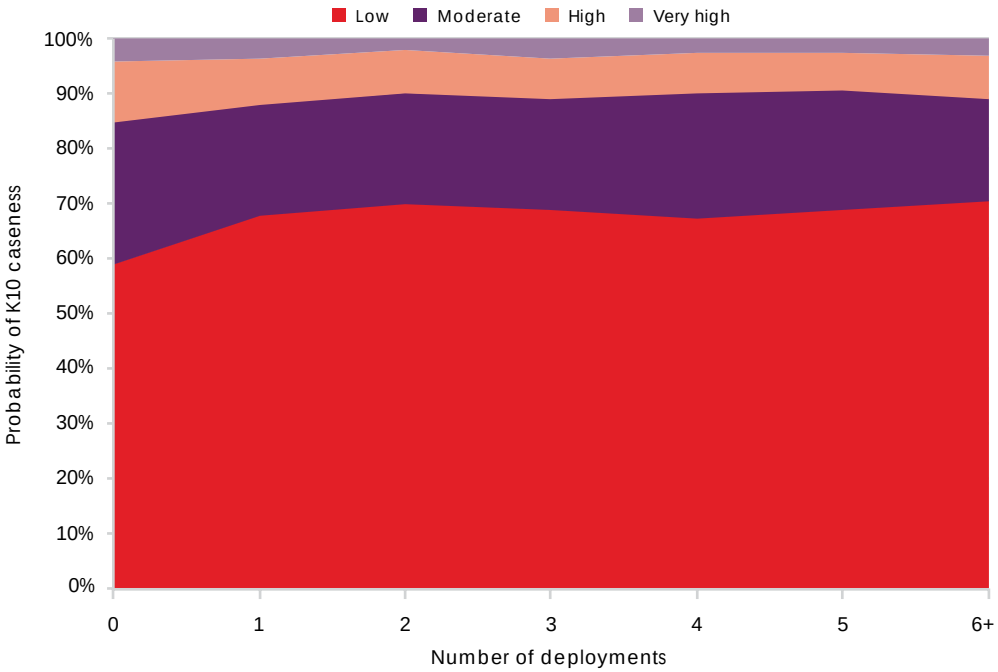


Figure 3.5 reflects Table 3.8 schematically. The increase in the low K10 bands is highlighted. This suggests that there is a degree of resilience that emerges in the groups who have had multiple deployments. However, the data do not indicate whether this is an associated or causal relationship. Importantly, individuals who develop psychological symptoms on deployment will be screened and identified using the ADF mental health screening process, which includes an immediate Return to Australia Psychological Screen (RtAPS) and a three- to six-month Post-operational Psychological Screen (POPS). Furthermore, individuals with significant symptomatology will be referred for treatment and, due to the medical employment classification system, may not

be redeployed until they are no longer symptomatic. Therefore, these results may demonstrate a healthy worker effect in the ADF for those categories and individuals who are deployed on multiple occasions.

3.3.1.2 Post-traumatic stress (PCL)

Table 3.9: *Odds ratio (CI) for levels of post-traumatic stress for number of deployments compared to deployment status*

Deployment	At least 'very high'	At least 'high'	At least 'moderate'
6+ versus 0	1.13 (0.9, 1.4)	1.09 (0.93, 1.27)	1.21 (1.09, 1.35)
5 versus 0	1.46 (1.10, 1.95)	1.17 (0.95, 1.44)	1.21 (1.05, 1.40)
4 versus 0	0.95 (0.72, 1.3)	1.01 (0.84, 1.21)	1.20 (1.07, 1.35)
3 versus 0	1.41 (1.14, 1.74)	1.15 (0.99, 1.33)	1.18 (1.06, 1.32)
2 versus 0	0.91 (0.75, 1.30)	0.92 (0.81, 1.05)	1.03 (0.94, 1.13)
1 versus 0	0.96 (0.79, 1.17)	0.99 (0.87, 1.13)	0.99 (0.91, 1.09)
p-value	p=0.001	p=0.15	p<0.001

It can be concluded from Table 3.9 that there is a significant difference between the numbers of deployments if a cut point of very high PCL (p=0.001) or if a cut point of at least moderate (p<0.001) is used.

If a cut point of at least moderate is considered, the results suggest that those deployed at least three times are between 18% and 21% more likely to have at least a moderate PCL score compared to those who have never been deployed. These data contrast to the K10 data. In general, there appears to be a weak but statistically significant effect of three or more deployments. An odds ratio of 1.18 (95% CI 1.06–1.31) is observed in individuals having at least a moderate score. This effect is also apparent in the very high band with an odds ratio of 1.41 (CI=1.14–1.74). Table 3.10 and Figure 3.6 show the predicted probabilities for each cut point of PCL against number of deployments.

Table 3.10: *Predicted probabilities for each level of PCL for each deployment category*

PCL	0	1	2	3	4	5	6+
Very high	2.8%	2.7%	2.5%	3.9%	2.6%	4.0%	3.1%
High	3.7%	3.7%	3.5%	3.5%	3.9%	3.5%	3.8%
Moderate	8.0%	8.0%	8.9%	9.4%	10.4%	9.6%	10.1%
Low	85.5%	85.6%	85.1%	83.3%	83.1%	83.0%	83.0%

Figure 3.6: *Stacked area plot of the probability of PCL caseness for each level of deployment*

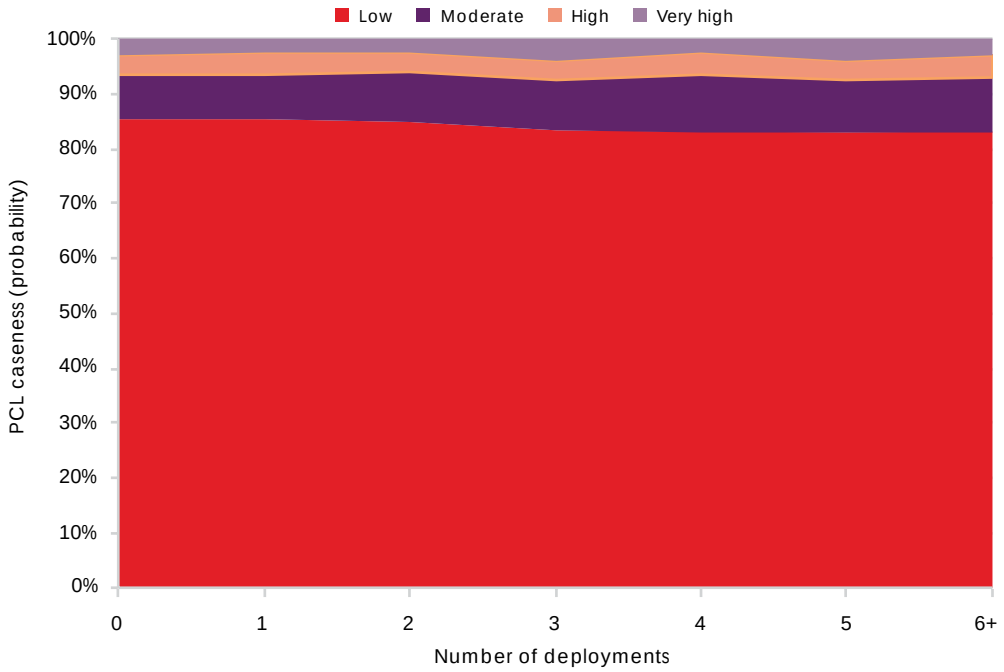


Figure 3.6 represents these findings schematically. Although there is a slight decline in the proportion of people with low PCL scores (and therefore an increase in the other bands), this effect seems minor. This result emphasises that the effects of multiple deployments, while statistically significant, do not have a major impact on the severity of post-traumatic symptoms. The majority of individuals are able to go on multiple deployments without developing major symptoms of post-traumatic stress disorder. Approximately 83% of individuals who safely deploy more than six times do so without significant adverse effects, according to the PCL.

In contrast to the K10, which is a global measure of psychological morbidity, the PCL does not demonstrate any resilience effect. To the contrary, there is a small but statistically significant effect suggesting progressive sensitisation. Again, these data do not take account of the fact that a number of individuals who develop significant symptoms after deployment are not redeployed. Hence, these data suggest that the screening process maintains a healthy workforce to be deployed but does not necessarily indicate a lack of significant impact of deployment.

3.3.1.3 Alcohol use and abuse (AUDIT)

Table 3.11: *Odds ratio (CI) for levels of alcohol use and abuse for number of deployments compared to deployment status*

Deployment	At least Zone IV	At least Zone III	At least Zone II
6+ versus 0	0.83 (0.54, 1.27)	0.84 (0.65, 1.09)	0.83 (0.75, 0.92)
5 versus 0	0.35 (0.16, 0.77)	0.58 (0.40, 0.85)	1.00 (0.87, 1.14)
4 versus 0	0.85 (0.50, 1.45)	0.83 (0.62, 1.12)	0.94 (0.84, 1.06)
3 versus 0	0.92 (0.60, 1.41)	0.81 (0.62, 1.05)	0.97 (0.88, 1.07)
2 versus 0	0.90 (0.64, 1.27)	0.92 (0.75, 1.13)	0.96 (0.88, 1.04)
1 versus 0	0.93 (0.65, 1.33)	1.05 (0.85, 1.30)	0.93 (0.85, 1.01)
p-value	p=0.3	p=0.05	p=0.03

Table 3.12: *Predicted probabilities for each level of AUDIT for each deployment category*

AUDIT	0	1	2	3	4	5	6+
Zone IV	1.5%	1.4%	1.3%	1.4%	1.3%	0.5%	1.2%
Zone III	2.4%	2.7%	2.3%	1.8%	2.0%	1.8%	2.1%
Zone II	23.1%	21.5%	22.6%	23.3%	22.6%	24.7%	20.2%
Zone I	73.0%	74.5%	73.9%	73.6%	74.1%	73.0%	76.5%

If a cut point of Zone IV is used, there is no effect due to deployment (p=0.3). This demonstrates that there is no statistically significant effect of multiple deployments on individuals who develop significant alcohol problems. There was a marginally statistically significant effect (P=0.05) for individuals scoring in at least Zone III on the AUDIT. This effect is possibly due to those individuals with at least a Zone III score being less likely (42%) to exhibit alcohol problems with five deployments compared to those with no previous deployments (OR 0.58, 95% CI 0.40, 0.85). If a cut point of at least Zone II is used, the effect is similar, with some evidence that those with more than six deployments are less likely (17%) to exhibit alcohol problems than those with no deployments (OR 0.83, 95% CI 0.75–0.92).

Figure 3.7: *Stacked area plot of the probability of AUDIT caseness for each level of deployment*

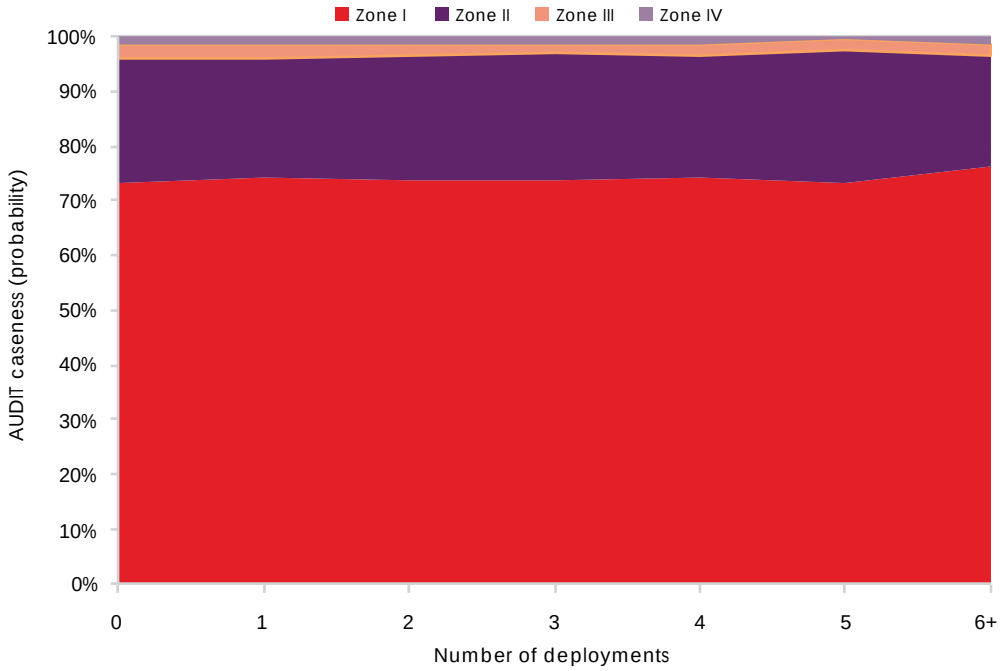


Figure 3.7 represents this data schematically. There is no significant impact demonstrated at multiple deployments on alcohol consumption patterns in the ADF. In particular, recent deployments to the Middle East have been associated with periods of abstinence. Hence, while there is typically considered to be an association between deployment and increased alcohol consumption, the lack of availability of alcohol on deployments suggests that this factor may need to be considered in explaining these data.

3.3.2 Number of traumatic events

The tables in this section summarise the impact of traumatic events on self-reported psychological distress (K10), self-reported post-traumatic stress (PCL) and self-reported alcohol abuse and dependence (AUDIT).

3.3.2.1 Psychological distress (K10)

Table 3.13: *Odds ratio (CI) for each cut point describing K10 for number of traumatic events compared to no previous traumatic events*

Traumatic events	At least 'very high'	At least 'high'	At least 'moderate'
6+ versus 0	2.90 (2.24, 3.76)	2.89 (2.50, 3.34)	2.50 (2.26, 2.76)
5 versus 0	1.46 (1.01, 2.12)	1.74 (1.43, 2.11)	1.75 (1.53, 2.00)
4 versus 0	1.30 (0.92, 1.84)	1.52 (1.26, 1.84)	1.61 (1.41, 1.82)
3 versus 0	1.26 (0.90, 1.76)	1.49 (1.25, 1.79)	1.41 (1.24, 1.59)
2 versus 0	1.52 (1.08, 2.12)	1.25 (1.03, 1.50)	1.34 (1.19, 1.51)
1 versus 0	1.10 (0.77, 1.57)	1.15 (0.96, 1.38)	1.04 (0.92, 1.17)
p-value	p<0.001	p<0.001	p<0.001

The data in Table 3.13 indicate that there is a significant effect associated with the number of traumatic events at each cut point. In particular, those who experienced more than six traumatic events were 2.9 times more likely to be classified as very high on the K10 than those who had not experienced an event. This is also reflected in the other cut points, where probability of at least a moderate K10 is more likely (2.5 times) for those who had experienced six or more traumatic events compared to those who experienced no events.

In summary, these data highlight that the cumulative risk of multiple trauma exposures becomes statistically significant for the moderate or above categories once an individual has experienced two or more traumas (see Table 3.13). This effect is also apparent in the high category. For multiple deployments, this is particularly significant for six or more traumas. The probabilities are reflected in Table 3.14, which demonstrates that with zero traumas the probability of having a low score is 70.1%, contrasted with six or more, when it decreases to 48.4%.

Table 3.14: *Predicted probabilities for each level of K10 for each trauma category*

K10	0	1	2	3	4	5	6+
Very high	2.6%	2.8%	3.9%	3.2%	3.3%	3.8%	7.2%
High	4.6%	5.4%	5.0%	7.2%	7.3%	8.2%	11.2%
Moderate	22.7%	22.5%	27.6%	27.1%	30.1%	30.9%	33.2%
Low	70.1%	69.2%	63.5%	62.5%	59.3%	57.2%	48.4%

Figure 3.8: *Stacked area plot of the probability of K10 caseness for each level of trauma*

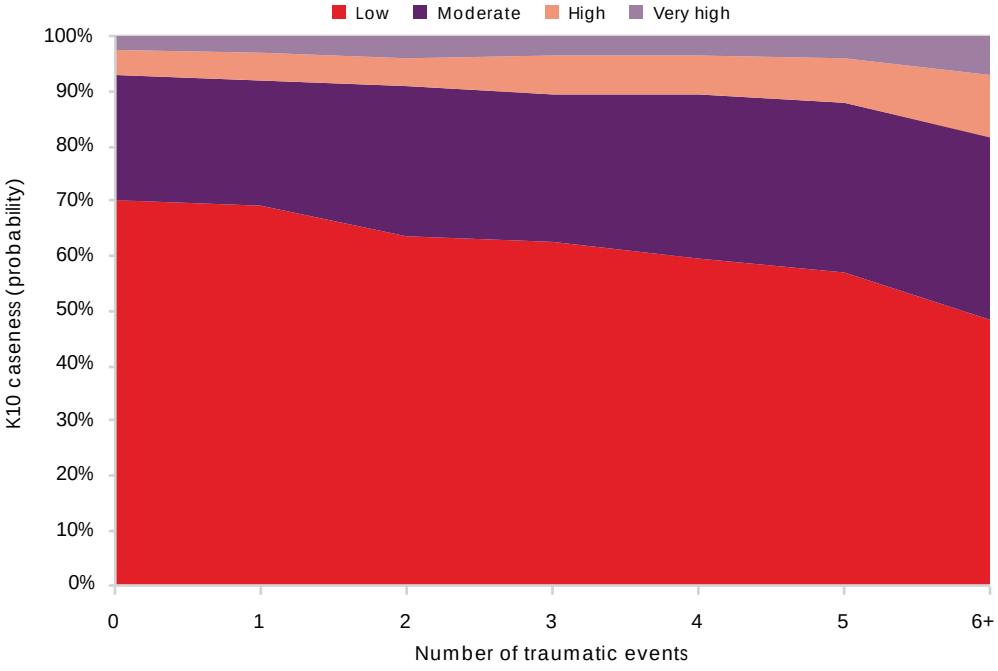


Table 3.14 and Figure 3.8 highlight the progressive accumulation of risk with the probability of at least moderate K10 increasing (and therefore the probability of low decreasing) as the number of traumatic events increases. This effect is generally apparent for all bands. This highlights that documenting and recording the number of trauma exposures is important as a determinant of general psychological distress of ADF members.

3.3.2.2 Post-traumatic stress (PCL)

Table 3.15: *Odds ratio (CI) for each cut point describing PCL for number of traumatic events compared to no previous traumatic events*

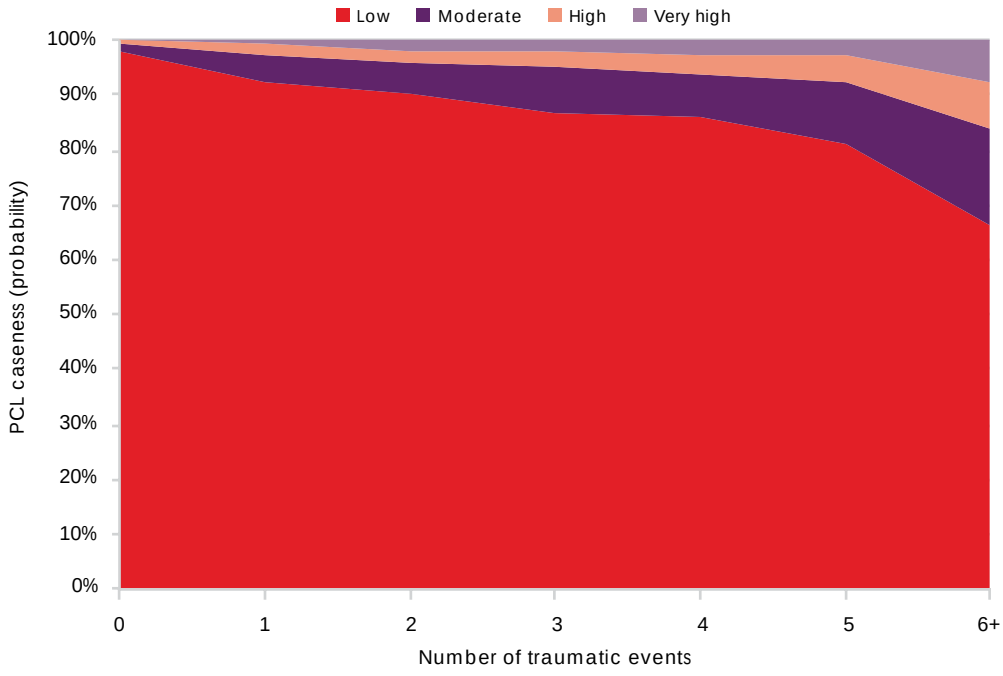
Traumatic events	At least 'very high'	At least 'high'	At least 'moderate'
6+ versus 0	52.30 (24.33, 112.42)	28.82 (18.12, 45.85)	28.33 (21.21, 37.85)
5 versus 0	18.44 (8.17, 41.6)	12.64 (7.70, 20.76)	13.04 (9.55, 17.81)
4 versus 0	18.32 (8.17, 41.07)	9.62 (5.85, 15.83)	8.84 (6.46, 12.09)
3 versus 0	13.60 (6.02, 30.74)	8.09 (4.91, 13.31)	8.45 (6.19, 11.52)
2 versus 0	10.33 (4.50, 23.71)	6.13 (3.68, 10.22)	5.86 (4.26, 8.05)
1 versus 0	4.97 (2.06, 11.95)	3.80 (2.24, 6.45)	4.50 (3.24, 6.26)
p-value	p<0.001	p<0.001	p<0.001

Table 3.16: *Predicted probabilities for each level of PCL for each trauma category*

PCL	0	1	2	3	4	5	6+
Very high	0.2%	0.8%	1.7%	2.2%	2.9%	3.0%	8.0%
High	0.5%	1.7%	2.3%	3.0%	3.1%	4.9%	8.3%
Moderate	1.1%	5.1%	5.6%	8.1%	7.7%	11.3%	17.7%
Low	98.2%	92.5%	90.4%	86.7%	86.2%	80.9%	66.1%

As can be seen in tables 3.15 and 3.16, there is a very strong impact of multiple trauma exposures on all bands of post-traumatic stress symptomatology. These probability and odds ratio tables highlight the fact that post-traumatic symptomatology should not be considered solely as though it had reached some pre-determined level of caseness. In particular, many individuals who have moderate symptomatology are clearly at risk of further elevation of symptom levels with later traumas. Furthermore, the impact of ageing and other effects can contribute to the occurrence of delayed onset post-traumatic stress disorder. Therefore, these data highlight a general risk of morbidity now and into the future for ADF members. As can be seen in these tables, the probabilities progressively increase with the number of traumas. The effect is apparent with one or more traumas – for example, for the very high category, the odds ratio is 4.97 (95% CI 2.06–11.5). The odds ratio of at least moderate symptomatology by the time an individual has six or more traumas is 28.3 (95% CI 21.21–37.85).

Figure 3.9: *Stacked area plot of the probability of PCL caseness for each level of trauma*



By the time an individual has had six or more traumas, there is approximately a 33% chance that the individual will have developed at least moderate post-traumatic stress symptomatology. Again, there is a progressive increase in post-traumatic symptomatology with the number of trauma exposures. This is clearly visible in Figure 3.9. These exposures may or may not have occurred while on deployment.

3.3.2.3 Alcohol use and abuse (AUDIT)

Table 3.17: *Odds ratio (CI) for each cut point describing AUDIT for number of traumatic events compared to no previous traumatic events*

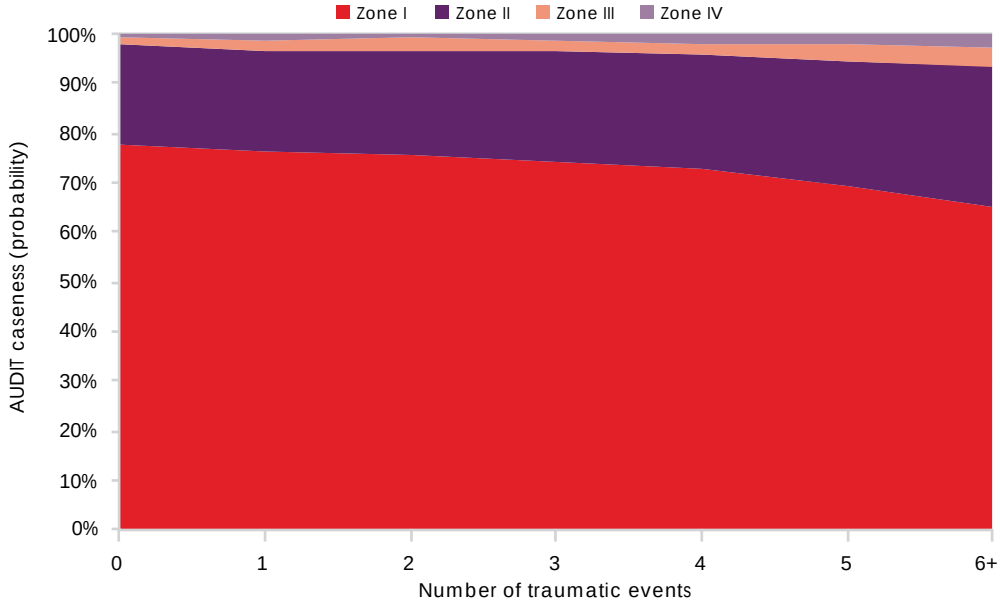
Traumatic events	At least 'Zone IV'	At least 'Zone III'	At least 'Zone II'
6+ versus 0	3.35 (2.05, 5.47)	3.03 (2.24, 4.10)	1.86 (1.66, 2.09)
5 versus 0	2.40 (1.28, 4.48)	2.57 (1.77, 3.73)	1.53 (1.31, 1.78)
4 versus 0	2.14 (1.15, 4.00)	1.78 (1.20, 2.65)	1.30 (1.12, 1.51)
3 versus 0	1.68 (0.93, 3.03)	1.46 (1.00, 2.13)	1.20 (1.04, 1.38)
2 versus 0	0.79 (0.37, 1.71)	1.60 (1.10, 2.34)	1.12 (0.97, 1.29)
1 versus 0	1.44 (0.77, 2.70)	1.42 (0.97, 2.09)	1.09 (0.95, 1.26)
p-value	p<0.001	p<0.01	p<0.01

Table 3.17 demonstrates a statistically significant increased risk of greater alcohol consumption on the AUDIT with increasing trauma exposures. Once an individual has had six or more traumas, the odds ratio of being in Zone IV is 3.35 (95% CI 2.05–5.47). This effect is generally apparent when the individual has had four or more traumas. In particular, the probability of falling into Zone III or above occurs at this level (OR 1.78, 95% CI 1.2–2.65).

Table 3.18: *Predicted probabilities for each level of AUDIT for each trauma category*

	0	1	2	3	4	5	6+
Zone IV	0.8%	1.2%	0.7%	1.4%	1.8%	2.0%	2.8%
Zone III	1.4%	2.0%	2.9%	1.9%	2.2%	3.7%	3.8%
Zone II	20.0%	20.7%	20.7%	22.3%	23.2%	24.8%	28.3%
Zone I	77.7%	76.1%	75.7%	74.4%	72.8%	69.5%	65.1%

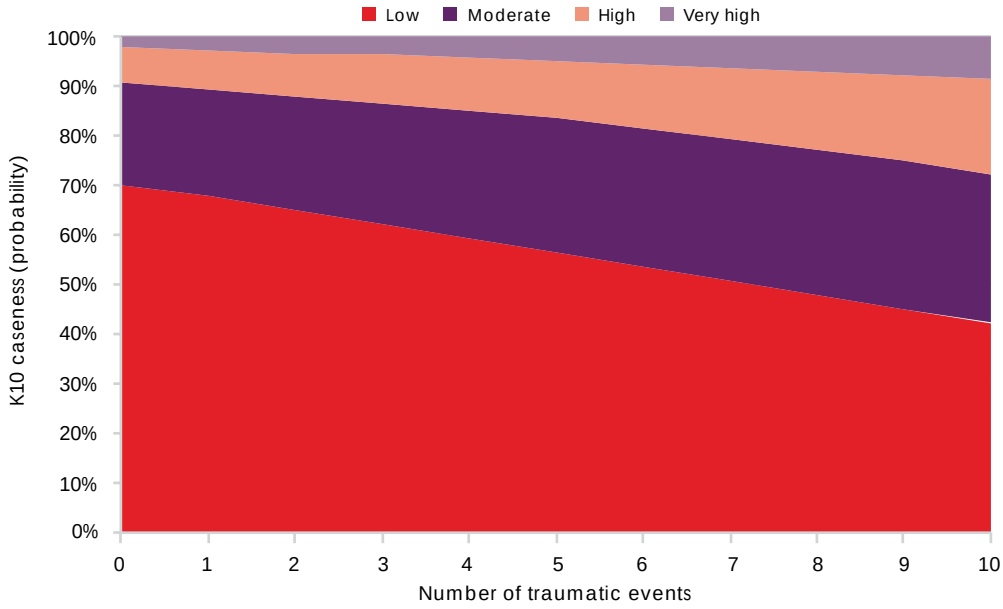
Figure 3.10: *Stacked area plot of the probability of AUDIT caseness for each level of trauma*



The relationship between the number of traumas and deployment is reflected in Table 3.18 and Figure 3.10. Although the probability of worsening alcohol health does not change greatly, there is some indication that it increases as trauma increases. One of the other issues is that there is often a two-way relationship between substance abuse and psychiatric morbidity. This may decrease the apparent trends demonstrated.

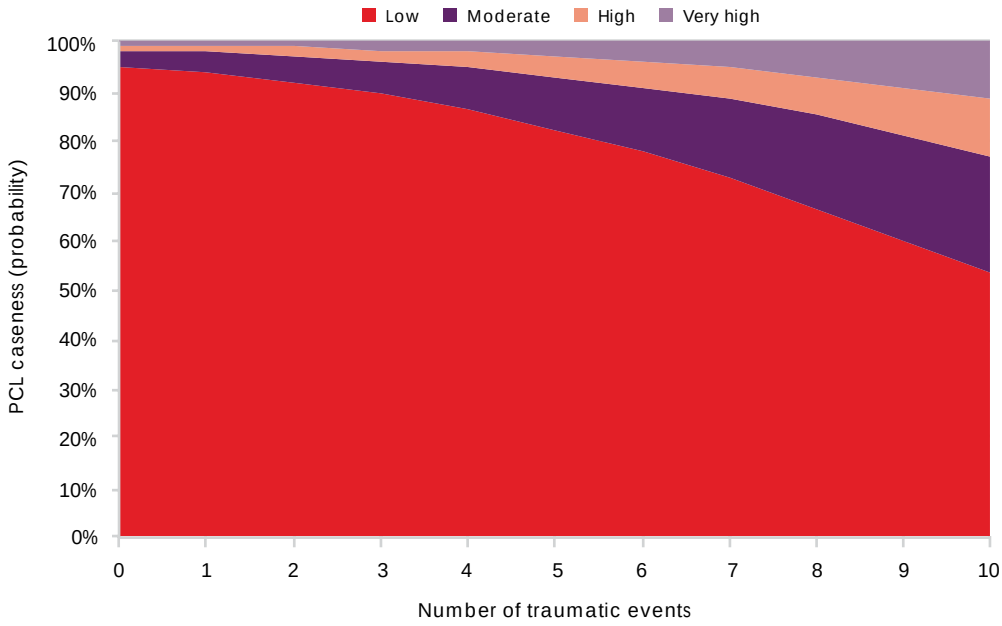
3.3.2.4 Psychological distress (K10)

Figure 3.11: *Stacked area plot of the probability of K10 caseness versus trauma*



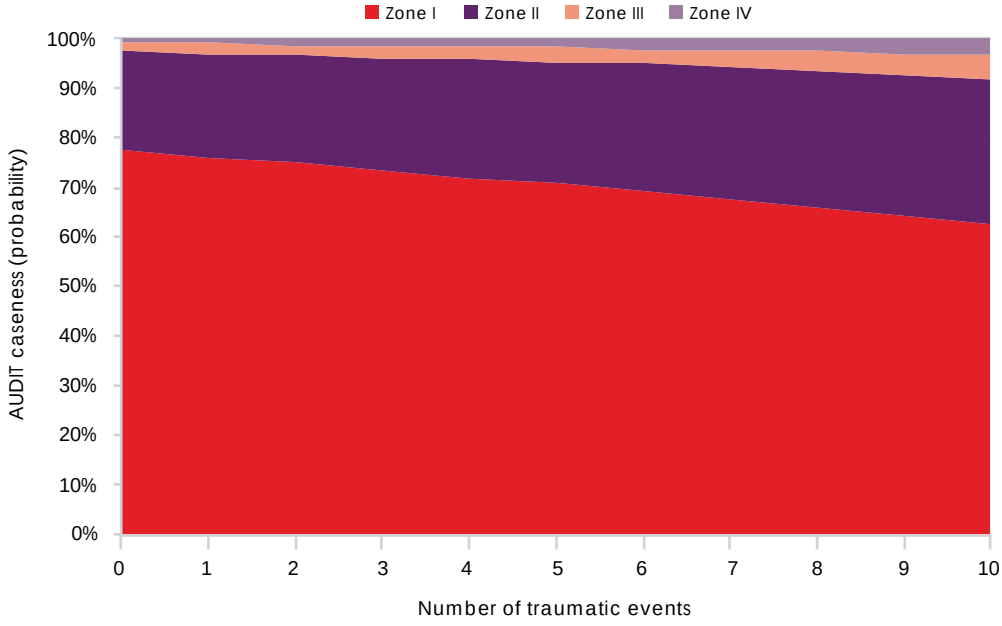
3.3.2.5 Post-traumatic stress (PCL)

Figure 3.12: *Stacked area plot of the probability of PCL caseness versus trauma*



3.3.2.6 Alcohol use and abuse (AUDIT)

Figure 3.13: *Stacked area plot of the probability of AUDIT caseness versus trauma*



3.3.3 Discussion

The findings in this study have important implications for mental health outcomes in the ADF. The absence of any direct association between the number of deployments that an ADF member has had in their career and mental health symptomatology, except for post-traumatic stress, is notable. Even the association identified for post-traumatic stress is a relatively weak effect. These data indicate that the number of deployments is not in itself a major risk factor for the onset of psychopathology. In other words, those members of the ADF who remain fit and healthy should be able to deal with multiple deployments without adverse effects on their health, except for a slowly increasing risk of post-traumatic stress disorder symptoms.

Cautions when interpreting the findings include that individuals who are adversely affected by deployments are unlikely to be redeployed. Therefore, the individuals who have multiple deployments are likely to be a particularly robust subsection of the ADF. In addition, those who are adversely affected may not have been captured by this study because they may have been medically discharged due to the development of a psychiatric disorder.

These results demonstrate the absence of an association between the number of deployments and psychological symptomatology, which contrasts with the results from the United States (Reger et al., 2009). The Mental Health Prevalence and Wellbeing Study did not examine duration or regularity of deployment. Rona et al. (2007) demonstrated a significant issue in the UK population, where symptoms were more likely to occur if individuals had been deployed for more than 13 months in a three-year period. One important issue not discussed in the UK study, however, was the significant rate of psychopathology in the control population that may have been related to a range of other combat-related deployments. The absence of an effect in the Iversen et al. study (2009) may have simply been due to the fact that the significance of these other deployments in contrast to that in Iraq was not adequately explored.

Another issue demonstrated in the present study is that the relatively low probability of caseness of those undergoing multiple deployments provides evidence that this is an unusually healthy group of ADF members. These results provide some evidence that the screening put in place following deployments ensures that those who undergo multiple deployments – particularly through operational mental health screening processes like RtAPS and POPs, a necessary antecedent of further deployment – are protected to a significant degree from the adverse consequences of multiple trauma exposure.

This study did not examine the number of traumas experienced by an individual during deployment. However, it remains the case that a significant number of deployed individuals are not exposed to combat or to situations of major human degradation or suffering. The deployed environment can provide protections from risks that are common in the Australian civilian environment, such as motor vehicle accidents and incidental assaults. Paradoxically, there may be some protective aspects of deployment that have not been fully articulated in those who are not deployed directly into frontline combat.

In contrast, there is a striking association between all forms of psychopathology and the number of trauma exposures that an individual has had in their life. The impact on general psychological distress as measured by the K10 shows that it is important to examine this relationship as a dimensional issue. While the number of individuals who score in the high bands progressively increases, so do those in the moderate band

where there is a lower probability of having an ICD-10 disorder. These findings of the progressive increases of symptoms provide substantial support for the emergence of sensitisation and kindling with repeated trauma exposures in this population (McFarlane, 2010a).

The emergence of this effect argues for the importance of taking a dimensional view of psychopathology in military forces. Addressing the emerging symptomatology through early intervention programs should be a significant priority.

This pattern was substantially demonstrated for post-traumatic stress disorder. Again, the recruitment of symptomatology occurred across the bands of severity. This finding highlights the issue of sub-syndromal post-traumatic stress. Furthermore, those individuals with sub-syndromal post-traumatic stress are at risk of delayed onset post-traumatic stress disorder (Andrews, Brewin, Philpott, & Stewart, 2007; Smid, Mooren, Van Der Mast, Gersons, & Kleber, 2009).

The evidence for this progressive emergence of symptoms on return to civilian life was particularly evident in the study of the US National Guard (J. L. Thomas et al., 2010). Therefore, the significance of this sub-syndromal disorder may only become an issue once an ADF member has left Defence. Such an individual would leave without any entitlement and there may be a significant delay before their symptoms become fully manifest. Subsequent trauma exposure is likely to play a significant role in the amplification of this distress (Perkonigg et al., 2005). The fact that a further traumatic exposure has occurred when an individual leaves the military service does not negate the importance of prior sensitisation, which these data demonstrate are apparent while the individuals are members of the ADF.

The emergence of progressively increasing patterns of alcohol consumption with multiple trauma exposures may indicate self-medication. The gradient of increased alcohol usage is lower, suggesting that there is a delayed emergence of this pattern of self-medication (Leeies, Pagura, Sareen, & Bolton, 2010; McFarlane, 1998; McFarlane et al., 2009). The implication of these findings about the relationship between symptom development and alcohol usage is that programs that aim to restrict and minimise harmful use of alcohol need to address the issues of psychological distress and multiple traumatisation within the population.

The relationship between depressive symptoms and trauma exposures has been increasingly identified (Post, 1992, 2002; Post, Weiss, Smith, Li, & McCann, 1997). Furthermore, the significant effect of stressful and traumatic life events in the onset of depressive disorders has been shown to be substantial, despite genetic predispositions, particularly for the earlier episodes of illness (Kendler, Thornton, & Gardner, 2001). Therefore, across the spectrum of psychopathology, multiple trauma exposure is a major risk factor that should be addressed in the ADF.

The importance of the cumulative risk of multiple trauma exposures points to the limitations of pre-deployment and pre-enlistment screening to identify individuals at risk in the ADF. The optimal strategy for addressing this risk is to have active programs at a public health level to minimise the risks of violence, training accidents, and multiple deployments in combat roles over a short period of time. Furthermore, the identification of the early emergence of symptoms through health optimisation and wellbeing programs should be a major priority in the ADF environment. Solely focusing on the treatment and identification of a diagnosable disorder is likely to restrict opportunities for early intervention and prevention.

3.3.4 Proposed further analyses

This section reports the analyses completed at the time of publication. Proposed further analyses include:

- examining the relationship between the traumatic stress exposures prior to ADF service and after ADF service as relative risk factors for the emergence of symptomatology
- examining the classes of traumatic exposures that represent particular risks to ADF members
- examining the relationship between deployment and cumulative trauma exposure. In those individuals who have had multiple traumas in combat roles, the relationship between these traumas and the emergence of symptomatology requires examination
- examining the relationship between different patterns of alcohol usage, trauma exposure and symptom development
- analysing the relationship between multiple trauma exposure and ICD-10 disorder, using the lifetime history
- linking the combat exposure measured at RtAPS and POPS to the health and wellbeing dataset for deployed members.

3.3.5 Occupational factors in the data yet to be analysed

3.3.5.1 Deployment history

Participants were asked whether they had been on an ADF operational deployment. If they had, they were asked the following details about their deployment(s):

- country deployed to
- operation name
- year(s) deployment(s) started
- number of times deployed in that year
- total number of months deployed in that year

They were also asked whether they had worked in the Middle East in a role outside the ADF.

3.3.5.2 Physical health

Three items from the 45 and Up Study asked the participant to rate, in general, their eyesight, memory, and teeth and gums, on a scale from poor to excellent. A question about hearing was also asked in the same format.

The 15-item Patient Health Questionnaire (PHQ-15; Kroenke, Spitzer & Williams, 2002) was used to assess somatic symptom severity. Participants were asked how much they had been bothered by symptoms such as stomach pain, dizziness and trouble sleeping in the past four weeks.

3.3.5.3 Quality of life

Two items assessed quality of life. The first, from the SF-12 (Ware et al., 2002), asked participants to rate, in general, how their health is. The second, from the 45 and Up Study, asked participants to rate, in general, their quality of life. Both were rated on a five-point scale from poor to excellent.

3.3.5.4 Dietary supplements

Three items from the Millennium Cohort Study assessed how often the participant currently takes body building, energy and weight loss supplements on a scale from never to daily or almost daily.

3.3.5.5 Mild traumatic brain injury

Mild traumatic brain injury (MTBI) was assessed using a modified version of an MTBI screening measure (Pietrzak et al., 2009) that was based on a tool developed by the Defense and Veterans Brain Injury Center (Department of Veterans Affairs, 2007; Government Accountability Office, 2008). This measure asks if the participant has experienced any of a list of events that may lead to MTBI, such as blast or improvised explosive device explosion, vehicular accident, and fall. Those that endorsed any of these events were then asked how many times they experienced a list of indicators of MTBI – for example, loss of consciousness, being dazed, confused or 'seeing stars', and concussion – after such an event. Finally, participants were asked whether any of a list of symptoms got worse after any of the events and whether they had had any of these symptoms in the past week. This list comprised problems such as memory problems or lapses, irritability and headaches.

3.3.5.6 Trauma exposure

Traumatic exposure to 18 events was assessed. Events included direct combat, life-threatening accident and serious physical attack or assault. The original list of events was derived from the CIDI 2.1, with validated additions by McFarlane and colleagues for the Ash Wednesday Bushfire Study (McFarlane & Van Hooff, 2009). The measure was adapted for use in the LASER study. The number of times each event occurred, and the age of the participant when the event first occurred and the last time it occurred, were also assessed. Participants were also asked to nominate their worst event type.

3.3.5.7 Sleep

Sleep was assessed using the Sleep Impairment Index (Smith & Trinder, 2001). This four-item measure asked participants how often in the past two weeks they had had difficulty falling asleep, difficulty staying asleep or problems waking up too early. It also asked how satisfied they were with their current sleep pattern.

3.3.5.8 Anger

Anger was assessed using items from the Dimensions of Anger Reactions Scale (Novaco, 1975) that were also used in the LASER study. Nine items looked at frequency of anger over the past four weeks by asking participants how much of the time they felt that way about statements such as 'I found myself getting angry at people or situations' and 'My anger had a bad effect on my health'.

A further two items from the AG21-US Army Screening Measure assessed episodes of physical aggression over the past month. These items asked how often the participant got in a fight and hit a person, and threatened someone with physical violence.

3.3.5.9 Caffeine and tobacco use

Tobacco use was assessed using an eight-item measure from the Millennium Cohort and King's College Studies. This measure asked about use of tobacco products in the past year, and, for those who reported smoking at least 100 cigarettes in their lifetime, further information about the age they started smoking, how many years they smoked an average of three cigarettes a day, how much they smoked per day when smoking, if they tried to quit and whether they were successful, and patterns of smoking on deployment.

Caffeine use was assessed using a single question from the Millennium Cohort Study asking about the frequency of beverages containing caffeine consumed per day.

3.3.5.10 Social support

Social support was assessed using the Schuster Social Support Scale (Schuster, Kessler & Aseltine, 1990), which was modified in the LASER study. This five-item measure looks at relationships with others by asking, for example, how often a certain group of people make you feel cared for, express interest in how you are doing or criticise you. The groups of people asked about were friends, family, members of the workplace and direct supervisors.

3.3.5.11 Family issues

Participants were asked how satisfied they were with their marriage/relationship, and what impact their military commitments have had on their marriage/relationship and children.

3.3.5.12 Occupational issues

Five items from the LASER study assessed general occupational issues by asking the participant how strongly they agreed or disagreed with statements about whether they were adequately recognised and rewarded for their work, and whether they had experienced bullying and believed it was appropriately handled by Defence.

A single item assessed workplace morale by asking the participant their level of agreement with the statement, 'In the last month, the level of morale in my immediate workplace / work team was high'. This item was taken from the Defence Attitudes Survey.

3.3.5.13 Resilience

Resilience was assessed using two questions from the Connor-Davidson Resilience Scale (Connor & Davidson, 2003). These items asked how often the participant felt they were able to adapt to change and tended to bounce back after hardship in the past 30 days.

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CONCLUSION

One in five of the ADF population had experienced a mental disorder in the previous 12 months, which is similar to the rate in the Australian community. Over half of the ADF had experienced an anxiety, affective or alcohol disorder at some stage in their lifetime, which was significantly higher than the Australian community rate. The incidence and prevalence of mental disorders suggest that any healthy worker effects in the ADF appear to be counterbalanced by the impact of occupational stressors.

In terms of affective, anxiety and alcohol disorders, the ADF and the Australian community faced similar challenges. The most common disorders in the ADF were anxiety disorders; as in the general community, post-traumatic stress disorder was the most prevalent of these. Affective disorders were associated with the largest deviation from the Australian community, with the prevalence of affective disorders in males in the ADF significantly higher than in the community. Although the rates of anxiety disorders are similar in the ADF to those in the community, the incidence of alcohol disorders is significantly lower across both sexes.

The study's data indicated specific cultural differences between the Services that need to be explored further. Army personnel were significantly more likely to have had either an affective, anxiety or alcohol disorder in comparison to Air Force and were also significantly more likely to endorse stigma and barriers to care items. Navy members were more likely than Air Force to have an alcohol disorder and more likely to report concerns about getting time off work, their career or deployability than about barriers to care. Overall, there was very little difference in the mental health prevalence between personnel who had been on operational deployment and those who had never been deployed.

These summary data provide a comprehensive baseline for future monitoring of mental health trends and have important implications for the further development of the ADF mental health and wellbeing strategy and service delivery model.

Comparisons with major allies

The literature that most resembles the current findings is a study conducted of the Canadian Forces, where a stratified sample was interviewed using an earlier version of the same diagnostic interview used in this study. The study revealed that 14.9% of the Canadian Forces had a mental disorder. Although the prevalence of mental disorders in the Canadian Forces is apparently lower than in the ADF, the two studies used different diagnostic criteria to analyse the data, with the Canadians using the Diagnostic and Statistical Manual of Mental Disorders – 4th edition (DSM-IV) diagnostic criteria. For the present study, ICD-10 criteria were used to allow comparison with national rates. The ICD-10 criteria appear to use slightly lower thresholds; this may explain at least some of the higher apparent prevalence of mental disorders in the ADF.

Neither the United Kingdom nor the United States has yet conducted an interview-based study of the prevalence of mental disorders in their defence forces. Studies of the UK forces using self-reports (for example, the General Health Questionnaire) estimate that 19.7% of that population has a mental disorder, which is similar to ADF rates. In the US forces, disorder rates are higher in deployed samples, but the overall rate of disorder is estimated at 18.3% of the forces' population, which is again similar to that in the ADF.

Target groups for intervention

The data in this report indicated a significant burden of mental illness that needs to be addressed because of its impact on the ADF's operational capability and on the wellbeing of Service personnel and their families. Within the data, a number of at-risk demographic subgroups within the population were identified; these warrant more detailed investigation as they are targets for both preventive and treatment interventions.

Females in the ADF generally had lower rates of mental disorders compared to their civilian counterparts. While they had higher rates of affective disorders, they had lower rates of both anxiety and alcohol disorders. Male ADF personnel, in comparison, had consistently higher rates of affective and anxiety disorders than those in the general community and a similar rate of alcohol disorders. Comparison of data from this study with data from the Longitudinal ADF Study Evaluating Retention and Resilience (LASER), which tracks an individual's mental health status from point of enlistment, should allow the ADF to determine whether females who join the ADF are more resilient and what the protective and risk factors are for both sexes.

The youngest cohort of ADF members is particularly at risk of having a mental disorder. Many of these individuals leave after five years, as this is the end of their initial contract, without having the disorder diagnosed or treated. LASER should also assist in identifying the risk and resilience factors during this period of service. Young members who leave the ADF with a mental disorder are at particular risk in the community of not receiving adequate care. In addition, the link to military service often goes unrecognised. The Department of Veterans' Affairs system has no visibility of this group, which increases the problems its members are likely to have in getting appropriate clinical care.

The study found very little difference between ranks on affective disorders, except that other ranks had a higher level of bipolar affective disorder. Both non-commissioned officers and other ranks were more likely to be diagnosed with an anxiety disorder when compared to officers. The prevalence of mental disorders in the other ranks is noteworthy as they were significantly less likely to report that they knew where to get help or that they had the ability to get time off work, suggesting that they would benefit from mental health literacy campaigns—such as 'Keep Your Mates Safe'—which focus on where, when and how to get care.

While mental disorders were less prevalent in officers, an estimated 828 had had an affective disorder and 1,242 had had an anxiety disorder in the previous 12 months. Officers were also just as likely as other ranks or non-commissioned officers to have had an alcohol disorder. Officers, however, were less likely to seek help for a mental health disorder. Of the rank groups, they were the most likely to indicate that negative stigma kept them from seeking help, including that help seeking would harm their career or that others would treat them differently. These findings suggest that any communications strategy to encourage help seeking must target its messages to specific populations.

The study data found cultural differences among the Services that need to be explored further. Army personnel were significantly more likely to have had either an affective, anxiety or alcohol disorder in comparison to Air Force personnel, and they were significantly more likely to report stigma and barriers to care items. Navy personnel were more likely than Air Force personnel to have had an alcohol disorder and were more likely to rate getting time off work and concerns about career and deployment as barriers to care.

Overall, there was very little difference between personnel who had been on deployment and those who had never been deployed. The only significant difference was that personnel who had been deployed were four times more likely to have obsessive-compulsive disorder. Because this was an unexpected finding, a further analysis was conducted in which the type of deployment was categorised as warlike or non-warlike. That analysis did not reveal any difference. This finding suggests that the significant resources invested by the ADF into a comprehensive operational mental health support system may be effective in prevention and early intervention for mental disorders resulting from exposure to occupational stressors on operations. This conclusion is further supported by the fact that personnel who had been deployed were more likely to seek care than personnel who had not been deployed.

Implications for prevention and treatment of affective disorders

The significant prevalence of affective disorders in the ADF is in keeping with the concern about the prevalence of these conditions in the broader Australian community. The beyondblue initiative emerged because of the recognition of the burden of disease associated with depression and the broader costs in terms of impairment and disability. Of all the disorders assessed, individuals with a depressive episode were most likely to have had professional treatment in the previous 12 months. This may be because the national campaigns have led to a greater acceptance of seeking help for this disorder or because the symptoms of this disorder have a severe impact on functioning, which leads individuals to be more inclined to seek care. Further investigation to confirm these hypotheses would allow the ADF to develop effective intervention initiatives.

The data estimated that some 3,182 individuals in the ADF had had a depressive episode in the previous 12 months. Despite the fact that 65.2% of personnel with a depressive episode in the previous 12 months had had treatment with a professional, the workload and health services required to meet the remaining need are substantial.

To maximise detection, the first line of support must be general duties medical officers because, of all the mental health professionals, they have the most contact with ADF personnel. In addition, as 65% of personnel with a depressive disorder also had at least one other mental disorder, any depression initiative must be fully integrated into a comprehensive mental health service delivery model.

It is worth noting that, of personnel with a depressive disorder who were asked about interference with work, 41% reported a severe or very serve impact. The costs of affective disorders to employers have led groups such as Wang and colleagues (2006) to model the impact of each type of affective disorder. Their evidence provides substantial support for enhanced treatment in employment settings. In general, they concluded that the introduction of such programs had a significant cost benefit for employers. For the ADF this means that enhanced treatment of the identified individuals with an affective disorder would be beneficial because it would lead to greater productivity.

A recent study in a civilian setting examined the impact of mood disorders on work performance in a nationally representative sample (Kessler et al., 2006). This study found that those with bipolar affective disorder reported 65 lost work days a year and those with major depression reported 27 lost work days. It appears that the depressive episodes in those with bipolar affective disorder are more severe and persistent than in

those with major depressive episodes alone. This suggests that, while bipolar affective disorder is not the most prevalent mental disorder, it has a considerable impact on capability that must be addressed. Consideration should be given to ensuring that both general practitioners and mental health professionals can carry out effective differential diagnosis of depressive disorders to ensure that treatment services are targeted most effectively.

Implications for prevention and treatment of anxiety disorders

In 2010, Chief of Army launched a DVD, *Dents in the soul*, to demystify post-traumatic stress disorder and to encourage personnel to seek care. This initiative was in response to concerns about the impact of the loss of personnel and the increasing number of severely injured in Army as a result of land-based operations. The data in this study support the priority given to post-traumatic stress disorder by the Army, where it is the most common mental disorder, reported in 9.7% of Army personnel. An estimated 2,462 personnel would have benefited from care in the previous 12 months. The continued rollout of this resource in commander's hours or unit training should be encouraged and consideration given to similar initiatives for the other two Services. Panic attacks, closely followed by post-traumatic stress disorder and depressive disorders, are the most common mental disorder in the Navy, and specific phobias, followed by post-traumatic stress disorder, the most common disorder in the Air Force.

Of those asked the question about seeking care, the proportion of personnel who had received treatment in the previous 12 months was lower for post-traumatic stress disorder than depression. The fact that many of these disorders may not be known to command has important implications. Anxiety disorders affect the functional capacity and decision making of personnel, which can lead to decision errors in such personnel, as anxiety disorders often produce memory and concentration difficulties.

An important issue that requires further investigation, however, is that many individuals may not be aware of the extent to which anxiety disorders disrupt memory, concentration, and decision-making capacity. Therefore, the cognitive impacts of these conditions in the workplace are matters that require further exploration if individuals with a mild version of these disorders are allowed to continue in important roles within the ADF.

Implications for prevention and treatment of alcohol disorders

While rates of alcohol disorder are not higher than those in the general community, they reinforce the investment Defence has made in the ADF Alcohol, Tobacco and Other Drugs Strategy and the recent ADF Alcohol Management Strategy.

Analysis of the self-reported alcohol consumption data collected from the AUDIT highlighted the complexity of drinking behaviour in the ADF and suggested optimal interventions. In particular, alcohol consumption is not simply a measure of psychological disturbance. Rather, moderate consumption has been identified to have potential beneficial health effects. For example, there is some evidence that alcohol, when consumed in moderation, may have a protective effect in those who have been exposed to traumatic stressors (McFarlane et al., 2009). The challenge for an organisation such as the ADF is to develop a message that addresses the specific question of problem and at-risk drinking, which has a clearly identified impact on a

number of ADF members. Episodic consumption of large quantities is also associated with particular risks of disorderly behaviour and violence. Therefore, to be effective in the ADF environment, an intervention strategy that addresses a spectrum of behaviours and drinking patterns is required.

There are a number of issues relating to treatment seeking in this population. The significant majority had received no care in the previous 12 months. Many individuals who abuse alcohol do not identify themselves as having a problem. Often they only come to attention if they have a co-morbid disorder that leads them to seek assistance. This highlights the importance of population screening with an instrument such as the AUDIT or the GGT test, which helps to detect liver disease and bile duct injury. (Conigrave, Davies, Haber, & Whitfield, 2003). The US Preventive Services Task Force found good evidence that screening in primary care settings can accurately identify patients whose alcohol consumption places them at increased risk of mortality and morbidity (Ikin et al., 2004). They also found good evidence that brief counselling resulted in more moderate alcohol consumption, which was sustained over a 6- to 12-month period. There was some evidence that these effects lasted for four or more years. Hence, there is sufficient evidence to suggest that a screening program in ADF health care facilities of all those who present for any medical condition in a 12-month period could yield a significant population benefit. Such an approach could be considered as the ADF selects an alcohol strategy.

Finally, given the impact of alcohol on behaviour and its relation to violence and inappropriate conduct, these findings have significant relevance to the ADF. Interventions should be targeted at ADF members who are charged with unruly behaviour or unbecoming conduct. A careful psychological assessment of those who are charged should be implemented as part of the military justice system.

In conclusion, the prevalence of alcohol disorders in the ADF is broadly in keeping with that in the general community. However, the reputational issues and scrutiny of ADF members' health and behaviour demand active strategies to treat and manage alcohol disorders, which go beyond those available to the civilian community.

Implications for treatment of co-morbid disorders

The prevalence of mental disorders is an important issue in terms of problems with discipline and other behaviours that potentially bring the ADF into disrepute. Alcohol abuse, acts of aggression and disinhibition are associated with mental disorders. Hence, any strategy to deal with these matters in the ADF must focus on these patterns of co-morbidity. For example, an individual with co-morbidity – an affective disorder and alcohol disorder, say – is particularly prone at times of excessive consumption to be involved in disorganised or disinhibited behaviour, especially if their affective disorder symptoms cluster in the manic or hypomanic end of the spectrum. This relationship not only needs to be recognised and addressed through the ADF mental health strategy but is also relevant to the military justice system and the broader issues of command.

Implications for the ADF Suicide Prevention Program

The significance of suicidal ideation in the ADF rests in the future risk of these individuals acting on their suicidal thoughts. The importance of suicide attempts for the future mortality of military veterans has recently been examined (Weiner, Richmond,

Conigliaro, & Wiebe, 2011). This study indicated that the 10-year cumulative mortality risk for veterans who had attended a United States Veterans Affairs medical centre after a suicide attempt was 22.0%, or three times greater than expected. The cumulative survival probability after 10 years was 78.0%. The three leading causes of death were heart disease (22.2%), suicide (13.1%) and unintentional injury (12.7%). The extent to which suicide accounted for the mortality of this group was significantly greater than in the general US population, in which suicide was the ninth leading cause. Among women in the study group, suicide was the leading cause of death (25%) and among men the second leading cause (12.7%). This highlights the necessity for significant long-term follow-up of suicide attempts.

In the general community, approximately 90% of people who attempt suicide have a psychiatric disorder, particularly depression (Beautrais et al., 1996; King et al., 2001) and post-traumatic stress disorder (Krysinska & Lester, 2010; Marshall et al., 2001; Oquendo et al., 2005). Mood disorders (Kang & Bullman, 2008) are an antecedent to 30% to 90% of suicide mortalities (Arsenault-Lapierre, Kim, & Turecki, 2004; Isometsä, 2001; Rihmer, 2007). Substance-related disorders are present in 26% to 55% of those who die by suicide and are the second highest group of mental disorders associated with suicide (Rihmer, 2007). Post-traumatic stress disorder is also related to suicide: 20% of community samples attempted suicide at least once (McFarlane, 2004; Sareen, Houlahan, Cox, & Asmundson, 2005).

Given that attempted suicide is significantly more common than completed suicide, investigation of the associated risk factors of suicidal ideation, particularly when it is accompanied by co-morbid psychiatric disorder, is an important task for the ADF. Prolonged feelings of worthlessness and fleeting suicidal thoughts often precede suicide and are potential indicators of risk. Therefore, such warning signs should be investigated, particularly in those with depressive disorder. The symptoms of emotional numbing of post-traumatic stress disorder are also important predictors (Guerra & Calhoun, 2011). This study of the ADF estimated the prevalence of individuals with psychiatric disorders with associated suicidal ideation, such as major depressive disorder and post-traumatic stress disorder. The findings will be used to develop more effective prevention strategies that focus on this pattern of morbidity. The levels of suicidal thoughts and attempts found in this study were not anticipated by the ADF. However, these rates were not dissimilar to those found in a study of the US Air Force, where 3% of males and 5.5% of females had suicidal ideation in the previous year (Snarr, Heyman, & Slep, 2010). While strategies have been put in place to manage suicidal behaviour in the ADF, particularly through the Applied Suicide Intervention Skills Training (ASIST) package, the data presented in this report provide important insights. First, a number of individuals who attempt suicide may not be known to command. This suggests that barriers to care are an important issue if these at-risk individuals are to be better cared for. Second, the known association between suicidal ideation and behaviour and psychiatric disorders needs to be explored further. In particular, interventions that solely focus on suicide prevention at times miss the important opportunity of ensuring that people receive the appropriate treatments. In the ADF, the number of people who are at risk of suicide shows that there is a significant unmet need, as the current rates exist despite the presence of mental health services.

The 2007 National Mental Health and Wellbeing Survey (Slade, Johnston, Oakley Browne, Andrews, & Whiteford, 2009) indicated that 10% of people with mental illness die by suicide within the first 10 years of diagnosis. The fact that the study estimated that 3.9% of ADF personnel had contemplated suicide within the previous year and 1.1% had

made a plan is indicative of the significance of this issue to the ADF. In the Australian population, of those who had serious thoughts of committing suicide in the previous 12 months, 72% had had a disorder in the previous 12 months. A similar pattern has been identified in ADF personnel. Therefore, any process or plan to deal with suicidal ideation must actively assess individuals for the presence or absence of a psychiatric disorder.

This study was limited to examining the link between suicidal ideation and mental disorder. The relationship between sub-threshold disorders and suicidality was not examined. Jakupcak and colleagues (2011) found that suicidal risk was three times greater in individuals with sub-threshold post-traumatic stress disorder than in veterans without it. Importantly, they found no difference in the likelihood of experiencing hopelessness and suicidal ideation between individuals with sub-threshold and those with threshold post-traumatic stress disorder symptoms. This highlights the importance of hidden sub-threshold symptoms of post-traumatic stress disorder as predictors of suicide risk and the fact that, even in those without mental disorders who have suicidal ideation, significant levels of psychological symptoms in the absence of full disorder may convey a substantial risk.

In summary, the rates of suicidal ideation in the ADF highlight the importance of having active intervention strategies such as the Suicide Prevention Program. In reviewing the alternative approaches, Zamorski (2011) has highlighted potential strategies for decreasing the suicide risk in the Canadian Forces that have relevance to the ADF. The value of screening for suicidal ideation, depression and post-traumatic stress disorder was advocated. The aggregated data from this study about the rates of suicide in the ADF suggest that despite the prevalence of suicidal ideation and attempted suicide, the rates of suicide are lower than in the general population (Bounty, Condon, & Winslade, 2004). This research provides some evidence about the possible benefit of the ASIST program and other interventions in the ADF. However, it remains the case that the substantial rates of under-diagnosed and untreated mental disorders in the ADF are a major cause of suicidal ideation, which is a risk to the organisation.

It is clear that while the rate of suicide attempts is similar to the community rate, the actual completion rate of suicide in the ADF is lower. However, the level of ideation and planning is higher. This suggests that the comprehensive literacy and suicide prevention initiatives in the ADF may be having a positive impact.

The ADF Suicide Prevention Program was launched in 2000 as part of the ADF Mental Health Strategy. It has three complementary components: prevention, intervention and postvention. The prevention component has focused on teaching members where, when and how to seek care.

This study also examined suicidal ideation in the context of an individual's mental health status. Importantly, it ascertained the strong relationship between suicidal ideation and mental disorders, finding that 2.8% of individuals with any disorder attempted suicide, while 0.1% of those with no disorder did so. Of those who attempted suicide in a year, 90% had a mental disorder. Those with an affective disorder were particularly at risk of suicidal ideation, but 21.2% of those with an anxiety disorder also felt that life was not worth living. This highlights that suicidal ideation and risk are not confined to those with depressive disorders.

The strong association with mental disorders means that targeted public health campaigns about managing suicide need to emphasise the importance of having effective evidence-based treatment for mental disorders. For example, inappropriate

concerns are often expressed about the prescription of antidepressants and increased risk of suicide. A significant examination of the relationship between suicide and antidepressant usage in the United States found that higher antidepressant use per capita predicted lower suicide rates. In other words, the lowest suicide rates were in the geographic regions with the highest rates of prescription (Gibbons, Hur, Bhaumik, & Mann, 2005). This finding highlights the demonstrable benefits (in terms of rates of suicide in the relevant communities) that the implementation of effective treatment for mental disorders can have at a population level.

The ADF is currently developing policy that will ensure that anti-depressant medication can be more effectively used in the treatment of individuals with mental disorders. Previously, personnel who were stable on medication and free of symptoms were not able to be deployed. Following a two-year trial in a deployed environment and a significant change in policy, Defence has determined that some individuals will be able to be deployed while on medication, provided that they are stable and have recovered from their illness. This should start to break down a significant barrier to care caused by anxiety about deployability.

Joint Health Command is conducting two major suicide prevention projects in 2011. First, an external evaluation of Defence's suicide prevention initiatives is reviewing the programs for effectiveness, best practice compliance and consistency with the national suicide prevention framework. Second, formal training in suicide risk assessment guidelines is being delivered in the second half of 2011 to Defence mental health professionals and providers. This training will ensure that all members of the Defence mental health workforce are skilled in the identification and management of members at risk of suicide.

Significance of mild symptoms

Analysis of self-reported psychological distress in the Kessler-10 (K10) and the post-traumatic symptomatology in the Posttraumatic Stress Disorder Checklist highlights the spectrum of severity of symptoms in the ADF. There is a general debate about considering psychopathology as a dimensional construct as well as using strict diagnostic categories. An important question is whether the ADF mental health policy should address the issue of individuals who have moderate symptom levels without a clearly diagnosed disorder.

The data in this study have been presented in bands of severity, which provide an indication of the prevalence of less severe symptoms in the ADF. It is important to understand that, as with any disorder, there is a range of severity in physical health. In systems of classification, a recent study emphasised the importance of including mild disorders when considering a revision of diagnostic systems (Kessler et al., 2003). The study followed up a group of individuals interviewed originally between 1990 and 1992, and interviewed again between 2000 and 2002, and identified the significant risk of progression from a mild to a more severe disorder. The finding shows the potential benefit and value of early intervention for members of the ADF who are experiencing only moderate symptoms, particularly because of the association with significant work impairment even at a moderate level of distress.

An important symptom that highlights the risk of morbidity in military populations is insomnia (McLay, Klam, & Volkert, 2010). Insomnia was the most commonly reported symptom and predicted greater rates of post-traumatic stress disorder at follow-up.

The relationship between sleep problems and general poor psychological and physical health in the community has been well documented and demonstrates the benefits of early intervention based on symptoms alone (Stein, Belik, Jacobi, & Sareen, 2008).

The prevalence of sub-syndromal post-traumatic stress disorder symptoms in veterans from the Middle East Area of Operations is similar to the prevalence of full-blown syndrome (Pietrzak, Goldstein, Malley, Johnson, & Southwick, 2009). Sub-syndromal post-traumatic stress disorder has significant degrees of impairment in relation to work and relationship problems. For those veterans, the level of impairment was intermediate – between those without any mental disorder and those that met full critera for post-traumatic stress disorder (Stein, Walker, Hazen, & Forde, 1997). The apparent dose response relationship noted between post-traumatic stress disorder status and function impairment showed that those with sub-syndromal post-traumatic stress disorder could benefit from intervention.

The issue of mild symptomatology is probably of particular relevance in those returning from deployment because of the risk of delayed onset disorders, particularly post-traumatic stress disorder. During the early post-deployment phases, individuals are probably significantly more malleable and responsive to treatment. However, given the barriers to care and stigma, implementing such treatment programs will be challenging.

Addressing stigma and barriers to care

The study found potential stigma to be a substantial issue, limiting the probability that members of the ADF would seek treatment for their condition. In particular, 27% of members believed that getting treatment would harm their career or career prospects, and 27.6% believed that their colleagues would treat them differently. However, the strongest disincentive to seeking treatment was the fear that taking action would stop them from being deployed, reported by 37% of individuals.

However, personnel did indicate that they knew where they could get help and that they would be given time off work to seek treatment. This suggests that the extensive psycho-education and screening programs delivered to those who have been deployed appear to have increased mental health literacy but have not addressed internal negative belief about how others may view those seeking help.

On the basis of these findings, it is important to consider what administrative steps and procedures could uncouple a discussion of mental health matters from negative consequences, not only in terms of social and personal status, but also career opportunities.

Many similar barriers exist in the broader community. Therefore, existing ADF programs should build on and modify successful interventions used in the general community. The evidence supports the provision of treatment for mental disorders in general medical settings rather than in separate and designated clinics for mental disorders. While those who had high levels of symptoms were significantly more likely to have sought care, a significant percentage of ADF personnel, varying by diagnosis, had substantial disability and were not receiving treatment. This untreated pool of mental disorders that impair function at work represents a major organisational risk to the ADF.

One strategy that has been proposed to improve the rates of people coming into treatment is the use of a primary care screen. It is well known that psychiatric disorders tend to be under-diagnosed in primary care settings. However, primary care settings

are generally more readily accessed than mental health services. Many patients present with a range of physical symptoms rather than primarily psychological complaints. The inclination and training of the clinician are also important factors that affect diagnostic accuracy. The importance of using screens has been extensively researched and screens have been found to be effective, particularly for depression and alcohol abuse. Calhoun et al. (2010) found that even brief instruments such as the Primary Care Posttraumatic Stress Disorder screening questionnaire are effective in improving diagnostic rates. There is now wide acceptance of the importance of screening. Instituting screening was recommended in the National Health and Medical Research Council's clinical guidelines for the treatment for post-traumatic stress disorder as well as in the United States (VA/DoD Clinical Practice Guideline Working Group, Veterans Health Administration, Department of Veterans Affairs and Health Affairs and Department of Defense, 2004).

A number of strategies could reduce stigma and break down barriers to care for military people who are experiencing mental health problems. These include:

- the use of primary care providers to provide a method of care that is more acceptable and less vulnerable to stigmatisation (Visco, 2009)
- outreach and education programs to make mental health issues more visible and less surrounded by a culture of secrecy and denial
- reduction in documentation and greater confidentiality to reduce the fear of repercussions for career and reputation among peers and leaders (Britt et al., 2008).

Importantly for the ADF, stigma and barriers to care remain despite a range of initiatives and psycho-education programs aimed at addressing these issues. Mental health literacy has increased but changing attitudes and behaviour remains a major challenge. Additional steps may be required, including a further review of the current medical employment classification system, which is perceived by many to be a major barrier to seeking treatment. The ADF needs a system that supports early intervention as well as treatment and management when required.

Trauma and deployment as risk factors

Understandably, much effort concerning the mental health of ADF members has focused on the individuals who are deployed. Among all ADF members, an estimated 43% reported having been deployed multiple times, 19% reported having been deployed only once, and the remaining 39% of personnel had never been deployed. Army had the highest incidence of multiple deployments at 46%, followed by Navy with 41%. Air Force had the lowest frequency of multiple deployments, at 36%. Navy, at 11%, had the highest proportion of personnel reporting six or more deployments.

Particular concern has been expressed about the effects of multiple deployments on mental health. Significantly, the analyses in this study did not show that multiple deployments resulted in individuals experiencing more symptoms of psychological distress. However, there was a trend for each subsequent deployment to incur higher levels of traumatic symptomatology.

The data further suggest that it should not be assumed that personnel are necessarily exposed to traumatic events through deployment. Exposures were confined to an important subgroup who may be at greater risk due to the nature of their role or

who had had direct experience of combat. Furthermore, high rates of trauma in the non-deployed sample predicted a spectrum of symptoms, which indicates the need for a broader occupational health model that takes into account a range of traumas that non-deployed individuals in Australia may be subjected to as a consequence of their military service. This matter requires further exploration.

The finding that deployment did not affect self-reported measures of mental health status (K10 and AUDIT) was not anticipated from the findings of significant correlations in US studies. However, studies by the Kings College Group tended to find little relationship with deployment. In contrast, post-traumatic stress disorder symptoms in the ADF sample were found to increase with the number of deployments. In the non-deployed sample, this study found a progressive recruitment of symptoms as trauma exposure increased. These seemingly contradictory findings require careful further interpretation.

The relative lack of recruitment of symptoms with progressive deployment may, in part, be due to the series of processes aimed at detecting individuals with substantial levels of symptomatology prior to and after deployment, such as the RtAPS and POPS. The possibility that the RtAPS and POPS are identifying at-risk individuals should be examined by linking with this dataset.

Also, many people who are deployed are not exposed to combat because they have other roles that are important to the activity of the ADF but do not involve a direct risk of trauma. The available literature suggests that deployment for longer than six months may have adverse effects on people's health (Buckman et al., 2011). For example, a UK study (Rona et al., 2007) found that individuals who had been deployed for 13 months or more in the previous three years had a significantly greater risk of post-traumatic stress disorder (OR=1.5). Logically, there is likely to be an interaction between the duration of deployment and the secondary dose response relationship between the degrees of trauma experienced on deployment. For example, the adverse outcomes of deployment are noted in those with high combat exposure (Engelhard et al., 2007; Smith et al., 2008). Therefore, in the ADF there needs to be further analysis of the interaction between the number of deployments, the duration of deployment and the number of trauma exposures.

The ADF Mental Health Reform Program

In July 2009, Defence introduced a comprehensive four-year Mental Health Reform Program to implement the Military Occupational Mental Health and Wellbeing Model in Defence. The program addresses the recommendations of the Dunt Review (*Mental Health in the ADF and Transition to Discharge*, February 2009). The 52 recommendations of the review are being implemented through the achievement of 10 goals.

Goal 1 – Enhancing the mental health workforce. Over the four years of the reform process, $84 million has been allocated to enhance the mental health workforce at the local, regional, national and strategic levels. The reform process has increased the mental health workforce by 25% and aims for an increase of more than 50% by mid-2013. Priorities for expansion include:

- **local/regional service delivery:** the creation of multidisciplinary teams to deliver mental health and occupational psychology services, as well as implement prevention initiatives
- **national:** an ADF Centre for Mental Health staff to provide a mentoring, supervision and training resource with national coverage

- **strategic:** the Mental Health, Psychology and Rehabilitation Branch, created in December 2010 in order to develop policy to support all elements of the reform process.

Goal 2 – Improving mental health governance and service delivery. The 2011 ADF Mental Health and Wellbeing Strategy has been developed and will act as a blueprint to guide the development of the 2012–2015 ADF Mental Health and Wellbeing Action Plan. This plan will provide a framework for future mental health initiatives and the ongoing evaluation of programs and services. Fundamental to this strategy is a new service delivery model that has been developed to improve the integration of mental health into the primary health care environment.

Goal 3 – Improving mental health policy. Improved mental health policy is providing guidance on clinical pathways, evidence-based practice approaches for treatment and contributing to the broader health policy. Improved mental health policy is focusing on both resilience and recovery.

Goal 4 – Improving mental health training. The outcome of this goal has been the development of a comprehensive program of continuing professional development for the mental health workforce and a contemporary mental health literacy program for ADF members.

In response to the 2009 force protection measures initiative, Joint Health Command has developed a comprehensive mental health peer program – 'Keep Your Mates Safe' (KYMS – Mental Health Peer Support). The recently piloted program teaches personnel in the first two years of service not only how to assist each other, but when, where and how to get support for themselves or their mates. It integrates and expands a range of training that had been occurring in an ad hoc manner.

Goal 5 – Prevention strategies. A number of targeted prevention strategies are being evaluated or developed, including strategies on alcohol, tobacco and other drugs, suicide, resilience and the operational mental health support continuum. These strategies will provide a governance and evaluation framework to guide future initiatives:

- ongoing roll-out of BattleSMART (Self-Management and Resilience Training), which enhances cognitive, behavioural and emotional coping skills in serving members across the career continuum. It is currently being delivered to ADF recruits in all three Service recruit training establishments, and has been trialled pre- and post-deployment
- ongoing review and enhancement of the operational mental health support continuum, with more structured decompression and readjustment programs
- data collection for the five-year Longitudinal ADF Study Examining Retention and Resilience (LASER), which is tracking a cohort of serving personnel from all three Services from their point of enlistment
- an ADF Alcohol Management Strategy, developed by Joint Health Command in partnership with the Australian Drug Foundation.

Goal 6 – Enhanced research and surveillance. An enhanced research and surveillance program will provide an improved system of research and surveillance, and be responsible for analysing and reporting on mental health trends, and maintaining data quality and management procedures. The program will also assist with conducting and disseminating collaborative research from and through national and international partnerships.

Goal 7 – Address mental health rehabilitation. The mental health reform process is providing an enhanced framework and governance structure to clinically assess and case manage members undergoing rehabilitation for mental disorders.

Goal 8 – Improve transition services. Barriers to seeking care throughout the transition of ADF members to civilian life have been identified and targeted programs or remediation strategies are being developed. LifeSMART for transition seminars are in place and a comprehensive interactive SMART website will be developed and linked to the Department of Veterans' Affairs transition website *Touchbase.*

Goal 9 – Support family engagement in the mental health care of ADF members. It is recognised that families play a crucial role in the overall health and wellbeing of ADF members. Wherever possible Defence will ensure that families are engaged and have the opportunity to be involved in mental health support programs.

Goal 10 – Improve facilities. Selected facilities will be refurbished or constructed to enhance the delivery of mental health care.

The results of the Mental Health Prevalence and Wellbeing Study will assist senior leaders in the departments of Defence, Veterans' Affairs and Health and Ageing to target further work, especially in the areas of surveillance, detection, prevention, early intervention and treatment.

Implications for prevention in the ADF

Strong leadership behaviours are essential to destigmatise mental health problems and reduce barriers to care. The current mental health peer program, which is being developed within the ADF, needs to be expanded into a **comprehensive peer support network** including a leaders' version for the promotional training continuum. This would ensure that leaders at all levels are able to identify and manage occupational stressors that affect mental health and wellbeing and be advocates for members with disorders.

The fact that 3.9% of the ADF had contemplated **suicide** within the previous year, with 1.1% having made a plan, is indicative of the significance of this issue to the ADF. However, the finding that this did not translate into significantly higher rates of suicide needs to be explored and supports the investment Defence is making by evaluating the current **ADF Suicide Prevention Program**.

The finding that rates of alcohol disorder in the ADF were no higher than in the general community reinforces the investment Defence has made in the ADF Alcohol, Tobacco and Other Drug Program, as well as the recent development of the **ADF Alcohol Management Strategy**.

The BattleSMART and **resilience-building programs** need to be further refined to meet the type of occupation stress identified, especially trauma exposure, and to better address the more prevalent mental health outcomes. Cognitive and behavioural strategies to address depressive and post-traumatic symptoms should be a priority.

Analysis of the data did not reveal a significant relationship between the number of deployments and mental health symptoms. There is, however, a trend indicating greater levels of traumatic symptomatology with each deployment. The data show a strong direct relationship between lifetime trauma exposure and mental health symptoms. While more detailed analysis will be needed, these initial findings suggest that, while the risk of post-trauma symptomatology increases with the number of deployments,

the most significant risk factor is the level of actual combat or trauma exposure, which supports the requirement for additional **interventions for high-risk groups**.

Post-traumatic stress disorder is the most prevalent of the anxiety disorders observed in the ADF and is an issue for all three Services. The rollout of Army's *Dents in the Soul* DVD on the disorder, which aims to demystify it and encourage help seeking to ensure early intervention, should continue and consideration should be given to **mental health literacy initiatives** for the other two Services and for other disorders.

Implications for early intervention

It is estimated that one in five ADF members has a mental disorder. As in the general community, the workload and health services required to meet this need are substantial. One strategy for early intervention would be to **upskill general duties medical officers** in detection and brief intervention, as they are likely to have routine contact with ADF personnel.

Analysis of the data has allowed psychometric determination of the optimal clinical cut-offs for **ADF mental screening instruments**. Work now needs to be done to determine the most ethical and cost-efficient cut-offs for the ADF environment so that policy and processes can be updated.

The current **ADF screening programs** designed to detect personnel for early intervention could be further strengthened by ensuring that they provide an opportunity for early and single-session brief interventions. The ADF conducts mental health screening for all personnel in the deployment cycle. However, to ensure that personnel who are not deploying are regularly assessed, it is proposed that an annual mental health screen be considered.

The majority of personnel indicated that they knew where to seek care and that they would be able to get time off work. This provides support for the range of current **mental health literacy programs**. The data indicated, however, that further work could be done in targeting specific messages to the different ranks in the ADF in relation to both stigma and barriers to care.

Junior ranks would benefit from greater reinforcement of the fact that they will be supported to seek care while messages to officers need to address stigma. Officers were less likely to seek help for a mental health condition. Of the rank groups they were the most likely to report negative stigma associated with seeking care – they felt that help seeking would harm their career or that others would treat them differently. These findings suggest that any **communications strategy** to encourage help seeking among officers needs to target this population through specific messages.

Defence should continue to develop and implement **options for e-mental health training** as a strategy to address concerns about stigma and barriers to care that is targeted to the ADF population. Such approaches have been demonstrated to be effective in delivering mental health information and improving access to care.

Co-morbidity outcomes, especially in relation to alcohol, suggest that commanders need more training to understand the relationship between mental disorders and antisocial behaviours – such as acts of aggression, disinhibition and drink driving – that may indicate underlying problems. **Revised policy** should therefore ensure that personnel in the disciplinary system are considered for a mental assessment.

Analysis of self-reported psychological distress and post-traumatic symptomatology highlight the spectrum of severity of symptoms in the ADF, including high levels of mild and moderate symptomatology. Research indicates the significant risk of progression from a mild to a more severe disorder. So there is potential benefit in the development of **early intervention treatment programs** for ADF members who are only experiencing moderate symptoms. The study also found that there is significant work impairment even at a moderate level of distress in the ADF population. This issue is of particular relevance in those returning from deployment, where there is a risk of delayed onset disorders, particularly post-traumatic stress disorder.

Implications for service delivery and treatment

The estimate that one in five ADF members has a mental disorder indicates the requirement for Defence to prioritise **enhancement of the ADF mental health service** delivery model within the mental health reform process. As in the general community, the workload and health services required to meet this need are substantial.

Forty-one per cent of those with an affective disorder reported severe or very severe impact associated with their symptoms. For the ADF, this means that **enhanced treatment within the employment setting** would be beneficial in terms of the productivity gained.

One strategy to improve services is investment in **e-mental health approaches to treatment,** especially to address the needs amongst the young adult ADF population and those with affective disorders. These approaches are very cost effective and have the potential to provide far more flexible access to care at times that would better suit ADF personnel.

The patterns of prevalence across sex, rank and Service for alcohol disorder are different to the patterns observed for affective and anxiety disorders (that is, alcohol is a particular issue for younger personnel, whereas depression and anxiety occur in a number of age ranges). This indicates that alcohol consumption is not simply a measure of psychological disturbance and that intervention strategies for alcohol problems need to target binge drinking as well as long-term alcohol disorder. It gives support to the investment Defence has made to **regionally based outpatient treatment programs**.

There is a requirement for further **health provider mental health upskilling** as all Defence health personnel need to have the skills to deal with mental health problems and illness. For example, there is a significant rate of suicidal ideation in the ADF, which has the potential to lead to more serious suicidal behaviour. The ADF needs to continue to develop programs to ensure comprehensive suicide risk assessment protocols and upskilling of health personnel.

Additionally, **co-morbidity** of mental disorder is common in the ADF. It needs to be accounted for in any individual or group treatment program, and clinicians need to be trained to routinely assess for management of more complex presentations.

Implications for surveillance and detection

The levels of mental disorder in the ADF population indicate the importance of monitoring of mental health trends through responsive and comprehensive **electronic health surveillance systems**.

The youngest cohort of ADF members is particularly at risk of having a mental disorder. Many of these individuals will leave after five years of service without their disorder being diagnosed or treated. The **Longitudinal ADF Study Evaluating Retention and Resilience** should assist in identifying risk and resilience factors during this period of service. These young members are at particular risk in the community of not receiving adequate care and the link to military service may go unrecognised. Systems are required to ensure that the Department of Veterans' Affairs has visibility of this group, especially those with veteran entitlements.

This study found that a number of typically rare disorders, such as bipolar affective disorder, exist in the ADF. It is therefore important that **clinicians are trained** to recognise and conduct effective differential diagnoses to ensure that treatment services are targeted effectively.

Analysis of the data has allowed psychometric determination of the **optimal epidemiological cut-offs** for ADF mental screening instruments. Consideration needs to be given to their effective use in an ADF environment.

A **significant number of personnel with mental disorders had received no care** in the previous 12 months. This may have been due to stigma, or barriers to care, or because they did not recognise that they had a problem. Despite the fact that 5.2% met diagnostic criteria for an alcohol disorder in the previous 12 months, only 2.1% indicated that they had a problem with drinking. This supports the inclusion of validated mental health screening in periodic health assessments.

ADF females were not significantly different from females in the community other than having a **lower prevalence of alcohol disorder**. Comparison of data in this study with the LASER study should allow the ADF to determine whether females who join the ADF are more resilient than those in the community and what the protective and risk factors are for both sexes.

Future work

The dataset this study has produced for the future monitoring of the health of ADF members is invaluable. There are still are a range of occupational issues that have not been examined, including the impact of social support, family relationships, quality of life, recognition of service, bullying, health risk behaviours, physical issues and mild traumatic brain injury. The study provides a baseline for further monitoring of the quality and effectiveness of mental health services offered to both ADF members and veterans. Joint Health Command, in consultation with key stakeholders, will determine the priorities for the next level of analysis.

The end of each section in this report provides a summary of proposed further analyses that could be conducted utilising the study's dataset. As the ADF is currently involved in deployments involving conflict, exploration of the data that would enhance the mental health and wellbeing of currently deployed personnel should be a priority. However, as the greatest need appears to be in those who have not been deployed, this needs to be balanced with exploration of the factors that will enhance service delivery for the entire ADF population. Table C.1 summarises three domains in which analysis could be conducted: operational mental health issues, strategic policy and improvement of service delivery.

The data from this study will provide an important benchmark for current research into the ADF population. In particular, they will provide comparison points for deployment health studies and for the detailed investigation of personnel who have been deployed to the Middle East Area of Operations.

The data also provide ADF-specific normative data that will provide a context for understanding the LASER findings and for other initiatives like the ADF Alcohol Management Strategy and the third-country decompression trial.

The two-phase design, which included the CIDI, means that Defence has a cohort of personnel identified as having a mental disorder in 2010. Those ADF members in the cohort who have consented to be contacted could be followed up to determine if they have care, or need it, with a focus in the research on determining the pathways to care that better address the barriers to care and stigma.

The findings that suggest the preventive systems in the operational mental health support system are having a positive impact on the mental health status of the ADF need to be further evaluated to determine which of their components are important. Data from this study could be utilised as a benchmark in this evaluation process. Furthermore, the data provide a baseline against which key components of the ADF mental health reform process can be evaluated.

Now that comprehensive mental health prevalence rates have been established for the ADF, consideration needs to be given to the most effective mechanism to monitor mental health trends over time. This report has established cut-offs that will allow more effective monitoring of mental health trends using self-report data and the new Joint electronic Health Data Information system, or JeHDI. Work has also begun in Australia on the next national mental health prevalence study by the ABS. Consideration needs to be given to the most effective method for Defence, in collaboration with the Department of Veterans' Affairs, to leverage off this national program.

Table C.1: *Recommended priorities for detailed analysis of the 2010 ADF Mental Health Prevalence and Wellbeing Study dataset*

Domain 1 – Analysis in support of understanding operational mental health issues	• While no direct relationship was found between mental health outcomes and the number of operational deployments, there is a clear relationship to the level of traumatic exposure. Detailed investigation is needed to identify high-risk subpopulations in the context of deployment, including the impact of their deployment cycle. • Further analysis needs to be conducted on the impact of frequency and length of time away from home, not only on mental health prevalence but on families and social support networks. Items have been included in the study that would allow exploration of such impact on marriages and children. • There is significant international interest in the impact of exposure to blast that may result in mild traumatic brain injury. In order to understand the relevance of this issue to the ADF, an analysis of the head injury items in the survey is needed.
Domain 2 – Analysis in support of strategic policy and command	• Further analysis of the Services should examine cultural differences that may offer opportunities for targeting prevention and treatment interventions. In particular, a detailed analysis of the demographic subgroups and occupational stressors is needed. • The exposures and organisational risks for the onset of a specific disorder should be established in separate analyses. The information derived could inform strategies for structural and administrative reforms in the ADF to improve the mental health of members during their Service life and once they return to the civilian community. • Seven major reviews are currently under way in Defence to determine if there are any systemic issues that need to be addressed within ADF culture. Items that relate to the prevalence and source of bullying in the ADF from these data and its impact on mental health could provide information in support of these reviews. • Elucidation of the risk factors for suicidal ideation will assist in better defining protocols for identifying members of the ADF who are at risk of attempting suicide. • Identifying how those with mental disorders are dealt with by the military justice system is an important priority, as this setting offers substantial opportunities for creating diversionary systems into care. Minor acts of violence and other crimes represent an organisational risk to the ADF and are often preventable if the underlying disorder is treated.

Domain 3 – Analysis in support of improvement in the mental health support network and service delivery	• Lifetime prevalence should be examined to provide critical information about the patterns of progression of mental disorders in the course of an ADF career. Given that recruits should have no active disorder at the time they join the Services, a strategy that identifies the major risks in a career path will create opportunities for preventive interventions. This approach, for example, would demonstrate the extent to which alcohol abuse in the ADF represents self-medication for a mental disorder. • Comparison of the emergence of mental disorders should focus on exploring whether exposure to occupational stressors results in a maturation process that leads to earlier onset of depressive disorder in the ADF population. • The data should also be further analysed to provide the rates of DSM-IV disorder. This report has provided the prevalence using ICD-10 criteria to allow comparison with the 2007 ABS National Mental Health and Wellbeing Survey. However, the rates in most other military studies use DSM-IV rates. More accurate comparisons with Australia's major allies will be assisted by examining the DSM-IV disorder prevalence rates. • The effectiveness of the Return to Australia Psychological Screening and Post-operational Psychological Screening programs and subsequent referrals for treatment can be assessed by cross-linkage of these datasets. An important issue to identify in a screening program is whether the individuals who screen positive receive effective treatment. Another important quality control issue is to identify those who screened positive and were not referred for treatment to ascertain whether they continued on the predicted path to recovery. • The relationship between the mental and physical health of ADF members requires further analysis. Many mental disorders primarily present with physical symptoms and the extent to which the overlap exists in the ADF is important to determine. The identification of the physical disorders that are linked with mental disorders will assist in defining the groups that require psychiatric screening in medical and rehabilitation settings. • The estimation of the financial cost to the organisation of untreated disorders will provide valuable information about the potential costs and benefits of instituting interventions that improve the uptake of treatment services. • Mental disorders have different outcomes within diagnostic categories. An important aim of treatment is to improve the prognosis and limit the course of a disorder. It should therefore be a priority to identify the factors that predict the prognosis and course of the different disorders characterised in this study. • Of all the disorders assessed, individuals with a depressive episode were the most likely to have had professional treatment in the previous 12 months. Further investigation into why this subgroup seeks treatment more readily (that is, into the relationship between psychological distress and impact on functioning) would allow the ADF to target and develop effective intervention initiatives for both this and other disorder types. • A more detailed understanding of co-morbidity, in particular the prevalence of co-morbidity for specific disorders and its relationship to risk factors, would allow Defence to develop targeted interventions.

A strong foundation

The 2010 Mental Health Prevalence and Wellbeing Study is a major deliverable of the ADF Mental Health Reform Program, as it has provided the foundation for the 2011 ADF Mental Health and Wellbeing Strategy and the future evaluation of mental health interventions and services.

It is an important overview of the status of mental health and wellbeing in the ADF which demonstrates that, as in the Australian community, the identification and treatment of mental disorders must be a priority. However, due to the unique demands of military service, the ADF has a different mental disorder profile to that of the community and there are subgroups within it that warrant further detailed investigation and targeted prevention and treatment programs.

The findings summarised in this report suggest that the comprehensive ADF operational mental health support program is assisting to reduce the levels of disorder in deployed populations. Despite this, there are still significant barriers to seeking care and untreated mental disorders are affecting capability. Dealing with the burden of mental disorder in personnel who have never been deployed and therefore are not involved in the operational mental health support continuum will be a particular challenge to be addressed through the mental health reform process. The ADF has robust tools to detect mental disorders and there is a wealth of data yet to be analysed that will provide significant insight into the range of occupational issues and potential interventions.

The initial summary of the data in this report provides a strong foundation for the prioritisation of programs in the development of the 2012–2015 ADF Mental Health and Wellbeing Action Plan. In particular, it highlights the need for continued programs to address stigma and break down barriers to care. These include a command-led communications strategy, consolidating and enhancing current ADF mental health treatment services, comprehensive upskilling of health providers, and establishing an informed an ADF peer network. Most importantly, the data provide a baseline to benchmark the ADF Mental Health Reform Program and inform the development of its initiatives, policies and performance indicators.

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ANNEX A: STUDY METHODOLOGY

This annex outlines the study design, measurement instruments, selection protocols, recruitment methods and associated analyses. The specific aims of the study are stated in the introduction. These are revisited to show that the methodology had to integrate two phases with overlapping but distinct goals.

Aims of the study

This study sought to measure the prevalence of mental disorders and psychological distress in a representative sample (50,049) of currently serving ADF personnel. All regular Navy, Army and Air Force personnel were identified using data extracted from the Defence computerised Personnel Management Key Solution (PMKeyS), on 11 December 2009. Trainees and reservists were not included in the study. In order to achieve the overall aim, the study contained two phases.

The first phase of the study was questionnaire based and had two aims:

- to examine the impact of a range of occupational factors on the mental health of ADF members, including:
  - deployment history
  - physical health
  - quality of life
  - dietary supplements
  - mild traumatic brain injury
  - trauma exposure
  - sleep
  - anger
  - stigma
  - barriers to care
  - caffeine and tobacco use
  - social support
  - family issues
  - occupational issues
  - resilience
  - help seeking
- to screen for potential mental health problems. This screening process became the basis for selection of individuals for a more intensive interview-based diagnostic assessment.

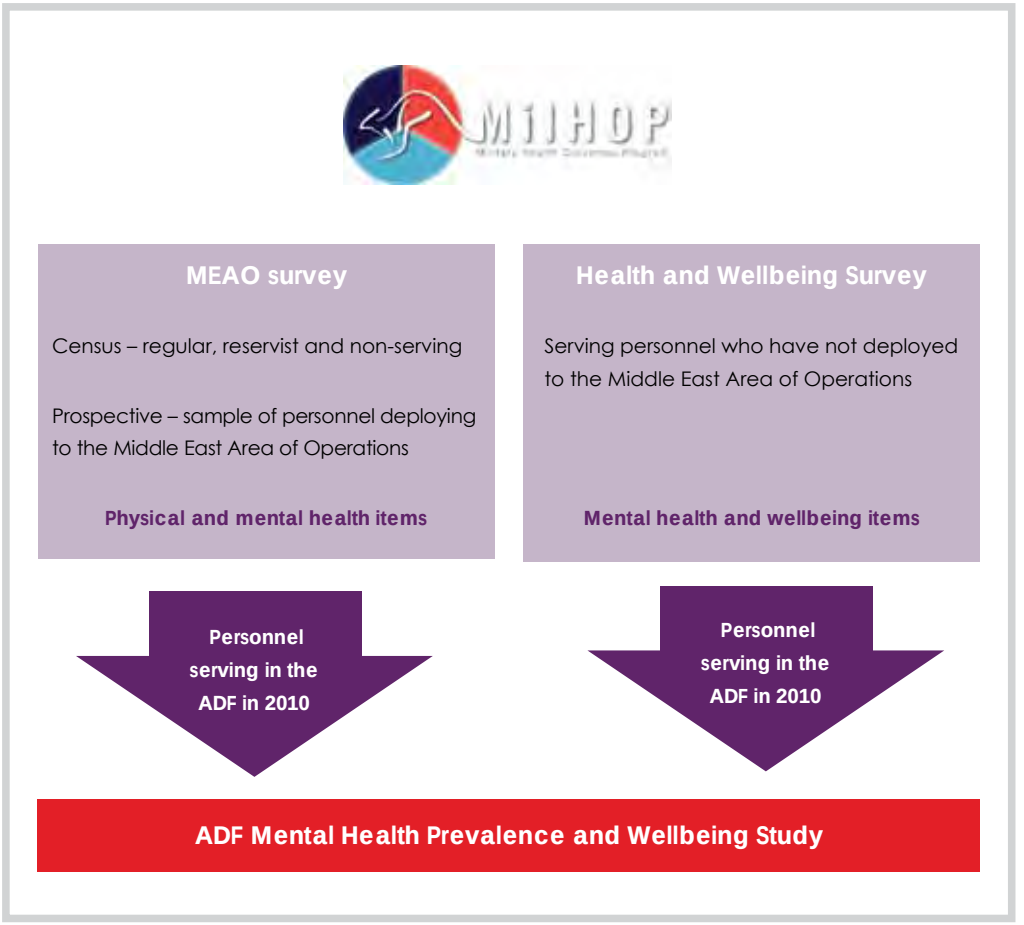
Phase 2 was interview based. This phase of the study also had two aims:

- to provide weighted estimates of the prevalence of lifetime and 12-month ICD-10 mental disorders in the ADF
- to examine the performance of the mental health screening instruments administered as part of Phase 1 and which are currently used in the ADF.

Sample

The study sample was made up of two mutually exclusive subpopulations (see Figure A.1). Subpopulation 1 comprised ADF personnel who had been deployed to the Middle East Area of Operations (MEAO). Subpopulation 2 comprised ADF personnel who had never been on operational deployment or personnel who had been deployed to an operation other than the MEAO.

Figure A.1: *Data sources for the ADF Mental Health Prevalence and Wellbeing Study*



Subpopulation 1 came from a broader MEAO study of both physical and mental health, which was conducted by the Centre for Military and Veterans' Health (University of Queensland and University of Adelaide node). Subpopulation 2 came from the Health and Wellbeing Survey, which focused primarily on the mental health and wellbeing of all ADF members who had not been deployed to the MEAO. The Centre for Traumatic Stress Studies at the University of Adelaide worked in collaboration with the Directorate of Strategic and Operational Mental Health in Joint Health Command to conduct the survey. Subpopulation 1 and subpopulation 2 were combined to create the Mental Health Prevalence and Wellbeing Study dataset.

Response rates

Phase 1 survey respondents

As at 31 January 2011, 52.5% (26,281) of ADF personnel had consented to participate in the study, 8.6% (4,293) declined to participate, and 38.9% (19,475) did not respond. The breakdown of individuals with enough data to be included in the survey is summarised in Table A.1. As the population characteristics were known (that is, sex, Service, medical employment classification status and deployment history), it was possible to compare personnel who responded to the survey with personnel who did not, allowing weighting of the data to provide estimates of prevalence that are representative of the entire ADF.

Table A.1: *Phase 1 survey response rates by Service for the ADF Mental Health Prevalence and Wellbeing Study*

	Population	Respondents	Rate
Total ADF	50,049	24,481	48.9%
Navy	11,612	5,392	46.4%
Army	25,356	11,429	45.1%
Air Force	13,081	7,660	58.6%

The characteristics of Phase 1 survey respondents included:

- Sex – consistent with the ADF population the sample was predominantly male (84.1%, versus 15.9% for females), although ADF females were more likely to respond than ADF males.
- Service – 22% of survey respondents were Navy, 46.7% were Army and 31.3% were Air Force. When the different Services were compared, Air Force personnel were most likely to respond and Army personnel were least likely.
- Age – the mean age of survey respondents was 35.5 (standard deviation (SD)=9.3), which is slightly higher than the mean age of the ADF (33.2 (SD=9.2)). The response rates were lower in the younger age groups. This was particularly notable among those aged between 18 and 27.
- Marital status – ADF personnel who were married were more likely to respond: 77.1% of the respondents were married in contrast to 62.9% of the overall ADF who were married.
- Medical employment classification (MEC) – ADF personnel who were classified as MEC 1 were slightly under-represented in the respondent group (61.1%) compared to total ADF population (65.6%) classified as MEC 1. ADF personnel who were MEC 2 (27.5%) and MEC 3 (9.4%) were slightly over-represented. Two per cent of survey respondents were MEC 4, which closely matched the proportion of MEC in the ADF (2.1%).
- Rank – Phase 1 questionnaire respondents comprised 29.7% officers, 50.6% non-commissioned officers and 19.7% other ranks. ADF personnel in the other ranks had a significantly lower response rate compared to 31.4% of the ADF who were in this ranking category. In contrast, non-commissioned officers were more likely to respond.
- Deployment and education – neither had much impact on the response rates; 65.2% of respondents had been on operational deployment and 34.8% had not.

Phase 2 CIDI interview respondents

A total of 3,688 participants were invited to participate in the telephone interview. Of those invited, 1,798 completed the interview.

In total, 87.5% of CIDI interviews were completed within 60 days of the self-report booklet, with 35.6% (640) completing the interview within 28 days. The mean number of days between completion of the self-report survey and the CIDI interview was 42.0 (SD=25.3).

The characteristics of Phase 2 CIDI respondents included:

- Sex – consistent with the overall group of ADF personnel who were selected for a CIDI, the sample of CIDI respondents was predominantly male (75.6% versus 24.4% of females). There were no differences between males and females in relation to the rate of response to the CIDI.
- Service – The CIDI respondents comprised 21.4% Navy, 39.8% Army and 38.8% Air Force. Navy and Air Force personnel were less likely to respond and Army personnel were more likely to respond.
- Age – The mean age of the CIDI respondents (38.3, SD=9.4) was higher than the mean age of the group invited to do a CIDI (37.3, SD=9.4). Response rates were lower in the younger age groups. This was particularly notable among the 18–27 and the 28–37 age groups.
- Marital status – ADF personnel who were married were as likely to complete a CIDI interview as those who were not married, with proportions reflecting response rates to the Phase 1 survey.
- Medical employment classification (MEC) – The CIDI respondents comprised 50.4% MEC 1, 34% MEC 2, 12.5% MEC 3 and 3.2% MEC 4. This compares to 65.6% MEC 1, 23.4% MEC 2, 8.9% MEC 3 and 2.1% MEC 4 in the entire ADF. ADF personnel who were MEC 1 were therefore slightly under-represented in the respondent group (50.4%) compared to the total CIDI sample (53.9%) and the entire ADF that were MEC 1. ADF personnel who were MEC 2, MEC 3 and MEC 4 were slightly over-represented.
- Rank – 36.4% of CIDI respondents were officers, 49.4% were non-commissioned officers and 14.1% were from the other ranks. Officers were more likely to complete a CIDI interview than non-commissioned officers. ADF personnel in the other ranks were the least likely to respond.
- Deployment and length of service in the ADF – neither had much impact on the response rates for the CIDI interview; 61.8% of CIDI respondents had been on operational deployment and 38.2% had not.

See Annex B for more details of the demographic characteristics of respondents and non-respondents.

Rationale for the study's design

Prevalence estimates were obtained using a two-phase design (Pickles, Dunn, & Vazquez-Barquero, 1995). This approach to epidemiological research is well accepted in the investigation of the prevalence of mental disorders (Salim & Welsh, 2009). In the first phase, participants completed a screening questionnaire, which

is generally economical in terms of time and resources. Based on the results of this screening and demographic information, certain participants were selected for a more accurate but costly formal diagnostic interview.

The data collected from the individual interviews were then weighted to ensure the representativeness of the prevalence estimates for key subgroups in the total ADF population. The weighting yielded estimates that had a similar accuracy to estimates that would have been obtained from a single-phase study that used formal diagnostic interviews of all participants in the sample.

A total of 50,049 ADF members received a questionnaire that combined a range of self-report measures, including those that examined common symptoms of psychological distress, post-traumatic symptomatology and alcohol use. Approximately half (49%, N=24,481) of the surveyed members completed the questionnaire. Based on the results of the completed questionnaires, the second phase of selected interviews was conducted to provide a time- and cost-efficient means of establishing ADF prevalence estimates. Instead of offering all respondents an interview, priority was given to respondents who were identified as being more likely to have a mental disorder based on their screening questionnaire. This process increased the efficiency of Phase 2 by limiting the number of ADF members without disorder that required an interview. Fifteen per cent of the respondents (N=3,733) were offered an interview and approximately half of them (N=1,798) accepted the offer.

The results of these interviews were then weighted to represent the entire ADF, based on the stratification process used to select the sample for the World Mental Health Composite International Diagnostic Interview (CIDI) (Kessler & Üstün, 2004). This stratification strategy, in which a larger proportion of high scorers were selected for interview, reduced the possibility of error in making prevalence estimates by focusing the diagnostic assessment on the respondents most likely to have a disorder. At the same time, because the interviewees were drawn from the large proportion of the ADF population who provided responses to the Phase 1 questionnaire, the potential for sampling error was further reduced. Moreover, the demographic and health status of the ADF members who did not respond at each phase was known and therefore could be taken into account in weighting the data from the interviews. The resulting ADF prevalence estimates could be confidently compared to those from the 2007 Australian Bureau of Statistics National Mental Health and Wellbeing Study (Slade, Johnston, Oakley Browne, Andrews, & Whiteford, 2009) and the prevalence estimates reported in the study of the Canadian Forces (Sareen et al., 2007).

Measures

Phase 1 questionnaire content

In Phase 1, ADF members were screened for mental health problems, psychological distress and occupational stressors using a 30- to 60-minute self-report questionnaire that was completed by the participant either online or on hard copy. The self-report questionnaire (see Annex C) included the Kessler Psychological Distress Scale (K10), the Posttraumatic Stress Disorder Checklist (PCL) and the Alcohol Use Disorders Identification Test (AUDIT), as well as a number of questions to examine help seeking, stigma and barriers to care in ADF members. Anonymity was preserved through the allocation of a unique study number to each participant. A brief description of each of the measures and outcome variables used in this report follows.

PCL

The PCL (Weathers, Litz, Herman, Huska, & Keane, 1993) has been designed to incorporate all of the symptomatic criteria for DSM-IV post-traumatic stress disorder. The 17 questions of the PCL are scored from 1 to 5 and are summed to give a total score from 17 to 85. For comparison purposes with ADF post-deployment reports (RtAPS and POPS), PCL scores were categorised into four risk levels: low (17–29), moderate (30-39), high (40–49) and very high (50–85), which provide an indication of the risk of post-traumatic stress disorder.

K10

The K10 is a short 10-item screening questionnaire for psychological distress that was developed in the context of the US national co-morbidity study (Kessler et al., 2002). The 10 questions of the K10 are scored from 1 to 5 and are summed to give a total score of between 10 and 50. Various methods have been used to stratify the scores of the K10. The categories of low (10–15), moderate (16–21), high (22–29) and very high (30–50) that are used in this report are derived from the cut-offs of the K10 that were used in the 2007 ABS Australian National Mental Health and Wellbeing Survey. In addition, K10 scores were categorised into two levels of psychological distress – low (10–19) and high (20–50) – for comparison purposes with RtAPS and POPS.

AUDIT

Alcohol consumption and problem drinking was examined using the AUDIT (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993), a brief self-report screening instrument developed by the World Health Organization. This instrument consists of 10 questions to examine the quantity and frequency of alcohol consumption (questions 1 to 3), possible symptoms of dependence (questions 4–6), and the reactions or problems related to alcohol (questions 7–10). The AUDIT is an instrument that is widely used in epidemiological and clinical practice for defining at-risk patterns of drinking. Babor, Higgins-Biddle, Saunders and Monteiro (2001), in describing the significance of the different zones of risk, suggested that 0–7 (Zone I) represents those who would benefit from alcohol education, 8–15 (Zone II) represents those who are likely to require simple advice, 16–19 (Zone III) represents those for whom counselling and continued monitoring are required, and 20–40 (Zone IV) represents those who require diagnostic evaluation and treatment.

Help seeking, stigma and barriers to care

Issues about help seeking, stigma and barriers to care were only examined in the non-MEAO subpopulation.

Help seeking was assessed in the self-report questionnaire using the following question: 'Have you sought help for a stress, emotional, mental health or family problem in the last 12 months?'

Stigma was addressed with the following items:

- It would harm my career or career prospects.
- People would treat me differently.
- I would be seen as weak.

Barriers to care were examined using the following items:

- I wouldn't know where to get help.
- I would have difficulty getting time off work.
- It would stop me from being deployed.

The non-MEAO subpopulation were asked to rate on a five-point scale (strongly disagree, disagree, uncertain, agree, strongly agree) how much each of these concerns might affect their decision to seek help. The response categories of 'strongly agree' and 'agree' were then combined to produce the prevalence estimates for each of the six barriers to care.

Number of deployments

The total numbers of major operations that ADF members had been deployed on was obtained from the self-report questionnaire. These operations were defined according to the following criteria: warlike, peacekeeping, peace-monitoring or humanitarian support. The lifetime number of deployments was categorised as follows: 0, 1, 2, 3, 4, 5, 6 or more.

Phase 2 diagnostic interview

The World Mental Health Survey Initiative version of the World Health Organization's Composite International Diagnostic Interview, version 3 (CIDI) provides an assessment of mental disorders based on the definitions and criteria of two classification systems: the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV) and the World Health Organization International Classification of Diseases, 10th revision (ICD-10) (World Health Organization, 1994). This instrument was chosen because it is widely used in epidemiological surveys worldwide, is fully structured, and was used in the 2007 ABS National Survey of Mental Health and Wellbeing.

12-month and lifetime ICD-10 mental disorders

Twelve-month and lifetime ICD-10 rates of the following 10 mental disorders were established: depressive episode, dysthymia, bipolar affective disorder, panic attack, panic disorder, agoraphobia, social phobia, specific phobia, generalised anxiety disorder, obsessive-compulsive disorder, post-traumatic stress disorder, alcohol harmful use, and alcohol dependence. Clinical calibration studies report that the CIDI has good validity (Haro et al., 2006). Throughout this report, the ICD-10 prevalence rates are presented with hierarchy rules applied in order to directly compare them with the Australian national rates (Slade et al., 2009). For all ICD-10 disorders, the standard CIDI algorithms were applied, which means that in order for a 12-month diagnosis to be given, an individual would be required to meet lifetime criteria initially and then have reported symptoms in the 12 months prior to the interview. Data on lifetime trauma were obtained from the post-traumatic stress disorder module of the CIDI.

Lifetime trauma exposure

Lifetime exposure to trauma was examined as part of the post-traumatic stress disorder module of the CIDI. The events examined were combat (military or organised non-military group); being a peacekeeper in a war zone or place of ongoing terror; being an unarmed civilian in a place of war, revolution, military coup or invasion; living as a civilian in a place of ongoing terror for political, ethnic, religious or other reasons; being

a refugee; being kidnapped or held captive; being exposed to a toxic chemical that could cause serious harm; being in a life-threatening automobile accident; being in any other life-threatening accident; being in a major natural disaster; being in a man-made disaster; having a life-threatening illness; being beaten by a parent or guardian as a child; being beaten by a spouse or romantic partner; being badly beaten by anyone else; being mugged, held up, or threatened with a weapon; being raped; being sexually assaulted; being stalked; having someone close to you die; having a child with a life-threatening illness or injury; witnessing serious physical fights at home as a child; having someone close experience a traumatic event; witnessing someone badly injured or killed or unexpectedly seeing a dead body; accidentally injuring or killing someone; purposefully injuring, torturing or killing someone; seeing atrocities or carnage such as mutilated bodies or mass killings; experiencing any other traumatic event; and experiencing any other event that the participant did not want to talk about.

The number of total lifetime events experienced by each individual was initially categorised in the same way as deployments. In addition, the number of traumatic events was treated as a continuous variable.

The interview was administered by a trained group of interviewers with a minimum qualification of an honours degree in psychology. Their diagnostic inter-rater reliability was monitored and supervised at the Centre for Traumatic Stress Studies throughout the study. While Defence provided the centre with the contact details for all ADF personnel, the responses to the survey and interview were de-identified and therefore any personal details provided by participants was not provided to Defence or the Department of Veterans' Affairs.

Stratification procedure

The first step in the stratification was to define the measures and demographic characteristics to be used as the basis for selection of participants for Phase 2. The variables used to stratify participants were AUDIT, PCL, sex and Service.

Selection procedure 1: self-report measures

The decision to use the AUDIT and the PCL was based on an examination of PCL, K10 and AUDIT scores collected in previous surveys of ADF members who had been deployed to the Near North Area of Influence versus comparable non-deployed members (McGuire et al., 2009a, 2009b).

These results were used because the participants were considered to be sufficiently representative of the entire ADF for the purpose of estimating the likely performance of these self-report questionnaires in the study. The analysis revealed that the K10 and the PCL were highly correlated with each other, but not with the AUDIT. Consequently, only the scores from the PCL and the AUDIT were used in the stratification.

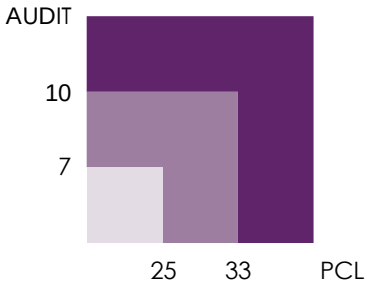
The 60th and 80th percentiles of the PCL and AUDIT distributions from the previous surveys were used as cut-offs for each measure to form three bands to stratify the sample for subsequent interview, as shown in Figure A.2. The 80th percentile was suitable as a cut-off for 'high scorers' as it was deemed a conservative diagnostic boundary for the detection of caseness. The 60th percentile was chosen as a secondary cut-off to represent those who displayed significant symptoms in their responses to

the Phase 1 questionnaire and thus could include a number of 'false negatives', specifically, individuals with mental health problems who would have otherwise been missed by the 80th percentile cut-offs. The lowest scorers (band 1) were individuals who had a lower probability of false negative diagnoses. The specific scores on the PCL and AUDIT represented within each of these bands are as follows:

- Band 3: PCL > 33 or AUDIT > 10
- Band 2: (25 < PCL ≤ 33 and AUDIT ≤ 10) or (PCL ≤ 33 and 7 < AUDIT ≤ 10)
- Band 1: PCL ≤ 25 and AUDIT ≤ 7.

These bands are represented in Figure A.2.

Figure A.2: *Bands used to stratify participants for CIDI selection*



To ensure that high scorers on the K10 were not being excluded by this stratification process, possibly creating a systematic underestimate of the prevalence estimates of mental disorders, the distribution (see Figure A.3) of high K10 scores (above 25) was compared for those participants who were selected for interview (white) and those not selected (red).

Figure A.3: *K10 scores for eligible CIDI participants by CIDI selection*

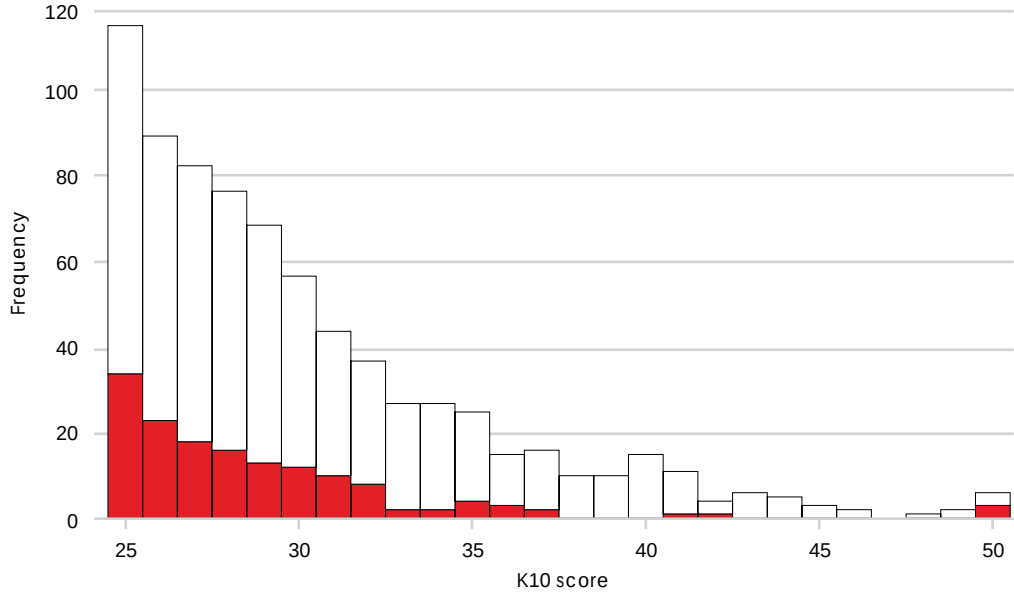


Figure A.3 shows that only a very small proportion of high K10 scorers were not selected. Hence, the decision to use the PCL and AUDIT to select the Phase 1 respondents for interview did not create any substantial error by consistently missing individuals with a diagnosable mental disorder.

Selection procedure 2: demographic characteristics

In addition to the PCL and AUDIT, sex and Service were used to select participants in Phase 2. This step was taken because of the greater number of males and Army personnel in the ADF. Females were oversampled to ensure sufficient numbers from each Service.

Strata

Table A.2 shows the distribution who were selected for interview based on their Phase 1 band, sex and Service. Each cell shows the number of individuals in each strata grouping and the percentage they represented of the total number of respondents in each strata. Thus, for individuals who met the band 3 criteria, 100% of the female and 100% of the male respondents in all three Services were selected to be offered an interview, while for band 2 among males, 50% of the Navy respondents, 20% of the Army respondents, and 30% of the Air Force respondents were selected to be offered an interview. Because females constitute a small percentage of ADF members, they were oversampled in order to obtain a sample that, where possible, was similar to the total number of males within each band. In total, there was a high probability that most personnel with high PCL or AUDIT scores and most females who completed a questionnaire were interviewed.

The numbers of participants selected for a CIDI in each stratum are presented in Table A.2. In total, 3,688 of the 16,184 eligible participants were selected to be offered an interview.

Table A.2: *CIDI strata sampling number and percentages*

	Female N (%)	Male Navy N (%)	Male Army N (%)	Male Air Force N (%)
Band 3 (high scorers)	192 (100%)	260 (100%)	690 (100%)	297 (100%)
Band 2	263 (100%)	155 (50%)	174 (20%)	313 (30%)
Band 1 (low scorers)	452 (50%)	195 (20%)	139 (5%)	558 (10%)

Weighting

Weighting refers to the process of adjusting the results for the participants who were interviewed to infer results for the total ADF population. Weighting involves the allocation of a representative value or weight to the data for each interviewee based on the stratification variables of interest. The weight can be considered an indication of how many individuals in the ADF population are represented by each study participant.

The ADF Mental Health Prevalence and Wellbeing Study was designed to provide prevalence estimates at the ADF population level; therefore, weights were applied to the data from both the questionnaire and CIDI, to provide ADF prevalence estimates using the method outlined below.

Estimates from CIDI

The CIDI participants were selected from eligible survey respondents through a stratified sampling design based on sex, Service and band. These strata were used to weight the CIDI responses to the entire population. Within each stratum the weight was calculated as the population size divided by the number of CIDI respondents from the stratum. As band was not available for non-respondents, the population size within each stratum was estimated by multiplying the known sex by Service population total by the observed proportion belonging to the band of interest from within the corresponding stratum. A finite population correction was also applied to adjust the variance estimates for the reasonably large sampling fraction within each stratum.

As outputs by sex, Service and rank were required, post-stratification by these variables was used to adjust the weights so that their known population totals were reproduced by the estimates. This also accounts for the known differential non-response by rank to the survey.

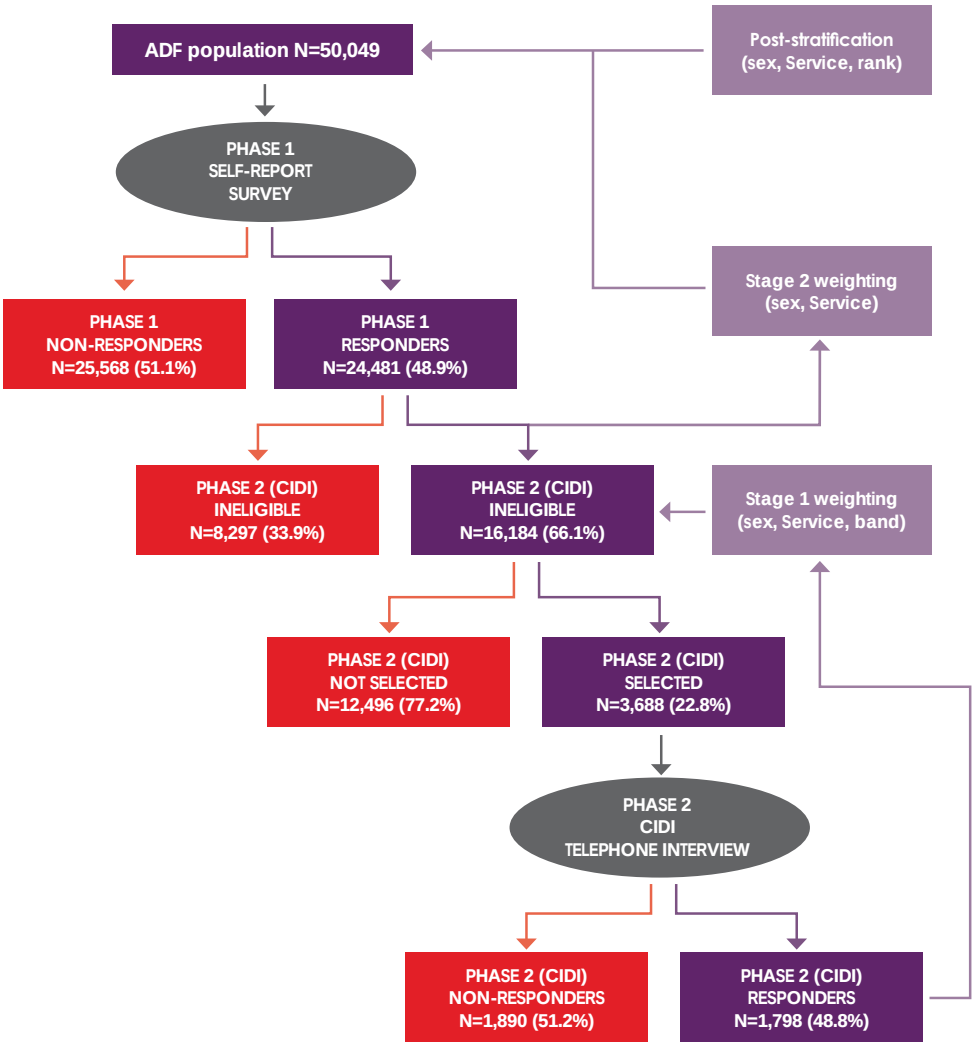
All CIDIs completed under protocol 1 were included in the CIDI sample for ADF mental health prevalence estimates. However, for examining the performance of the mental health screening instruments administered as part of Phase 1, the interview needed to be completed within 70 days of completing the questionnaire. As a result of these different criteria for use of CIDI responses, two separate weights were calculated.

Estimates from survey

In order to correct for differential non-response the results were weighted based on strata formed from sex, Service, rank and MEC status. Within each stratum the weight was calculated as the population size divided by the number of respondents from the stratum. In each section of the questionnaire, responses were only used if the participant responded to all of the questions from that section. As a result, a separate weight was calculated for each section of the questionnaire. A finite population correction was also applied to adjust the variance estimates for the reasonably large sampling fraction within each stratum.

Figure A.4 outlines the two-phase design, incorporating both weighting and post-stratification.

Figure A.4: *ADF Mental Health Prevalence and Wellbeing Study – two-phase design and weighting process*



Phase 1 procedure

Before the initial contact by the investigators, a series of strategies were used to promote the studies. A warm-up letter was sent to potential participants advising them that they had been selected to participate and inviting them to do so. There were media releases, and promotional posters were placed in the Service newspapers, websites and relevant ADF bases. Finally, commanders were briefed on the study in a range of forums. All ADF members were informed that their participation in the study was confidential and that their responses would be de-identified prior to the information being released to Defence.

Initial contact

Contact details were obtained through the Defence telephone directory and PMKeyS on 11 December 2009 and routinely updated throughout the study.

For ADF personnel with a Defence mailing address, initial contact was made by mail distribution of a hard-copy warm-up letter and information brochure describing the significance of the project.

On 23 April 2010, a personalised email invitation was sent to all ADF personnel with a Defence email address.

Follow-up of non-respondents

A multi-faceted approach to following up survey non-respondents was undertaken in order to maximise participation:

- Email reminders were sent out at regular intervals to all ADF personnel who had not responded to the survey.
- Personnel who requested paper surveys, or who did not have email addresses, were posted hard copies.
- Personnel who had not responded to the email invitation were sent a hard-copy invitation pack via Australia Post.
- A coordinated series of Defence base visits were organised to provide hard copies to ADF members (mostly other ranks) who did not have regular access to a computer at work. Hard-copy packs were numbered consecutively and, on confirmation of personal details, a pack was given to a participant and the pack number was recorded on stand-alone laptop computers. Consent forms and questionnaires were then returned in separate envelopes and placed in boxes. Paperwork collected during the visit (each approximately one week) was returned by courier in Defence-level secured boxes for processing after the base visit was completed. Other forms were returned in the reply-paid envelope provided as per the approved protocol.
- Finally, an intensive period of telephone follow-up was conducted in the final four months of the data collection period. Non-respondents were called on their business number, their mobile number, or their home phone number.

Phase 2 procedure

In Phase 2, each participant in the stratified sample who had completed one of the self-report questionnaires was invited to participate in a one-hour clinical telephone interview with a research psychologist trained in the use the CIDI. Participants were interviewed, on average, four weeks after completing their online or hard-copy survey and, as previously described, were selected for interview based on their scores on the PCL and AUDIT.

Selection

To be eligible for selection for a CIDI, participants were required to:

- have been a regular serving member of the ADF on 11 December 2009
- have completed the AUDIT, PCL and K10 scales in their self-report questionnaire
- have completed their survey fewer than 60 days before the interview. Participants contacted during the 60-day window were still interviewed even if the interview itself was conducted outside the 60-day window
- have consented to be contacted for a follow-up interview
- not be imminently due to be deployed to the MEAO.

Recruitment

Potential CIDI participants were contacted by telephone using contact details obtained in one of three ways:

- using the contact details and alternative contact details provided by the participant either online or in hard copy as part of Phase 1
- using information obtained from the Defence telephone directory
- using information available from PMKeyS.

To ensure that the most recent contact details were obtained, a download of current listed addresses and phone numbers for these participants was obtained from the Defence telephone directory and PMKeyS immediately before commencement of the interview period (30 April 2010) and intermittently throughout the interview period.

Initial contact was conducted by telephone. Trained research staff from the Centre for Traumatic Stress Studies with the appropriate security clearances made the recruitment calls. Research staff were blind to the scores of each participant on the self-report measures.

The first telephone call was made using the primary phone number provided in the contact information sheet completed in Phase 1. In the absence of this information, a phone number obtained from the alternative contact information sheet, PMKeyS or the Defence telephone directory was used. Telephone calls were made at a variety of times during the day and evening in order to maximise contact opportunities.

A maximum of 10 attempts was made to speak to a participant before that participant was removed from the participant pool. When no contact was made, and a telephone message service was available, a reminder message was left on two of the 10 occasions only, along with the study's free-call number and email address.

When telephone contact was made, the research officer explained the aims, purpose and requirements of the interview. The participant was then asked if they would like to book in for a telephone interview and a time for the telephone interview was arranged. Prior to the interview, each participant was sent the CIDI information brochure by email or post, or directed to view the information on the Military Health Outcomes Program website. Personnel who declined to participate were removed from the contact list.

Informed oral consent was obtained over the telephone prior to commencement of the interview and was recorded using a digital recorder. The participant was informed that consent was being recorded, a consent statement was read to them, and they were asked whether they agreed.

Participants were given opportunities to opt out of Phase 2 by:

- calling the research team on the toll-free number (1800 232 904) provided in the information sheet
- sending an email to cmvh@adelaide.edu.au to register their refusal
- waiting for the research staff member to call them for their interview and register their refusal over the telephone.

Statistical analysis

Analyses were conducted in Stata version 11.2 or SAS version 9.2. All analyses were conducted using weighted estimates of totals, means and proportions, except where specified otherwise. Standard errors were estimated using linearisation, except where specified otherwise.

Subgroup analyses were conducted on each of the ICD-10 disorders using the following demographic and deployment history predictors: sex, rank, Service and deployment status (never deployed, warlike deployment and non-warlike deployment). The levels of impairment and associated rates of the uptake for treatment are reported for the individual ICD-10 disorders.

To compare the ADF rates against the Australian population, direct standardisation was applied to data from the National Survey of Mental Health and Wellbeing (Australian Bureau of Statistics, 2007). The data were restricted to employed people between the ages of 18 and 67, to match the ADF population. For the standardisation, age was grouped into 10-year age groups (18–27, 28–37, ... , 58–67) with the following exceptions:

- Ages 38–67 were grouped for the estimation of suicide attempts.
- Ages 48–67 were grouped for the estimation of suicide plans.
- Ages 18–37 were grouped for the estimation of dysthymia in males.
- Ages 48–67 were grouped for the estimation of bipolar affective disorder in males.
- Ages 48–67 for males were grouped for the estimation of total and partial days out of role among those with an alcohol disorder.

Standard errors were estimated using the replication weights provided in the Australian Bureau of Statistics confidentialised unit record file.

Comparisons between the prevalence of 12-month ICD-10 disorders among subgroups were analysed using weighted logistic regressions. All regressions involved the variables sex, Service, rank and deployment status. The interaction between sex and Service was initially included, but was removed if found to be non-significant. No other interactions were included. The effect of warlike/non-warlike deployment was tested for the disorder groups: any affective disorder, any anxiety disorder, any alcohol disorder and any disorder.

Comparisons between the prevalence of 12-month ICD-10 disorder classes (affective disorders, anxiety disorders and alcohol disorders) among subgroups were analysed using a weighted multinomial logistic regression, with number of disorder classes as the outcome. The regression involved the covariates sex, Service, rank and deployment status. The interaction between sex and Service was initially included, but was removed if found to be non-significant. No other interactions were included.

To estimate the effect of the disorder groups (any affective disorder, any anxiety disorder and any alcohol disorder) on the number of days out of role in the previous four weeks due to psychological distress, a weighted zero-inflated negative binomial regression model was used. This model was chosen over the alternatives (poisson, negative binomial and zero-inflated poisson) using the Akaike information criterion, and also through likelihood ratio tests and the Vuong test. A plot of the differences between the observed and predicted probabilities was also inspected, as suggested by Long (1997). These model comparisons were conducted using the unweighted CIDI sample. All interactions between the three disorder groups were initially included in both the zero-inflation model and the count model, with only the significant effects retained. The same process was used to estimate the effect of the disorder groups on the number of partial days out of role and doctor visits due to psychological distress. This process was also applied to determine the effect of co-morbidity (one, two or three disorder classes) on total and partial days out of role, and doctor visits due to psychological distress.

For each disorder the severity of the impact on total and partial days out of role and doctor visits due to psychological distress were also calculated. These analyses therefore took into account both the prevalence of the disorders and the rate of partial/total days out of role and doctor visits for those with disorders. To calculate the severity of the impact of a particular disorder, on days out of role for example, the percentage of the weighted total number of days out of role in the previous four weeks accounted for by those with that particular disorder was used.

Comparisons between the prevalence of self-reported suicidal behaviour among subgroups were analysed using weighted logistic regressions. All regressions involved the covariates sex, Service, rank and deployment status. The interaction between sex and Service was initially included, but was removed if found to be non-significant. No other interactions were included. For the question relating to thoughts that they would be better off dead or of hurting themselves in some way, a proportional odds model (also known as a cumulative logit model) was considered for analysis. However, since the main assumption of this approach was violated, an alternative approach was considered whereby the ordinal response was dichotomised by means of several cut-offs and modelled using separate weighted logistic regressions.

For the PCL, K10 and AUDIT, the proportion (N (%)) of ADF personnel in each subgroup is presented. Comparisons between the average total scores for the AUDIT, PCL and K10 among subgroups were analysed using weighted multiple linear regressions. All regressions involved the covariates sex, Service, rank and deployment status. The interaction between sex and Service was initially included, but was removed if found to be non-significant. No other interactions were included.

Comparisons between the prevalence of self-reported alcohol consumption and problems with drinking were analysed using weighted logistic regressions. A proportional odds model was considered for analysis; however, since the main assumption of this approach was violated, the ordinal response was dichotomised by means of several cut-offs. All regressions involved the covariates sex, Service, rank and deployment status. The interaction between sex and Service was initially included, but was removed if found to be non-significant. No other interactions were included.

Comparisons between the prevalence of self-reported psychological distress and the rate of help seeking due to psychological distress (total and partial days out of role, and doctor visits) among subgroups were analysed with weighted zero-inflated negative binomial regression models. This model was chosen over the alternatives (poisson, negative binomial and zero-inflated poisson) using the Akaike information criterion, and also through likelihood ratio tests and the Vuong test. A plot of the differences between the observed and predicted probabilities was also inspected. These model comparisons were conducted using the unweighted self-report sample.

To estimate the sensitivity, specificity, positive predictive value and negative predictive value of the self-report scales, weighted estimates of proportions were used. The areas under the curve and standard error were estimated using the Stata macro developed by Bisoffi, Mazzi and Dunn (2000). Jackknife sampling was used for the estimation of the areas under the curve and standard error.

Two cut-offs are presented for each self-report measure. The first cut-off, recommended for consideration in screening protocols, is the value that maximises the sum of the sensitivity and specificity (the proportion of those with and without the disease that are correctly classified). The second cut-off, recommended for making epidemiological estimates, is the value that brings the number of false positives and false negatives closest together, counterbalancing these sources of error most accurately. This optimal cut-off would give the closest estimate of the true prevalence of 30-day ICD-10 mental disorder as measured by the CIDI.

Comparisons between the prevalence of help seeking, stigma and barriers to care among subgroups were analysed using weighted logistic regressions. All regressions involved the variables sex, Service, rank, K10 category and deployment status. The interaction between sex and Service was initially included, but was removed if found to be non-significant. No other interactions were included.

To determine whether the number of deployments and the number of traumatic exposures were associated with poor mental health outcomes, a proportional odds model was considered for analysis. However, since the main assumption of this approach was violated, the ordinal response was dichotomised by means of several cut-offs and modelled using separate weighted logistic regressions. For example for the K10, three cut-offs (or three dichotomous outcomes) were modelled corresponding to very high (=1) versus high, moderate, low (=0); very high, high (=1) versus moderate, low (=0); and very high, high, moderate (=1) versus low (=0).

Ethics approvals

All study protocols were approved by the Australian Defence Human Research Ethics Committee (574-09, 588-07, 488-07), the University of Queensland Behavioural and Social Sciences Ethical Review Committee (200900441), the Department of Veterans' Affairs Human Research Ethics Committee (E008-026) and the University of Adelaide Human Research Ethics Committee (H-183-2009, H065-2008, H064-2008). Specific information pertaining to study materials is enclosed in these documents and can be accessed from the Australian Defence Human Research Ethics Committee.

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ANNEX B: DETAILED DATA TABLES

Section 1 data tables

Table B.1: *Estimated prevalence of 12-month mental disorders, by age and sex, ADF and ABS study*

Age group (years)	Males					Females					Persons				
	ABS %	ABS 95% CI	N ADF	ADF %	95% CI	ABS %	ABS 95% CI	N ADF	ADF %	95% CI	% ABS	ABS 95% CI	N ADF	% ADF	95% CI
18–27	24.2	18.8–29.6	2,517	26.8	18.6–34.9	27.9	23.7–32.1	558	26.5	17.1–35.9	24.7	20.2–29.3	3,076	26.7	19.8–33.6
28–37	19.0	13.8–24.1	3,297	26.0	16.5–35.5	26.0	22.2–29.8	584	21.9	15.8–28.0	20.0	15.7–24.4	3,881	25.3	17.3–33.2
38–47	16.3	10.6–22.1	2,507	17.8	14.3–21.3	21.8	16.1–27.4	425	24.3	17.1–31.6	17.0	11.9–22.0	2,932	18.5	15.3–21.7
48–57	16.2	10.1–22.3	986	14.8	9.8–19.8	16.2	11.3–21.0	66	23.2	6.9–39.5	16.2	10.6–21.8	1,052	15.2	10.3–20.0

Table B.2: *Estimated prevalence of 12-month affective disorders, by age and sex, ADF and ABS study*

Age group (years)	Males					Females					Persons				
	ABS %	ABS 95% CI	N ADF	ADF %	95% CI	ABS %	ABS 95% CI	N ADF	ADF %	95% CI	% ABS	ABS 95% CI	N ADF	% ADF	95% CI
18–27	5.8	2.9–8.7	1,015	10.8	5.6–15.9	7.7	5.1–10.3	190	9.0	3.1–14.9	6.1	3.6–8.5	1,204	10.5	6.1–14.8
28–37	6.4	3.4–9.3	1,565	12.3	4.8–19.9	7.5	5.4–9.6	293	11.0	6.7–15.3	6.5	4.0–9.0	1,858	12.1	5.8–18.4
38–47	5.1	2.3–7.9	998	7.1	4.9–9.3	6.9	2.6–11.1	186	10.7	6.1–15.2	5.3	2.8–7.8	1,184	7.5	5.4–9.5
48–57	4.9	2.7–7.1	456	6.8	3.8–9.9	3.8	2.2–5.4	27	9.4	0.0–19.3	4.8	2.8–6.8	482	7.0	4.0–9.9

Table B.3: *Estimated prevalence of 12-month anxiety disorders, by age and sex, ADF and ABS study*

Age group (years)	Males					Females					Persons				
	ABS %	ABS 95% CI	N ADF	ADF %	95% CI	ABS %	ABS 95% CI	N ADF	ADF %	95% CI	% ABS	ABS 95% CI	N ADF	% ADF	95% CI
18–27	10.6	7.0–14.1	980	10.4	6.2–14.7	19.2	16.0–22.5	455	21.6	13.1–30.1	11.9	8.9–14.8	1,435	12.5	8.6–16.3
28–37	11.3	7.6–15.0	2,518	19.8	10.3–29.3	21.8	17.6–26.1	465	17.4	11.7–23.2	12.9	9.8–16.0	2,983	19.4	11.5–27.3
38–47	12.5	7.8–17.2	1,818	12.9	10.0–15.8	18.8	13.7–23.8	293	16.8	10.4–23.2	13.2	9.1–17.3	2,111	13.3	10.6–16.0
48–57	13.3	7.5–19.2	768	11.5	7.0–16.1	14.0	9.4–18.7	58	20.4	4.8–36.0	13.4	8.0–18.7	826	11.9	7.5–16.3

Table B.4: *Estimated prevalence of 12-month alcohol disorders, by age and sex, ADF and ABS study*

Age group (years)	Males					Females					Persons				
	ABS %	ABS 95% CI	N ADF	ADF %	95% CI	ABS %	ABS 95% CI	N ADF	ADF %	95% CI	% ABS	ABS 95% CI	N ADF	% ADF	95% CI
18–27	15.2	10.3–20.0	1,261	13.4	7.2–19.6	9.4	6.2–12.6	45	2.1	0.0–4.4	14.3	10.2–18.4	1,306	11.3	6.3–16.4
28–37	6.5	3.3–9.8	521	4.1	2.3–5.9	2.5	0.9–4.0	66	2.5	0.0–5.1	5.9	3.2–8.7	587	3.8	2.3–5.4
38–47	4.5	2.0–7.0	565	4.0	2.1–5.9	2.0	0.4–3.6	35	2.0	0.0–4.3	4.2	2.1–6.4	600	3.8	2.1–5.5
48–57	1.8	0.3–3.3	91	1.4	0.5–2.3	2.1	0.1–4.0	7	2.3	0.0–6.5	1.8	0.4–3.2	98	1.4	0.5–2.3

Table B.5: *Estimated prevalence of 12-month affective disorders, by type and sex, ADF and ABS study*

	Males						Females						Persons					
	ABS %	ABS 95% CI	ADF %	ADF 95% CI	Diff (ADF–ABS)	Diff 95% CI	ABS %	ABS 95% CI	ADF %	ADF 95% CI	Diff (ADF–ABS)	Diff 95% CI	ABS %	ABS 95% CI	ADF %	ADF 95% CI	Diff (ADF–ABS)	Diff 95% CI
Depressive episodes	2.9	(2.0, 3.9)	6.0	(4.5, 7.4)	3.0	(1.3, 4.8)	4.4	(3.3, 5.6)	8.7	(6.1, 11.3)	4.3	(1.5, 7.1)	3.1	(2.3, 4.0)	6.4	(5.1, 7.7)	3.2	(1.7, 4.7)
Dysthymia	0.7	(0.1, 1.3)	1.0	(0.5, 1.4)	0.3	(–0.5, 1.0)	1.0	(0.6, 1.5)	1.6	(0.6, 2.6)	0.6	(–0.5, 1.7)	0.8	(0.2, 1.3)	1.1	(0.6, 1.5)	0.3	(–0.4, 1.0)
Bipolar affective disorder	2.5	(1.3, 3.7)	3.1	(0.8, 5.3)	0.6	(–2.0, 3.1)	2.4	(1.4, 3.4)	1.2	(0.3, 2.0)	–1.2	(–2.5, 0.1)	2.5	(1.4, 3.5)	2.8	(0.9, 4.7)	0.3	(–1.9, 2.5)
Any affective disorder	5.7	(4.2, 7.3)	9.4	(6.8, 12.0)	3.7	(0.6, 6.7)	7.3	(5.8, 8.8)	10.2	(7.5, 12.9)	2.9	(–0.2, 6.0)	5.9	(4.6, 7.3)	9.5	(7.2, 11.8)	3.6	(0.9, 6.2)

Table B.6: *Estimated prevalence of 12-month anxiety disorders, by type and sex, ADF and ABS study*

	Males						Females						Persons					
	ABS %	ABS 95% CI	ADF %	ADF 95% CI	Diff (ADF–ABS)	Diff 95% CI	ABS %	ABS 95% CI	ADF %	ADF 95% CI	Diff (ADF–ABS)	Diff 95% CI	ABS %	ABS 95% CI	ADF %	ADF 95% CI	Diff (ADF–ABS)	Diff 95% CI
Panic attack	5.8	(4.4, 7.1)	6.4	(4.7, 8.0)	0.6	(–1.6, 2.8)	11.1	(9.3, 12.9)	11.6	(8.5, 14.7)	0.5	(–3.0, 4.1)	6.5	(5.2, 7.7)	7.1	(5.6, 8.6)	0.6	(-1.3, 2.5)
Panic disorder	2.5	(1.5, 3.4)	1.2	(0.8, 1.7)	–1.2	(–2.3, –0.2)	3.0	(2.1, 3.9)	2.5	(1.3, 3.8)	–0.5	(–2.0, 1.1)	2.5	(1.7, 3.4)	1.4	(1.0, 1.9)	–1.1	(–2.1, –0.2)
Agoraphobia	1.8	(1.0, 2.6)	2.7	(1.9, 3.5)	0.9	(–0.2, 2.0)	2.5	(1.8, 3.3)	1.4	(0.4, 2.4)	–1.1	(–2.4, 0.1)	1.9	(1.2, 2.6)	2.5	(1.8, 3.2)	0.6	(–0.4, 1.6)
Social phobia	4.2	(2.8, 5.6)	3.5	(2.6, 4.3)	–0.7	(–2.4, 0.9)	6.5	(5.2, 7.8)	6.2	(3.7, 8.7)	–0.3	(–3.1, 2.5)	4.5	(3.3, 5.8)	3.8	(3.0, 4.7)	–0.7	(–2.2, 0.8)
Specific phobia	–	–	5.6	(4.2, 7.0)	–	–	–	–	8.7	(6.0, 11.4)	–	–	–	–	6.0	(4.8, 7.3)	–	–
Generalised anxiety disorder	1.6	(0.9, 2.3)	1.0	(0.5, 1.4)	–0.6	(–1.5, 0.2)	3.1	(2.0, 4.1)	1.8	(0.6, 3.0)	–1.3	(–2.9, 0.3)	1.8	(1.1, 2.4)	1.1	(0.7, 1.5)	–0.7	(–1.5, 0.04)
Obsessive-compulsive disorder	1.2	(0.7, 1.8)	3.2	(0.9, 5.5)	2.0	(–0.4, 4.4)	2.9	(1.9, 3.9)	2.7	(1.1, 4.3)	–0.2	(–2.0, 1.7)	1.4	(1.0, 1.9)	3.2	(1.1, 5.2)	1.7	(–0.4, 3.8)
Post-traumatic stress disorder	4.6	(3.4, 5.8)	8.1	(5.5, 10.6)	3.5	(0.6, 6.3)	9.0	(7.5, 10.5)	10.1	(7.3, 12.8)	1.0	(–2.1, 4.2)	5.2	(4.1, 6.3)	8.3	(6.1, 10.6)	3.1	(0.6, 5.6)
Any anxiety disorder	11.5	(9.4, 13.5)	14.2	(10.9, 17.5)	2.7	(–1.2, 6.6)	19.9	(17.7, 22.1)	18.8	(15.0, 22.5)	–1.1	(–5.5, 3.2)	12.6	(10.8, 14.4)	14.8	(11.9, 17.7)	2.2	(–1.2, 5.6)

Table B.7: *Estimated prevalence of 12-month alcohol disorders, by type and sex, ADF and ABS study*

	Males						Females						Persons					
	ABS %	ABS 95% CI	ADF %	ADF 95% CI	Diff (ADF–ABS)	Diff 95% CI	ABS %	ABS 95% CI	ADF %	ADF 95% CI	Diff (ADF–ABS)	Diff 95% CI	ABS %	ABS 95% CI	ADF %	ADF 95% CI	Diff (ADF–ABS)	Diff 95% CI
Alcohol harmful use	5.5	(3.9, 7.1)	3.1	(1.7, 4.5)	–2.4	(–4.6, –0.3)	3.7	(2.4, 5.1)	1.3	(0.2, 2.5)	–2.4	(–4.2, –0.7)	5.3	(3.9, 6.7)	2.8	(1.6, 4.1)	–2.4	(–4.3, –0.6)
Alcohol dependence	3.3	(2.1, 4.5)	2.6	(1.8, 3.3)	–0.7	(–2.2, 0.7)	1.4	(0.7, 2.1)	0.9	(0.2, 1.7)	–0.5	(–1.5, 0.6)	3.0	(2.0, 4.1)	2.3	(1.7, 3.0)	–0.7	(–2.0, 0.6)
Any alcohol disorder	8.8	(6.7, 10.9)	5.6	(4.1, 7.2)	–3.2	(–5.8, –0.5)	5.1	(3.7, 6.6)	2.2	(0.9, 3.6)	–2.9	(–4.9, –0.9)	8.3	(6.5, 10.1)	5.2	(3.8, 6.6)	–3.1	(–5.4, –0.8)

Table B.8: *Mean number of days in the previous four weeks totally out of role for the ADF and the ABS due to health/psychological distress by 12-month ICD-10 disorder*

	Males						Females						Persons					
	ABS	ABS 95% CI	ADF	ADF 95% CI	Diff (ADF-ABS)	Diff 95% CI	ABS	ABS 95% CI	ADF	ADF 95% CI	Diff (ADF-ABS)	Diff 95% CI	ABS	ABS 95% CI	ADF	ADF 95% CI	Diff (ADF-ABS)	Diff 95% CI
Any affective disorder	2.8	(0.4, 5.3)	1.8	(1.0, 2.6)	-1.0	(-3.6, 1.5)	1.6	(0.8, 2.4)	2.1	(1.0, 3.2)	0.5	(-0.9, 1.9)	2.7	(0.6, 4.8)	1.9	(1.2, 2.6)	-0.8	(-3.0, 1.4)
Any anxiety disorder	2.5	(1.0, 4.0)	1.2	(0.7, 1.7)	-1.3	(-2.9, 0.3)	1.2	(0.8, 1.6)	1.6	(0.9, 2.3)	0.4	(-0.4, 1.2)	2.3	(1.0, 3.6)	1.3	(0.8, 1.7)	-1.0	(-2.4, 0.3)
Any alcohol disorder	0.9	(0.3, 1.5)	0.5	(0.1, 0.8)	-0.4	(-1.1, 0.3)	1.0	(0.5, 1.5)	2.7	(0.7, 4.6)	1.7	(-0.4, 3.7)	0.9	(0.4, 1.4)	0.6	(0.2, 1.0)	-0.3	(-0.9, 0.3)
Any disorder	1.6	(0.9, 2.4)	1.2	(0.8, 1.6)	-0.4	(-1.2, 0.5)	1.2	(0.8, 1.5)	1.4	(0.8, 1.9)	0.2	(-0.5, 0.8)	1.5	(0.9, 2.2)	1.2	(0.9, 1.6)	-0.3	(-1.0, 0.4)

Table B.9: *Mean number of days in the previous four weeks partially out of role for the ADF and the ABS due to health/psychological distress by 12-month ICD-10 disorder*

	Males						Females						Persons					
	ABS	ABS 95% CI	ADF	ADF 95% CI	Diff (ADF-ABS)	Diff 95% CI	ABS	ABS 95% CI	ADF	ADF 95% CI	Diff (ADF-ABS)	Diff 95% CI	ABS	ABS 95% CI	ADF	ADF 95% CI	Diff (ADF-ABS)	Diff 95% CI
Any affective disorder	2.1	(1.1, 3.1)	3.0	(1.9, 4.0)	0.9	(-0.6, 2.4)	4.1	(2.7, 5.4)	6.7	(4.2, 9.1)	2.6	(-0.2, 5.4)	2.4	(1.5, 3.3)	3.6	(2.5, 4.6)	1.2	(-0.2, 2.6)
Any anxiety disorder	2.0	(1.3, 2.7)	2.6	(1.8, 3.4)	0.6	(-0.4, 1.7)	2.3	(1.7, 3.0)	4.2	(2.8, 5.6)	1.9	(0.3, 3.4)	2.0	(1.4, 2.6)	2.9	(2.2, 3.7)	0.9	(-0.1, 1.8)
Any alcohol disorder	1.6	(0.4, 2.7)	1.7	(0.8, 2.5)	0.1	(-1.3, 1.5)	1.5	(0.6, 2.4)	4.3	(0.9, 7.7)	2.8	(-0.7, 6.3)	1.6	(0.6, 2.5)	1.8	(1.0, 2.7)	0.3	(-1.0, 1.6)
Any disorder	1.6	(1.1, 2.1)	2.3	(1.8, 2.9)	0.8	(-0.01, 1.5)	2.3	(1.7, 2.8)	4.2	(2.9, 5.4)	1.9	(0.5, 3.3)	1.7	(1.2, 2.1)	2.6	(2.1, 3.2)	0.9	(0.2, 1.7)

Table B.10: *Days totally unable to carry out their work, study or day-to-day activities in the previous four weeks, by type of 12-month affective disorder, subgrouped by weeks*

ICD-10 affective disorder	0 days			1–7 days			8–14 days			15–21 days			22–28 days			Missing		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Depressive episodes	2,265	71.2	62.9–79.5	492	15.5	9.1–21.8	188	5.9	2.1–9.7	83	2.6	0.0–5.3	44	1.4	0.0–2.7	110	3.5	0.3–6.6
Dysthymia	371	70.5	52.9–88.0	54	10.3	1.3–19.4	61	11.5	0.0–26.1	12	2.2	0.0–6.3	19	3.5	0.0–8.3	10	2.0	0.0–5.7
Bipolar affective disorder	1,204	85.9	73.8–98.0	108	7.7	0.0–16.2	10	0.7	0.0–2.2	25	1.8	0.0–4.5	20	1.4	0.0–3.5	35	2.5	0.0–5.6
Any affective disorder	3,631	76.3	68.9–83.8	588	12.4	7.3–17.4	210	4.4	1.7–7.2	120	2.5	0.4–4.6	63	1.3	0.3–2.4	145	3.0	0.7–5.4

Table B.11: *Days partially unable to carry out their work, study or day-to-day activities in the previous four weeks, by type of 12-month affective disorder, subgrouped by weeks*

ICD-10 affective disorder	0 days			1–7 days			8–14 days			15–21 days			22–28 days			Missing		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Depressive episodes	1,661	52.2	41.9–62.5	898	28.2	19.5–37.0	296	9.3	4.6–14.0	126	4.0	0.6–7.3	103	3.2	1.1–5.4	98	3.1	0.0–6.1
Dysthymia	267	50.7	29.7–71.7	159	30.3	11.1–49.4	64	12.2	2.3–22.2	17	3.3	0.0–9.4	10	2.0	0.0–5.7	8	1.6	0.0–4.5
Bipolar affective disorder	990	70.7	48.6–92.7	209	14.9	1.7–28.2	116	8.3	0.0–17.0	20	1.4	0.0–3.5	31	2.2	0.0–5.1	35	2.5	0.0–5.6
Any affective disorder	2,800	58.9	48.0–69.7	1,111	23.3	15.6–31.1	433	9.1	4.9–13.3	146	3.1	0.7–5.4	134	2.8	1.1–4.5	132	2.8	0.5–5.0

Table B.12: *Four-week service use (times seen a doctor), by type of 12-month affective disorder (from K10 plus in relation to general symptoms of psychological distress reported in the K10)*

ICD-10 affective disorder	0 times			1 time			2 times			3 times			4 times			5+ times			Missing		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Depressive episodes	1,947	61.2	51.6–70.7	289	9.1	3.3–14.8	283	8.9	4.2–13.6	131	4.1	0.8–7.4	231	7.3	3.2–11.3	191	6.0	2.0–10.0	111	3.5	0.4–6.6
Dysthymia	289	54.9	33.9–75.9	86	16.4	0.0–35.5	107	20.4	4.8–35.9	22	4.1	0.0–9.9	11	2.0	0.0–5.8	12	2.2	0.0–6.3	0	0.0	–
Bipolar affective disorder	1,130	80.6	64.8–96.4	86	6.1	0.0–13.5	38	2.7	0.0–5.9	0	0.0	–	73	5.2	0.0–12.1	40	2.8	0.0–6.2	35	2.5	0.0–5.6
Any affective disorder	3,146	66.1	56.5–75.8	431	9.1	4.0–14.1	346	7.3	3.7–10.8	152	3.2	0.8–5.6	293	6.2	2.7–9.6	242	5.1	2.1–8.1	146	3.1	0.7–5.4

Table B.13: *Days totally unable to carry out their work, study or day-to-day activities in the previous four weeks due to psychological distress, by type of 12-month anxiety disorder, subgrouped by weeks*

ICD-10 anxiety disorder	0 days			1–7 days			8–14 days			15–21 days			22–28 days			Missing		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Panic attack	2,419	68.4	58.3–78.4	747	21.1	11.3–30.9	171	4.8	2.0–7.6	104	2.9	1.1–4.8	31	0.9	0.0–1.9	66	1.9	0.1–3.6
Panic disorder	441	62.2	46.9–77.5	210	29.7	14.6–44.7	0	0.0	–	36	5.1	0.3–10.0	0	0.0	–	22	3.0	0.0–7.1
Agoraphobia	838	66.4	53.4–79.4	217	17.2	6.6–27.9	54	4.3	0.0–9.2	48	3.8	0.2–7.5	12	0.9	0.0–2.6	92	7.3	0.0–15.8
Social phobia	1,537	80.1	71.7–88.5	297	15.5	7.5–23.5	50	2.6	0.1–5.1	25	1.3	0.0–3.1	0	0.0	–	10	0.5	0.0–1.6
Specific phobia	2,279	75.7	66.9–84.5	337	11.2	6.0–16.4	232	7.7	0.6–14.8	98	3.3	0.2–6.3	23	0.8	0.0–1.8	41	1.4	0.0–3.4
Generalised anxiety disorder	331	62.1	43.5–80.7	141	26.5	8.2–44.8	29	5.4	0.0–11.4	0	0.0	–	12	2.2	0.0–6.2	20	3.8	0.0–8.9

ICD-10 anxiety disorder	0 days			1–7 days			8–14 days			15–21 days			22–28 days			Missing		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Obsessive-compulsive disorder	1,315	83.1	67.6–98.7	90	5.7	0.0–11.8	143	9.1	0.0–21.9	22	1.4	0.0–3.4	12	0.7	0.0–2.2	0	0.0	–
Post-traumatic stress disorder	3,220	77.2	68.2–86.3	508	12.2	7.0–17.3	64	1.5	0.3–2.8	106	2.6	0.3–4.8	30	0.7	0.0–1.5	241	5.8	0.0–12.6
Any anxiety disorder	5,775	77.8	71.2–84.5	880	11.9	7.9–15.8	233	3.1	0.3–6.0	147	2.0	0.6–3.4	42	0.6	0.0–1.1	343	4.6	0.4–8.8

Table B.14: *Days partially out of role in the previous four weeks due to psychological distress, by type of 12-month anxiety disorder, subgrouped by weeks*

ICD-10 anxiety disorder	0 days			1–7 days			8–14 days			15–21 days			22–28 days			Missing		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Panic attack	1,869	52.8	41.6–64.0	1,026	29.0	18.6–39.5	299	8.4	4.4–12.5	195	5.5	2.6–8.4	103	2.9	1.0–4.9	45	1.3	0.0–2.8
Panic disorder	340	48.0	32.2–63.7	210	29.7	14.6–44.7	79	11.2	3.7–18.7	35	4.9	0.2–9.6	33	4.7	0.0–9.8	12	1.6	0.0–4.7
Agoraphobia	586	46.5	32.5–60.5	410	32.5	19.6–45.4	157	12.5	5.3–19.7	14	1.1	0.0–3.1	12	0.9	0.0–2.6	82	6.5	0.0–14.9
Social phobia	1,002	52.2	41.2–63.3	628	32.7	22.0–43.5	153	8.0	3.4–12.6	99	5.2	0.2–10.1	37	2.0	0.0–4.2	0	0.0	–
Specific phobia	1,820	60.4	50.3–70.6	811	26.9	17.4–36.5	169	5.6	2.5–8.7	88	2.9	0.0–5.9	51	1.7	0.2–3.2	72	2.4	0.0–5.2
Generalised anxiety disorder	235	44.0	25.2–62.9	124	23.2	6.2–40.2	121	22.7	5.9–39.6	15	2.7	0.0–6.4	39	7.3	0.0–15.4	0	0.0	–
Obsessive-compulsive disorder	1,126	71.2	50.0–92.5	318	20.1	2.9–37.4	65	4.1	0.1–8.1	20	1.3	0.0–3.2	51	3.2	0.0–8.6	0	0.0	–
Post-traumatic stress disorder	2,228	53.4	40.2–66.7	1,368	32.8	21.7–43.9	262	6.3	2.6–10.0	175	4.2	1.3–7.1	54	1.3	0.2–2.4	82	2.0	0.0–4.1
Any anxiety disorder	4,351	58.6	49.5–67.8	2,092	28.2	20.7–35.7	424	5.7	3.2–8.2	234	3.2	1.4–4.9	155	2.1	0.6–3.5	164	2.2	0.2–4.2

Table B.15: *Estimated 12-month service use, by type of 12-month anxiety disorder (from CIDI in relation to the type of affective disorder reported)*

ICD-10 disorder	Received professional treatment in last 12 months											
	Yes			No			Don't know			Refused		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Panic disorder	343	48.3	32.7–63.9	367	51.7	36.1–67.3	0	0.0	–	0	0.0	–
Agoraphobia	584	46.3	32.7–60.0	677	53.7	40.0–67.3	0	0.0	–	0	0.0	–
Social phobia	484	25.2	16.1–34.3	1,435	74.8	65.7–83.9	0	0.0	–	0	0.0	–
Specific phobia	371	12.3	6.0–18.6	2,640	87.7	81.4–94.0	0	0.0	–	0	0.0	–
Generalised anxiety disorder	403	75.6	60.0–91.2	130	24.4	8.8–40.0	0	0.0	–	0	0.0	–
Obsessive-compulsive disorder	185	11.7	2.5–20.9	1,349	85.3	73.6–97.0	0	0.0	–	47	3.0	0.0–8.8
Post-traumatic stress disorder[a]	1,068	50.2	38.7–61.7	1,041	48.9	37.4–60.4	7	0.3	0.0–0.9	12	0.5	0.0–1.6

a Does not cover all members with this disorder, but percentages are out of the total number with responses.

Table B.16: *Four-week service use (times seen a doctor), by type of 12-month anxiety disorder (from K10 in relation to general symptoms of psychological distress reported in the K10)*

ICD-10 anxiety disorder	0 times			1 time			2 times			3 times			4 times			5+ times			Missing		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Panic attack	2,036	57.6	46.5–68.6	442	12.5	2.6–22.5	434	12.3	6.4–18.2	169	4.8	1.2–8.3	161	4.6	2.0–7.2	214	6.1	2.9–9.2	80	2.3	0.4–4.2
Panic disorder	358	50.5	34.8–66.2	48	6.7	1.0–12.5	152	21.5	6.7–36.3	14	1.9	0.0–5.5	46	6.5	0.0–14.1	45	6.3	0.9–11.6	47	6.6	0.4–12.8
Agoraphobia	647	51.3	37.5–65.1	83	6.6	0.0–13.3	249	19.7	8.0–31.5	0	0.0	–	75	5.9	0.6–11.2	114	9.0	2.1–16.0	93	7.4	0.0–15.9
Social phobia	1,309	68.2	58.0–78.4	85	4.4	0.8–8.1	293	15.3	7.0–23.6	68	3.6	0.0–8.3	50	2.6	0.1–5.1	113	5.9	1.3–10.5	0	0.0	–
Specific phobia	2,165	71.9	62.7–81.1	110	3.6	0.7–6.6	184	6.1	2.1–10.1	138	4.6	0.3–8.9	214	7.1	0.2–14.1	143	4.7	1.7–7.8	57	1.9	0.0–4.2

ICD-10 anxiety disorder	0 times			1 time			2 times			3 times			4 times			5+ times			Missing		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Generalised anxiety disorder	256	48.0	29.0–67.1	71	13.2	1.3–25.2	118	22.0	5.3–38.8	0	0.0	–	20	3.8	0.0–9.1	58	10.9	0.0–23.2	10	1.9	0.0–5.4
Obsessive-compulsive disorder	1,145	72.4	51.6–93.2	61	3.9	0.0–9.0	103	6.5	0.7–12.3	101	6.4	0.0–14.7	148	9.4	0.0–22.5	22	1.4	0.0–3.4	0	0.0	–
Post-traumatic stress disorder	2,867	68.8	58.1–79.5	254	6.1	3.0–9.2	362	8.7	3.9–13.5	151	3.6	0.9–6.3	131	3.1	0.7–5.6	150	3.6	0.9–6.3	255	6.1	0.0–13.0
Any anxiety disorder	5,085	68.5	60.5–76.5	390	5.3	3.0–7.5	731	9.9	6.1–13.6	246	3.3	1.1–5.5	331	4.5	1.3–7.6	276	3.7	1.7–5.7	360	4.9	0.6–9.1

Table B.17: *Total days out of role in the previous four weeks due to psychological distress, by type of 12-month alcohol disorder, subgrouped by weeks*

ICD-10 alcohol disorder	0 days			1–7 days			8–14 days			15–21 days			22–28 days			Missing		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Alcohol harmful use	1,266	89.2	80.8–97.5	61	4.3	0.0–9.2	23	1.6	0.0–3.9	20	1.4	0.0–3.5	0	0.0	–	49	3.5	0.0–8.9
Alcohol dependence	975	83.3	73.1–93.5	113	9.6	1.8–17.5	19	1.6	0.0–3.7	0	0.0	–	0	0.0	–	64	5.5	0.0–12.4
Any alcohol disorder	2,241	86.5	79.8–93.2	174	6.7	2.2–11.3	42	1.6	0.0–3.2	20	0.8	0.0–1.9	0	0.0	–	113	4.4	0.0–8.7

Table B.18: *Partial days out of role in the previous four weeks due to psychological distress, by type of 12-month alcohol disorder, subgrouped by weeks*

ICD-10 alcohol disorder	0 days			1–7 days			8–14 days			15–21 days			22–28 days			Missing		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Alcohol harmful alcohol use	1,176	82.9	72.5–93.2	151	10.7	3.3–18.0	32	2.3	0.0–4.9	0	0.0	–	20	1.4	0.0–3.3	40	2.8	0.0–8.1
Alcohol dependence	774	66.1	52.6–79.5	156	13.4	4.8–21.9	133	11.3	1.3–21.4	25	2.2	0.0–4.6	10	0.9	0.0–2.5	72	6.2	0.0–13.2
Any alcohol disorder	1,950	75.3	66.2–84.4	308	11.9	6.2–17.5	165	6.4	1.3–11.4	25	1.0	0.0–2.1	30	1.2	0.0–2.5	112	4.3	0.0–8.7

Table B.19: *Four-week service use (number of visits to the doctor), by type of 12-month alcohol disorder (from K10 in relation to general symptoms of psychological distress reported in the K10)*

	0 times			1 time			2 times			3 times			4 times			5+ times			Missing		
ICD-10 alcohol disorder	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Alcohol harmful use	1,183	83.4	72.5–94.2	19	1.3	0.0–3.2	91	6.4	0.0–13.6	12	0.8	0.0–2.4	32	2.3	0.0–4.9	20	1.4	0.0–3.5	63	4.4	0.0–10.2
Alcohol dependence	808	69.0	55.5–82.5	111	9.5	1.6–17.3	19	1.6	0.0–3.9	29	2.5	0.0–5.9	41	3.5	0.0–10.0	90	7.7	0.0–15.8	72	6.2	0.0–13.2
Any alcohol disorder	1,991	76.9	67.8–86.0	130	5.0	1.2–8.9	110	4.2	0.2–8.2	41	1.6	0.0–3.4	73	2.8	0.0–6.1	110	4.3	0.3–8.3	135	5.2	0.7–9.7

Table B.20: *Estimated prevalence of ICD-10 post-traumatic stress disorder among those reporting different traumatic event types in the CIDI*

Traumatic event	Total no. experiencing the event			ICD-10 PTSD associated with each event		
	N	%	95% CI	N	%	95% CI
Saw someone badly injured/killed or unexpectedly saw a dead body	22,204	44.4	40.5–48.3	3,057	13.8	9.3–18.3
Someone close died	18,159	36.3	32.7–39.8	2,407	13.3	8.2–18.4
Peacekeeper (in war zone or place of ongoing terror)	15,781	31.5	27.9–35.2	1,456	9.2	6.3–12.1
Combat (military or organised non-military group)	14,941	29.9	26.4–33.3	1,550	10.4	7.5–13.3
Life-threatening automobile accident	13,395	26.8	23.1–30.5	1,667	12.4	5.5–19.4
Mugged, held up, threatened with weapon	12,994	26.0	22.4–29.5	2,303	17.7	10.3–25.1
Exposed to toxic chemical that could cause serious harm	11,390	22.8	19.1–26.4	1,527	13.4	5.3–21.5
Major natural disaster	8,862	17.7	15.3–20.2	1,148	13.0	9.2–16.7
Other life-threatening accident	7,815	15.6	12.3–18.9	1,425	18.2	6.7–29.7
Man-made disaster	7,376	14.7	11.9–17.6	1,371	18.6	7.4–29.8
Saw atrocities or carnage such as mutilated bodies or mass killings	6,923	13.8	11.1–16.6	1,541	22.3	10.7–33.9
Badly beaten by anyone else	6,745	13.5	10.6–16.3	1,106	16.4	4.0–28.8
Witnessed serious physical fights at home as a child	6,690	13.4	10.5–16.2	1,268	19.0	6.3–31.6
Life-threatening illness	6,137	12.3	9.2–15.3	588	9.6	5.6–13.6
Other traumatic event	6,034	12.1	9.4–14.7	1,638	27.1	14.1–40.1
Someone close had traumatic experience	5,677	11.3	9.2–13.4	754	13.3	9.1–17.5
Sexual assault	4,792	9.6	7.2–12.0	548	11.4	7.1–15.8
Child had life-threatening illness/injury	3,172	6.3	4.8–7.8	526	16.6	9.6–23.6
Stalked	2,659	5.3	3.2–7.4	1,020	38.4	15.1–61.7
Raped	2,518	5.0	2.9–7.1	1,066	42.3	18.5–66.1
Accidentally injured/killed someone	2,293	4.6	1.9–7.3	651	28.4	0.0–62.0
Beaten by parents/guardian as a child	2,291	4.6	3.4–5.7	401	17.5	10.0–25.1
Experience don't want to talk about	2,131	4.3	3.3–5.2	574	26.9	17.8–36.1
Unarmed civilian in a place of war, revolution, military coup or invasion	1,886	3.8	2.6–4.9	344	18.3	4.1–32.4
Purposefully injured/tortured/killed someone	1,614	3.2	1.8–4.6	267	16.5	5.8–27.3
Lived as a civilian in a place of ongoing terror for political, ethnic, religious or other reasons	1,305	2.6	1.7–3.5	46	3.5	0.3–6.7
Kidnapped or held captive	864	1.7	0.0–3.7	678	78.5	52.3–100.0
Beaten by spouse/romantic partner	770	1.5	1.0–2.1	240	31.1	14.2–48.1
Refugee	74	0.1	0.0–0.3	8	11.0	0.0–34.3

Section 2 data tables

Table B.21: *K10 risk categories (two categories) by sex, Service, sex by Service, rank and deployment status*

	N	Low (10–19)			High (20–50)		
		N	%	% CI	N	%	% CI
Total	50,049	41,008	81.9	81.5–82.4	9,041	18.1	17.6–18.5
Males	43,241	35,658	82.5	82.0–83.0	7,583	17.5	17.0–18.0
Navy	9,508	7,562	79.5	78.4–80.7	1,946	20.5	19.3–21.6
Army	22,843	18,852	82.5	81.8–83.3	3,991	17.5	16.7–18.2
Air Force	10,890	9,245	84.9	84.2–85.6	1,645	15.1	14.4–15.8
Females	6,808	5,351	78.6	77.5–79.7	1,457	21.4	20.3–22.5
Navy	2,104	1,559	74.1	71.7–76.5	545	25.9	23.5–28.3
Army	2,513	2,002	79.7	77.9–81.4	511	20.3	18.6–22.1
Air Force	2,191	1,790	81.7	80.1–83.2	401	18.3	16.8–19.9
Navy	11,612	9,120	78.5	77.5–79.6	2,492	21.5	20.4–22.5
Army	25,356	20,854	82.2	81.6–82.9	4,502	17.8	17.1–18.4
Air Force	13,081	11,034	84.4	83.7–85.0	2,047	15.6	15.0–16.3
Officers	12,034	10,311	85.7	85.1–86.3	1,723	14.3	13.7–14.9
Non-commissioned officers	22,319	18,472	82.8	82.2–83.3	3,847	17.2	16.7–17.8
Other ranks	15,696	12,226	77.9	76.7–79.0	3,470	22.1	21.0–23.3
Never deployed	20,171	15,866	78.7	77.8–79.5	4,305	21.3	20.5–22.2
Deployed at least once	29,878	25,143	84.2	83.6–84.7	4,735	15.8	15.3–16.4

Table B.22: *K10 risk categories, by sex by Service and by Service, rank and deployment status*

		Low (10–15)			Moderate (16–21)			High (22–29)			Very high (30–50)		
	N	N	%	% CI	N	%	% CI	N	%	% CI	N	%	% CI
Total	50,049	32,380	64.7	64.1–65.3	11,237	22.5	22.0–22.9	4,655	9.3	9.0–9.6	1,778	3.6	3.3–3.8
Males	43,241	28,397	65.7	65.1–66.3	9,504	22.0	21.4–22.5	3,909	9.0	8.7–9.4	1,431	3.3	3.1–3.6
Navy	9,508	5,810	61.1	59.7–62.5	2,347	24.7	23.4–25.9	979	10.3	9.4–11.2	372	3.9	3.3–4.5
Army	22,843	15,178	66.4	65.5–67.4	4,788	21.0	20.2–21.8	2,093	9.2	8.6–9.7	784	3.4	3.1–3.8
Air Force	10,890	7,409	68.0	67.1–68.9	2,369	21.8	20.9–22.6	836	7.7	7.2–8.2	275	2.5	2.2–2.8
Females	6,808	3,983	58.5	57.2–59.8	1,733	25.5	24.3–26.6	746	11.0	10.1–11.8	347	5.1	4.5–5.7
Navy	2,104	1,156	54.9	52.2–57.6	537	25.5	23.2–27.9	268	12.7	10.9–14.6	144	6.8	5.4–8.2
Army	2,513	1,505	59.9	57.8–62.0	625	24.9	23.0–26.7	266	10.6	9.2–11.9	118	4.7	3.7–5.6
Air Force	2,191	1,322	60.3	58.4–62.3	571	26.1	24.3–27.8	212	9.7	8.5–10.9	86	3.9	3.1–4.7
Navy	11,612	6,966	60.0	58.7–61.2	2,884	24.8	23.7–25.9	1,247	10.7	9.9–11.5	516	4.4	3.9–5.0
Army	25,356	16,683	65.8	65.0–66.6	5,413	21.3	20.6–22.1	2,359	9.3	8.8–9.8	901	3.6	3.2–3.9
Air Force	13,081	8,731	66.7	65.9–67.6	2,940	22.5	21.7–23.2	1,049	8.0	7.5–8.5	361	2.8	2.5–3.0
Officers	12,034	8,353	69.4	68.6–70.2	2,500	20.8	20.1–21.5	930	7.7	7.3–8.2	251	2.1	1.9–2.3
Non-commissioned officers	22,319	14,723	66.0	65.3–66.6	4,878	21.9	21.3–22.5	1,977	8.9	8.5–9.3	741	3.3	3.1–3.6
Other ranks	15,696	9,304	59.3	57.9–60.6	3,859	24.6	23.4–25.8	1,747	11.1	10.3–12.0	786	5.0	4.4–5.6
Never deployed	20,170	11,909	59.0	58.1–60.0	5,228	25.9	25.0–26.8	2,174	10.8	10.2–11.4	859	4.3	3.8–4.7
Deployed at least once	29,878	20,471	68.5	67.8–69.2	6,008	20.1	19.5–20.7	2,481	8.3	7.9–8.7	918	3.1	2.8–3.3

Table B.23: *Days in the previous four weeks ADF personnel were totally unable to carry out their work, study or day-to-day activities due to psychological distress (subgrouped by weeks)*

	N	Missing[a]			0 days			1–7 days			8–14 days			15–21 days			22–28 days		
		N	%	% CI	N	%	% CI	N	%	% CI	N	%	% CI	N	%	% CI	N	%	% CI
Total	50,049	1,885	3.8	3.5–4.0	44,884	89.7	89.3–90.0	2,644	5.3	5.0–5.5	309	0.6	0.5–0.7	178	0.4	0.3–0.4	148	0.3	0.2–0.4
Males	43,241	1,647	3.8	3.5–4.1	39,039	90.3	89.9–90.7	2,014	4.7	4.4–4.9	258	0.6	0.5–0.7	154	0.4	0.3–0.4	129	0.3	0.2–0.4
Navy	9,508	256	2.7	2.2–3.1	8,649	91.0	90.1–91.8	494	5.2	4.5–5.8	41	0.4	0.2–0.6	40	0.4	0.2–0.6	29	0.3	0.2–0.4
Army	22,843	1,081	4.7	4.3–5.2	20,358	89.1	88.5–89.7	1,079	4.7	4.3–5.1	148	0.6	0.5–0.8	98	0.4	0.3–0.6	78	0.3	0.2–0.5
Air Force	10,890	310	2.8	2.5–3.2	10,032	92.1	91.6–92.7	441	4.1	3.7–4.4	69	0.6	0.5–0.8	17	0.2	0.1–0.2	21	0.2	0.1–0.3
Females	6,808	238	3.5	3.0–4.0	5,845	85.9	84.9–86.8	630	9.3	8.5–10.0	52	0.8	0.5–1.0	23	0.3	0.2–0.5	20	0.3	0.1–0.4
Navy	2,104	78	3.7	2.6–4.8	1,764	83.9	81.9–85.9	223	10.6	8.9–12.3	11	0.5	0.2–0.9	13	0.6	0.2–1.1	15	0.7	0.3–1.1
Army	2,513	78	3.1	2.3–3.9	2,167	86.2	84.7–87.7	234	9.3	8.0–10.6	27	1.1	0.6–1.5	6	0.2	0.0–0.4	2	0.1	0.0–0.2
Air Force	2,191	83	3.8	3.0–4.6	1,914	87.4	86.0–88.7	173	7.9	6.8–9.0	14	0.6	0.3–1.0	4	0.2	0.0–0.4	3	0.1	0.0–0.3
Navy	11,612	333	2.9	2.5–3.3	10,413	89.7	88.9–90.4	716	6.2	5.6–6.8	52	0.5	0.3–0.6	53	0.5	0.3–0.6	44	0.4	0.2–0.5
Army	25,356	1,159	4.6	4.2–5.0	22,525	88.8	88.3–89.4	1,313	5.2	4.8–5.6	174	0.7	0.5–0.8	105	0.4	0.3–0.5	80	0.3	0.2–0.4
Air Force	13,081	393	3.0	2.7–3.3	11,946	91.3	90.8–91.8	615	4.7	4.3–5.1	83	0.6	0.5–0.8	21	0.2	0.1–0.2	24	0.2	0.1–0.3
Officers	12,034	251	2.1	1.8–2.3	11,200	93.1	92.6–93.5	497	4.1	3.8–4.5	47	0.4	0.3–0.5	18	0.1	0.1–0.2	21	0.2	0.1–0.2
Non-commissioned officers	22,319	848	3.8	3.5–4.1	19,995	89.6	89.1–90.0	1,200	5.4	5.1–5.7	140	0.6	0.5–0.7	75	0.3	0.3–0.4	61	0.3	0.2–0.3
Other ranks	15,696	787	5.0	4.4–5.7	13,690	87.2	86.3–88.1	948	6.0	5.4–6.7	122	0.8	0.5–1.0	85	0.5	0.3–0.7	66	0.4	0.3–0.6
Never deployed	20,171	596	3.0	2.6–3.3	18,071	89.6	89.0–90.2	1,220	6.0	5.6–6.5	135	0.7	0.5–0.8	89	0.4	0.3–0.6	59	0.3	0.2–0.4
Deployed at least once	29,878	1,289	4.3	4.0–4.6	26,813	89.7	89.3–90.2	1,424	4.8	4.5–5.1	175	0.6	0.5–0.7	89	0.3	0.2–0.4	89	0.3	0.2–0.4

a Responded to all K10 questions but did not respond to this question.

Table B.24: *Days in the previous four weeks ADF personnel were partially unable to carry out their work, study or day-to-day activities due to psychological distress (subgrouped by weeks)*

		Missing[a]			0 days			1–7 days			8–14 days			15–21 days			22–28 days		
	N	N	%	% CI	N	%	% CI	N	%	% CI	N	%	% CI	N	%	% CI	N	%	% CI
Total	50,049	2,034	4.1	3.8–4.3	40,478	80.9	80.4–81.3	5,290	10.6	10.2–10.9	1,056	2.1	2.0–2.3	589	1.2	1.1–1.3	603	1.2	1.1–1.3
Males	43,241	1,764	4.1	3.8–4.4	35,394	81.9	81.4–82.3	4,286	9.9	9.5–10.3	825	1.9	1.7–2.1	481	1.1	1.0–1.2	491	1.1	1.0–1.3
Navy	9,508	272	2.9	2.4–3.3	7,722	81.2	80.1–82.3	1,068	11.2	10.3–12.1	204	2.1	1.7–2.6	113	1.2	0.9–1.5	130	1.4	1.0–1.7
Army	22,843	1,156	5.1	4.6–5.5	18,705	81.9	81.1–82.6	2,067	9.0	8.5–9.6	410	1.8	1.6–2.0	250	1.1	0.9–1.3	255	1.1	0.9–1.3
Air Force	10,890	336	3.1	2.7–3.4	8,968	82.4	81.6–83.1	1,151	10.6	10.0–11.2	212	1.9	1.7–2.2	118	1.1	0.9–1.3	106	1.0	0.8–1.2
Females	6,808	270	4.0	3.4–4.5	5,084	74.7	73.5–75.8	1,004	14.7	13.8–15.7	231	3.4	2.9–3.9	107	1.6	1.2–1.9	112	1.7	1.3–2.0
Navy	2,104	89	4.2	3.1–5.4	1,514	72.0	69.6–74.4	353	16.8	14.8–18.8	84	4.0	2.9–5.1	29	1.4	0.7–2.0	35	1.7	1.0–2.3
Army	2,513	99	3.9	3.1–4.8	1,902	75.7	73.8–77.5	326	13.0	11.6–14.4	81	3.2	2.4–4.0	48	1.9	1.3–2.5	57	2.3	1.6–3.0
Air Force	2,191	82	3.7	3.0–4.5	1,668	76.1	74.4–77.8	325	14.8	13.4–16.2	66	3.0	2.3–3.7	31	1.4	0.9–1.9	20	0.9	0.5–1.3
Navy	11,612	361	3.1	2.7–3.6	9,236	79.5	78.5–80.5	1,421	12.2	11.4–13.0	288	2.5	2.1–2.9	142	1.2	0.9–1.5	164	1.4	1.1–1.7
Army	25,356	1,255	4.9	4.5–5.4	20,606	81.3	80.6–82.0	2,393	9.4	8.9–9.9	491	1.9	1.7–2.2	298	1.2	1.0–1.4	313	1.2	1.0–1.4
Air Force	13,081	418	3.2	2.9–3.5	10,636	81.3	80.6–82.0	1,475	11.3	10.7–11.8	278	2.1	1.9–2.4	149	1.1	1.0–1.3	126	1.0	0.8–1.1
Officers	12,034	274	2.3	2.0–2.5	9,880	82.1	81.5–82.7	1,486	12.3	11.8–12.9	197	1.6	1.4–1.8	106	0.9	0.7–1.0	92	0.8	0.6–0.9
Non-commissioned officers	22,319	908	4.1	3.8–4.4	18,027	80.8	80.2–81.3	2,270	10.2	9.7–10.6	526	2.4	2.1–2.6	274	1.2	1.1–1.4	314	1.4	1.2–1.6
Other ranks	15,696	853	5.4	4.8–6.1	12,570	80.1	79.0–81.2	1,533	9.8	9.0–10.6	334	2.1	1.8–2.5	209	1.3	1.0–1.6	197	1.3	1.0–1.6
Never deployed	20,170	642	3.2	2.8–3.6	16,267	80.6	79.9–81.4	2,323	11.5	10.9–12.1	454	2.3	2.0–2.5	245	1.2	1.0–1.4	239	1.2	1.0–1.4
Deployed at least once	29,879	1,392	4.7	4.3–5.0	24,211	81.0	80.5–81.6	2,966	9.9	9.5–10.3	602	2.0	1.8–2.2	344	1.2	1.0–1.3	364	1.2	1.1–1.4

a Responded to all K10 questions but did not respond to this question.

Table B.25: *Number of times ADF personnel reported seeing a doctor in the previous four weeks for symptoms of psychological distress reported in the K10*

		Missing[a]			Did not seek help			Sought help once			Sought help twice			Sought help three times			Sought help four times			Sought help more than four times		
	N	N	%	% CI	N	%	% CI	N	%	% CI	N	%	% CI	N	%	% CI	N	%	% CI	N	%	% CI
Total	50,049	1,942	3.9	3.6–4.1	43,870	87.7	87.3–88.0	1,708	3.4	3.2–3.6	1,051	2.1	1.9–2.3	506	1.0	0.9–1.1	396	0.8	0.7–0.9	576	1.2	1.0–1.3
Males	43,241	1,686	3.9	3.6–4.2	38,259	88.5	88.1–88.9	1,347	3.1	2.9–3.3	790	1.8	1.7–2.0	417	1.0	0.8–1.1	315	0.7	0.6–0.8	427	1.0	0.9–1.1
Navy	9,508	282	3.0	2.5–3.4	8,487	89.3	88.4–90.1	323	3.4	2.9–3.9	195	2.0	1.6–2.5	91	1.0	0.7–1.2	55	0.6	0.4–0.8	75	0.8	0.6–1.0
Army	22,843	1,072	4.7	4.2–5.1	19,985	87.5	86.8–88.1	636	2.8	2.5–3.1	436	1.9	1.7–2.2	237	1.0	0.8–1.2	195	0.9	0.7–1.0	282	1.2	1.0–1.4
Air Force	10,890	331	3.0	2.7–3.4	9,787	89.9	89.3–90.5	389	3.6	3.2–3.9	160	1.5	1.3–1.7	89	0.8	0.6–1.0	65	0.6	0.4–0.7	69	0.6	0.5–0.8
Females	6,808	257	3.8	3.2–4.3	5,611	82.4	81.4–83.4	360	5.3	4.7–5.9	261	3.8	3.3–4.3	89	1.3	1.0–1.6	81	1.2	0.9–1.5	149	2.2	1.8–2.6
Navy	2,104	87	4.1	3.0–5.3	1,725	82.0	79.9–84.1	97	4.6	3.5–5.7	84	4.0	2.9–5.1	29	1.4	0.7–2.0	37	1.7	1.0–2.4	46	2.2	1.4–3.0
Army	2,513	89	3.6	2.7–4.4	2,067	82.3	80.6–83.9	137	5.4	4.5–6.4	92	3.7	2.8–4.5	39	1.5	1.0–2.1	25	1.0	0.6–1.4	64	2.5	1.8–3.3
Air Force	2,191	80	3.7	2.9–4.4	1,818	83.0	81.5–84.5	127	5.8	4.8–6.8	85	3.9	3.1–4.7	22	1.0	0.6–1.4	19	0.9	0.5–1.2	40	1.8	1.2–2.4
Navy	11,612	369	3.2	2.7–3.6	10,212	87.9	87.1–88.8	420	3.6	3.1–4.1	279	2.4	2.0–2.8	120	1.0	0.8–1.3	92	0.8	0.6–1.0	121	1.0	0.8–1.3
Army	25,356	1,162	4.6	4.2–5.0	22,053	87.0	86.4–87.6	772	3.0	2.8–3.3	527	2.1	1.8–2.3	275	1.1	0.9–1.3	220	0.9	0.7–1.0	346	1.4	1.2–1.6
Air Force	13,081	411	3.1	2.8–3.5	11,606	88.7	88.2–89.3	516	3.9	3.6–4.3	244	1.9	1.6–2.1	111	0.8	0.7–1.0	84	0.6	0.5–0.8	109	0.8	0.7–1.0
Officers	12,034	267	2.2	2.0–2.5	10,969	91.2	90.7–91.6	365	3.0	2.8–3.3	187	1.6	1.4–1.8	123	1.0	0.9–1.2	48	0.4	0.3–0.5	74	0.6	0.5–0.7
Non-commissioned officers	22,319	859	3.9	3.6–4.1	19,497	87.4	86.9–87.8	806	3.6	3.4–3.9	499	2.2	2.0–2.4	194	0.9	0.7–1.0	192	0.9	0.7–1.0	271	1.2	1.1–1.4
Other ranks	15,696	816	5.2	4.5–5.9	13,404	85.4	84.4–86.4	537	3.4	2.9–3.9	365	2.3	1.9–2.7	189	1.2	0.9–1.5	156	1.0	0.7–1.3	231	1.5	1.2–1.8
Never deployed	20,170	638	3.2	2.8–3.5	17,779	88.1	87.5–88.8	670	3.3	3.0–3.7	491	2.4	2.1–2.7	222	1.1	0.9–1.3	132	0.7	0.5–0.8	238	1.2	1.0–1.4
Ever deployed	29,879	1,304	4.4	4.0–4.7	26,091	87.3	86.8–87.8	1,038	3.5	3.2–3.7	559	1.9	1.7–2.1	284	1.0	0.8–1.1	264	0.9	0.7–1.0	338	1.1	1.0–1.3

a Responded to all K10 questions but did not respond to this question.

Table B.26: *Properties of the K10 for predicting 30-day ICD-10 anxiety disorder*

Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
10	1.00	1.00–1.00	0.00	0.00–0.00	0.08	0.05–0.10	–	–
11	1.00	0.99–1.00	0.14	0.11–0.18	0.09	0.06–0.11	1.00	0.99–1.00
12	1.00	0.99–1.00	0.27	0.22–0.31	0.10	0.07–0.13	1.00	1.00–1.00
13	0.84	0.62–1.00	0.36	0.32–0.41	0.10	0.08–0.12	0.97	0.91–1.00
14	0.80	0.58–1.00	0.46	0.42–0.51	0.11	0.09–0.13	0.97	0.92–1.00
15	0.77	0.57–0.98	0.55	0.51–0.59	0.12	0.10–0.15	0.97	0.93–1.00
16	0.73	0.53–0.93	0.64	0.60–0.68	0.14	0.12–0.17	0.97	0.93–1.00
17	0.68	0.49–0.87	0.72	0.68–0.75	0.16	0.13–0.20	0.96	0.94–0.99
18	0.61	0.44–0.79	0.76	0.72–0.79	0.17	0.14–0.21	0.96	0.93–0.99
19	0.58	0.41–0.75	0.81	0.78–0.84	0.20	0.16–0.24	0.96	0.93–0.99
20	0.49	0.35–0.64	0.84	0.82–0.87	0.21	0.17–0.25	0.95	0.93–0.98
21	0.45	0.31–0.58	0.87	0.85–0.89	0.22	0.18–0.27	0.95	0.93–0.98
22	0.42	0.29–0.54	0.89	0.88–0.91	0.24	0.19–0.30	0.95	0.92–0.97
23	0.37	0.25–0.49	0.91	0.89–0.92	0.25	0.19–0.31	0.95	0.92–0.97
24	0.35	0.23–0.46	0.92	0.91–0.94	0.27	0.21–0.34	0.95	0.92–0.97
25	0.31	0.21–0.42	0.93	0.92–0.95	0.27	0.20–0.34	0.94	0.92–0.97
26	0.30	0.19–0.40	0.95	0.93–0.96	0.31	0.23–0.39	0.94	0.92–0.97
27	0.25	0.16–0.34	0.95	0.94–0.96	0.30	0.21–0.38	0.94	0.92–0.96
28	0.24	0.15–0.33	0.96	0.95–0.97	0.34	0.24–0.43	0.94	0.92–0.96
29	0.21	0.13–0.29	0.98	0.97–0.98	0.41	0.31–0.52	0.94	0.92–0.96
30	0.19	0.12–0.27	0.98	0.97–0.99	0.43	0.32–0.54	0.94	0.91–0.96
31	0.17	0.10–0.24	0.98	0.98–0.99	0.45	0.33–0.57	0.94	0.91–0.96
32	0.13	0.08–0.19	0.99	0.98–0.99	0.44	0.31–0.57	0.93	0.91–0.96
33	0.11	0.06–0.17	0.99	0.98–0.99	0.44	0.30–0.58	0.93	0.91–0.95
34	0.11	0.06–0.16	0.99	0.99–0.99	0.48	0.33–0.64	0.93	0.91–0.95
35	0.10	0.05–0.15	0.99	0.99–1.00	0.49	0.32–0.66	0.93	0.91–0.95
36	0.09	0.04–0.13	0.99	0.99–1.00	0.52	0.33–0.70	0.93	0.91–0.95
37	0.07	0.03–0.11	0.99	0.99–1.00	0.50	0.30–0.69	0.93	0.91–0.95
38	0.04	0.02–0.07	0.99	0.99–1.00	0.41	0.21–0.60	0.93	0.90–0.95
39	0.04	0.01–0.06	0.99	0.99–1.00	0.36	0.16–0.55	0.93	0.90–0.95
40	0.03	0.01–0.05	1.00	0.99–1.00	0.44	0.20–0.68	0.93	0.90–0.95
41	0.02	0.01–0.04	1.00	1.00–1.00	0.40	0.14–0.67	0.93	0.90–0.95
42	0.01	0.00–0.03	1.00	1.00–1.00	0.33	0.05–0.60	0.93	0.90–0.95
43	0.01	0.00–0.03	1.00	1.00–1.00	0.35	0.05–0.65	0.93	0.90–0.95
44	0.01	0.00–0.02	1.00	1.00–1.00	0.28	0.04–0.60	0.92	0.90–0.95

Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
45	0.01	0.00–0.01	1.00	1.00–1.00	0.25	0.11–0.61	0.92	0.90–0.95
46	0.01	0.00–0.01	1.00	1.00–1.00	0.51	0.03–0.99	0.92	0.90–0.95
47	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.92	0.90–0.95
48	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.92	0.90–0.95
49	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.92	0.90–0.95
50	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.92	0.90–0.95

AUC	
Value	95% CI
0.75	0.60–0.89

Table B.27: *Properties of the K10 for predicting 30-day ICD-10 affective disorder*

Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
10	1.00	1.00–1.00	0.00	0.00–0.00	0.03	0.02–0.03	–	–
11	1.00	1.00–1.00	0.14	0.11–0.17	0.03	0.02–0.04	1.00	1.00–1.00
12	1.00	1.00–1.00	0.25	0.21–0.29	0.04	0.03–0.05	1.00	1.00–1.00
13	0.88	0.73–1.00	0.36	0.31–0.40	0.04	0.03–0.05	0.99	0.98–1.00
14	0.88	0.73–1.03	0.45	0.41–0.50	0.04	0.03–0.05	0.99	0.98–1.00
15	0.80	0.64–0.96	0.54	0.50–0.58	0.04	0.03–0.06	0.99	0.98–1.00
16	0.80	0.64–0.96	0.62	0.59–0.66	0.05	0.04–0.07	0.99	0.98–1.00
17	0.78	0.62–0.94	0.70	0.66–0.73	0.07	0.05–0.08	0.99	0.98–1.00
18	0.76	0.60–0.92	0.74	0.71–0.77	0.07	0.05–0.09	0.99	0.98–1.00
19	0.75	0.59–0.91	0.79	0.76–0.82	0.09	0.06–0.11	0.99	0.98–1.00
20	0.69	0.54–0.85	0.83	0.81–0.85	0.10	0.07–0.13	0.99	0.98–1.00
21	0.62	0.46–0.77	0.86	0.84–0.88	0.11	0.08–0.14	0.99	0.98–1.00
22	0.58	0.43–0.73	0.88	0.87–0.90	0.12	0.08–0.15	0.99	0.98–0.99
23	0.54	0.40–0.69	0.90	0.88–0.91	0.13	0.09–0.17	0.99	0.98–0.99
24	0.54	0.39–0.69	0.91	0.90–0.93	0.15	0.10–0.19	0.99	0.98–0.99
25	0.44	0.31–0.58	0.92	0.91–0.94	0.14	0.09–0.18	0.98	0.98–0.99
26	0.41	0.27–0.54	0.94	0.92–0.95	0.15	0.10–0.20	0.98	0.98–0.99
27	0.37	0.24–0.49	0.94	0.93–0.96	0.15	0.09–0.21	0.98	0.98–0.99
28	0.35	0.22–0.48	0.95	0.94–0.97	0.17	0.10–0.24	0.98	0.97–0.99
29	0.32	0.20–0.45	0.97	0.96–0.98	0.22	0.13–0.30	0.98	0.97–0.99
30	0.28	0.17–0.40	0.97	0.97–0.98	0.22	0.13–0.31	0.98	0.97–0.99
31	0.23	0.13–0.33	0.98	0.97–0.98	0.21	0.13–0.30	0.98	0.97–0.99
32	0.17	0.10–0.25	0.98	0.98–0.99	0.20	0.12–0.28	0.98	0.97–0.99
33	0.16	0.08–0.23	0.98	0.98–0.99	0.21	0.12–0.30	0.98	0.97–0.98
34	0.15	0.08–0.22	0.99	0.98–0.99	0.23	0.12–0.33	0.98	0.97–0.98
35	0.11	0.05–0.17	0.99	0.98–0.99	0.19	0.09–0.30	0.98	0.97–0.98
36	0.09	0.03–0.14	0.99	0.98–0.99	0.18	0.07–0.28	0.98	0.97–0.98
37	0.08	0.03–0.13	0.99	0.99–1.00	0.19	0.07–0.31	0.98	0.97–0.98
38	0.06	0.02–0.11	0.99	0.99–1.00	0.20	0.06–0.34	0.98	0.97–0.98
39	0.06	0.02–0.11	0.99	0.99–1.00	0.22	0.07–0.37	0.98	0.97–0.98
40	0.06	0.02–0.11	1.00	0.99–1.00	0.32	0.11–0.53	0.98	0.97–0.98
41	0.06	0.02–0.11	1.00	1.00–1.00	0.42	0.14–0.69	0.98	0.97–0.98
42	0.05	0.01–0.09	1.00	1.00–1.00	0.41	0.09–0.72	0.97	0.97–0.98
43	0.04	0.01–0.08	1.00	1.00–1.00	0.36	0.05–0.67	0.97	0.97–0.98
44	0.03	0.00–0.06	1.00	1.00–1.00	0.28	0.00–0.60	0.97	0.97–0.98

Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
45	0.02	0.00–0.04	1.00	1.00–1.00	0.25	0.00–0.61	0.97	0.97–0.98
46	0.02	0.00–0.04	1.00	1.00–1.00	0.51	0.03–0.99	0.97	0.97–0.98
47	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.97	0.97–0.98
48	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.97	0.97–0.98
49	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.97	0.97–0.98
50	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.97	0.97–0.98

AUC	
Value	95% CI
0.81	0.70–0.91

Table B.28: *Properties of the K10 for predicting 30-day ICD-10 anxiety or affective disorder*

Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
10	1.00	1.00–1.00	0.00	0.00–0.00	0.09	0.07–0.11	–	–
11	1.00	0.99–1.00	0.15	0.11–0.18	0.10	0.08–0.13	1.00	0.99–1.00
12	1.00	0.99–1.00	0.27	0.23–0.31	0.12	0.09–0.15	1.00	1.00–1.00
13	0.83	0.65–1.02	0.37	0.32–0.41	0.12	0.10–0.13	0.96	0.90–1.01
14	0.79	0.61–0.97	0.47	0.42–0.51	0.13	0.11–0.15	0.96	0.91–1.00
15	0.76	0.58–0.93	0.56	0.51–0.60	0.15	0.12–0.17	0.96	0.92–1.00
16	0.72	0.55–0.89	0.65	0.61–0.69	0.17	0.14–0.20	0.96	0.92–0.99
17	0.68	0.51–0.84	0.72	0.69–0.76	0.20	0.16–0.23	0.96	0.93–0.99
18	0.62	0.46–0.77	0.76	0.73–0.80	0.21	0.17–0.24	0.95	0.92–0.98
19	0.59	0.44–0.73	0.81	0.78–0.84	0.24	0.19–0.28	0.95	0.92–0.98
20	0.50	0.37–0.63	0.85	0.83–0.87	0.25	0.21–0.29	0.94	0.92–0.97
21	0.44	0.33–0.56	0.88	0.86–0.90	0.27	0.22–0.31	0.94	0.91–0.97
22	0.41	0.30–0.52	0.90	0.88–0.92	0.29	0.24–0.34	0.94	0.91–0.96
23	0.37	0.27–0.48	0.91	0.89–0.93	0.30	0.24–0.36	0.94	0.91–0.96
24	0.35	0.25–0.45	0.93	0.91–0.94	0.33	0.26–0.40	0.93	0.91–0.96
25	0.30	0.21–0.39	0.93	0.92–0.95	0.32	0.24–0.39	0.93	0.91–0.96
26	0.28	0.20–0.37	0.95	0.94–0.96	0.36	0.27–0.44	0.93	0.91–0.95
27	0.24	0.16–0.32	0.95	0.94–0.97	0.34	0.26–0.43	0.93	0.90–0.95
28	0.23	0.15–0.30	0.96	0.95–0.98	0.39	0.28–0.49	0.93	0.90–0.95
29	0.20	0.13–0.27	0.98	0.97–0.98	0.46	0.36–0.57	0.92	0.90–0.95
30	0.18	0.12–0.25	0.98	0.97–0.99	0.49	0.37–0.60	0.92	0.90–0.95
31	0.16	0.10–0.22	0.98	0.98–0.99	0.52	0.39–0.64	0.92	0.90–0.94
32	0.13	0.08–0.18	0.99	0.98–0.99	0.53	0.39–0.66	0.92	0.90–0.94
33	0.11	0.07–0.16	0.99	0.98–0.99	0.52	0.37–0.67	0.92	0.89–0.94
34	0.11	0.06–0.15	0.99	0.99–1.00	0.56	0.40–0.72	0.92	0.89–0.94
35	0.09	0.05–0.14	0.99	0.99–1.00	0.56	0.39–0.73	0.92	0.89–0.94
36	0.08	0.04–0.12	0.99	0.99–1.00	0.57	0.38–0.75	0.92	0.89–0.94
37	0.07	0.03–0.10	0.99	0.99–1.00	0.55	0.35–0.75	0.91	0.89–0.94
38	0.04	0.02–0.07	1.00	0.99–1.00	0.48	0.27–0.70	0.91	0.89–0.94
39	0.04	0.02–0.06	1.00	0.99–1.00	0.44	0.22–0.66	0.91	0.89–0.93
40	0.03	0.01–0.05	1.00	1.00–1.00	0.56	0.29–0.83	0.91	0.89–0.93
41	0.02	0.01–0.04	1.00	1.00–1.00	0.56	0.25–0.87	0.91	0.89–0.93
42	0.02	0.00–0.03	1.00	1.00–1.00	0.47	0.13–0.80	0.91	0.89–0.93
43	0.01	0.00–0.03	1.00	1.00–1.00	0.43	0.09–0.76	0.91	0.89–0.93
44	0.01	0.00–0.02	1.00	1.00–1.00	0.28	0.00–0.60	0.91	0.89–0.93

Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
45	0.00	0.00–0.01	1.00	1.00–1.00	0.25	0.00–0.61	0.91	0.89–0.93
46	0.00	0.00–0.01	1.00	1.00–1.00	0.51	0.03–0.99	0.91	0.89–0.93
47	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.91	0.89–0.93
48	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.91	0.89–0.93
49	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.91	0.89–0.93
50	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.91	0.89–0.93

AUC	
Value	95% CI
0.75	0.63–0.86

Table B.29: *PCL risk categories, by sex by Service, and by Service, rank and deployment status*

		Low (17–29)			Moderate (30–39)			High (40–49)			Very high (50–85)		
	Total	N	%	% CI	N	%	% CI	N	%	% CI	N	%	% CI
Total	50,049	42,363	84.6	84.3–85.0	4,360	8.7	8.4–9.0	1,849	3.7	3.5–3.9	1,477	3.0	2.8–3.1
Males	43,241	36,645	84.7	84.3–85.2	3,749	8.7	8.3–9.0	1,578	3.7	3.4–3.9	1,269	2.9	2.7–3.1
Females	6,808	5,719	84.0	83.1–84.9	612	9.0	8.3–9.7	270	4.0	3.5–4.4	207	3.0	2.6–3.5
Navy	11,613	9,753	84.0	83.1–84.8	1,060	9.1	8.5–9.8	454	3.9	3.5–4.4	345	3.0	2.6–3.4
Males	9,508	8,022	84.4	83.4–85.3	846	8.9	8.2–9.6	351	3.7	3.2–4.2	289	3.0	2.6–3.5
Females	2,104	1,731	82.3	80.4–84.1	214	10.2	8.7–11.7	103	4.9	3.9–5.9	57	2.7	1.9–3.5
Army	25,356	21,173	83.5	82.9–84.1	2,327	9.2	8.7–9.6	1,006	4.0	3.7–4.3	850	3.4	3.1–3.6
Males	22,843	19,058	83.4	82.8–84.1	2,100	9.2	8.7–9.7	910	4.0	3.7–4.3	774	3.4	3.1–3.7
Females	2,513	2,114	84.1	82.7–85.5	227	9.0	7.9–10.2	96	3.8	3.1–4.6	75	3.0	2.3–3.7
Air Force	13,081	11,438	87.4	86.9–88.0	973	7.4	7.0–7.9	388	3.0	2.7–3.2	282	2.2	1.9–2.4
Males	10,890	9,564	87.8	87.2–88.4	803	7.4	6.9–7.8	317	2.9	2.6–3.2	206	1.9	1.7–2.1
Females	2,191	1,874	85.5	84.3–86.7	170	7.8	6.8–8.7	71	3.3	2.6–3.9	75	3.4	2.8–4.0
Officers	12,034	10,513	87.4	86.8–87.9	937	7.8	7.4–8.2	318	2.6	2.4–2.9	266	2.2	2.0–2.4
Non-commissioned officers	22,320	18,498	82.9	82.4–83.4	2,134	9.6	9.2–9.9	949	4.3	4.0–4.5	739	3.3	3.1–3.5
Other ranks	15,695	13,352	85.1	84.2–86.0	1,290	8.2	7.5–8.9	582	3.7	3.2–4.2	472	3.0	2.6–3.4
Ever deployed	30,850	25,954	84.1	83.7–84.6	2,815	9.1	8.8–9.5	1,140	3.7	3.5–3.9	941	3.0	2.8–3.3
Never deployed	19,199	16,410	85.5	84.8–86.1	1,545	8.0	7.5–8.6	708	3.7	3.3–4.0	536	2.8	2.5–3.1

Table B.30: *Properties of the PCL for predicting 30-day ICD-10 post-traumatic stress disorder*

Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
17	1.00	1.00–1.00	0.00	0.00–0.00	0.03	0.02–0.04	–	–
18	1.00	0.99–1.00	0.33	0.29–0.37	0.05	0.04–0.06	1.00	1.00–1.00
19	0.96	0.89–1.00	0.40	0.36–0.44	0.05	0.04–0.07	1.00	0.99–1.00
20	0.96	0.89–1.00	0.48	0.44–0.52	0.06	0.04–0.07	1.00	0.99–1.00
21	0.93	0.85–1.00	0.55	0.51–0.59	0.07	0.05–0.08	1.00	0.99–1.00
22	0.91	0.83–1.00	0.59	0.55–0.63	0.07	0.05–0.09	1.00	0.99–1.00
23	0.86	0.74–0.98	0.61	0.58–0.65	0.07	0.05–0.09	0.99	0.98–1.00
24	0.80	0.67–0.93	0.65	0.61–0.68	0.07	0.05–0.09	0.99	0.98–1.00
25	0.80	0.67–0.93	0.67	0.64–0.71	0.08	0.06–0.10	0.99	0.98–1.00
26	0.80	0.67–0.93	0.72	0.70–0.75	0.09	0.07–0.11	0.99	0.98–1.00
27	0.80	0.67–0.93	0.75	0.72–0.77	0.10	0.07–0.12	0.99	0.98–1.00
28	0.79	0.65–0.92	0.78	0.75–0.80	0.11	0.08–0.13	0.99	0.98–1.00
29	0.79	0.65–0.92	0.80	0.77–0.82	0.12	0.09–0.15	0.99	0.98–1.00
30	0.74	0.60–0.87	0.82	0.80–0.84	0.12	0.09–0.15	0.99	0.98–1.00
31	0.74	0.60–0.87	0.83	0.82–0.85	0.13	0.10–0.16	0.99	0.98–1.00
32	0.69	0.56–0.83	0.85	0.83–0.87	0.14	0.10–0.17	0.99	0.98–0.99
33	0.66	0.52–0.79	0.86	0.85–0.88	0.14	0.11–0.18	0.99	0.98–0.99
34	0.64	0.51–0.78	0.88	0.86–0.89	0.15	0.11–0.19	0.99	0.98–0.99
35	0.63	0.50–0.76	0.89	0.87–0.90	0.16	0.12–0.20	0.99	0.98–0.99
36	0.63	0.49–0.76	0.89	0.88–0.91	0.17	0.13–0.21	0.99	0.98–0.99
37	0.61	0.48–0.74	0.91	0.89–0.92	0.18	0.14–0.23	0.99	0.98–0.99
38	0.53	0.41–0.66	0.91	0.90–0.93	0.18	0.13–0.22	0.98	0.98–0.99
39	0.50	0.37–0.62	0.92	0.91–0.93	0.18	0.13–0.23	0.98	0.97–0.99
40	0.47	0.35–0.60	0.93	0.92–0.94	0.18	0.13–0.23	0.98	0.97–0.99
41	0.46	0.34–0.58	0.93	0.92–0.94	0.19	0.13–0.24	0.98	0.97–0.99
42	0.43	0.31–0.55	0.94	0.93–0.95	0.19	0.14–0.25	0.98	0.97–0.99
43	0.42	0.30–0.54	0.94	0.93–0.95	0.20	0.14–0.25	0.98	0.97–0.99
44	0.40	0.29–0.52	0.94	0.93–0.95	0.20	0.14–0.26	0.98	0.97–0.99
45	0.38	0.27–0.50	0.95	0.94–0.96	0.21	0.14–0.27	0.98	0.97–0.99
46	0.36	0.25–0.47	0.95	0.94–0.96	0.21	0.14–0.27	0.98	0.97–0.99
47	0.33	0.23–0.44	0.96	0.95–0.96	0.21	0.14–0.28	0.98	0.97–0.98
48	0.32	0.21–0.43	0.96	0.95–0.97	0.22	0.15–0.29	0.98	0.97–0.98
49	0.30	0.19–0.40	0.96	0.95–0.97	0.21	0.14–0.29	0.98	0.97–0.98
50	0.30	0.19–0.40	0.97	0.96–0.97	0.23	0.15–0.31	0.98	0.97–0.98
51	0.29	0.19–0.40	0.97	0.96–0.98	0.24	0.16–0.33	0.98	0.97–0.98
52	0.28	0.18–0.39	0.97	0.96–0.98	0.26	0.17–0.35	0.98	0.97–0.98
53	0.25	0.15–0.35	0.97	0.97–0.98	0.26	0.16–0.36	0.97	0.97–0.98

Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
54	0.21	0.12–0.30	0.98	0.97–0.98	0.24	0.14–0.34	0.97	0.96–0.98
55	0.20	0.12–0.29	0.98	0.97–0.98	0.24	0.14–0.34	0.97	0.96–0.98
56	0.20	0.12–0.29	0.98	0.97–0.99	0.26	0.15–0.37	0.97	0.96–0.98
57	0.17	0.10–0.25	0.98	0.98–0.99	0.25	0.14–0.35	0.97	0.96–0.98
58	0.16	0.09–0.24	0.98	0.98–0.99	0.25	0.14–0.37	0.97	0.96–0.98
59	0.16	0.09–0.24	0.98	0.98–0.99	0.26	0.14–0.38	0.97	0.96–0.98
60	0.16	0.09–0.24	0.99	0.98–0.99	0.28	0.15–0.40	0.97	0.96–0.98
61	0.15	0.08–0.23	0.99	0.98–0.99	0.29	0.15–0.43	0.97	0.96–0.98
62	0.13	0.05–0.20	0.99	0.98–0.99	0.27	0.13–0.42	0.97	0.96–0.98
63	0.13	0.05–0.20	0.99	0.99–1.00	0.33	0.16–0.51	0.97	0.96–0.98
64	0.11	0.04–0.18	0.99	0.99–1.00	0.33	0.15–0.51	0.97	0.96–0.98
65	0.11	0.04–0.18	0.99	0.99–1.00	0.36	0.17–0.56	0.97	0.96–0.98
66	0.10	0.03–0.17	0.99	0.99–1.00	0.39	0.18–0.60	0.97	0.96–0.98
67	0.08	0.02–0.14	1.00	0.99–1.00	0.44	0.20–0.68	0.97	0.96–0.98
68	0.08	0.02–0.14	1.00	1.00–1.00	0.49	0.24–0.74	0.97	0.96–0.98
69	0.04	0.01–0.08	1.00	1.00–1.00	0.37	0.14–0.60	0.97	0.96–0.98
70	0.04	0.01–0.08	1.00	1.00–1.00	0.39	0.15–0.63	0.97	0.96–0.98
71	0.03	0.00–0.05	1.00	1.00–1.00	0.35	0.07–0.63	0.97	0.96–0.98
72	0.01	0.00–0.02	1.00	1.00–1.00	0.21	0.05–0.48	0.97	0.96–0.98
73	0.01	0.00–0.02	1.00	1.00–1.00	0.26	0.06–0.58	0.97	0.96–0.98
74	0.01	0.00–0.02	1.00	1.00–1.00	0.39	0.06–0.83	0.97	0.96–0.98
75	0.01	0.00–0.02	1.00	1.00–1.00	0.39	0.06–0.83	0.97	0.96–0.98
76	0.01	0.00–0.02	1.00	1.00–1.00	0.39	0.06–0.83	0.97	0.96–0.98
77	0.01	0.00–0.02	1.00	1.00–1.00	0.39	0.06–0.83	0.97	0.96–0.98
78	0.01	0.00–0.01	1.00	1.00–1.00	0.25	0.19–0.68	0.97	0.96–0.98
79	0.01	0.00–0.01	1.00	1.00–1.00	0.25	0.19–0.68	0.97	0.96–0.98
80	0.01	0.00–0.01	1.00	1.00–1.00	0.25	0.19–0.68	0.97	0.96–0.98
81	0.01	0.00–0.01	1.00	1.00–1.00	0.25	0.19–0.68	0.97	0.96–0.98
82	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.97	0.96–0.98
83	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.97	0.96–0.98
84	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.97	0.96–0.98
85	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.97	0.96–0.98

AUC	
Value	95% CI
0.85	0.79–0.91

Table B.31: *AUDIT risk categories, by sex by Service, and by Service, rank and deployment status*

		Zone I (score 1–7)			Zone II (score 8–15)			Zone III (score 16–19)			Zone IV (score 20–40)		
	N	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Total	50,049	36,848	73.6	73.1–74.2	11,345	22.7	22.2–23.2	1,172	2.3	2.1–2.5	684	1.4	1.2–1.5
Males	43,241	31,072	71.9	71.3–72.5	10,417	24.1	23.5–24.7	1,091	2.5	2.3–2.8	661	1.5	1.3–1.7
Navy	9,508	6,872	72.3	70.9–73.6	2,228	23.4	22.2–24.7	240	2.5	2.0–3.0	168	1.8	1.3–2.2
Army	22,843	15,428	67.5	66.6–68.5	6,251	27.4	26.5–28.3	720	3.2	2.8–3.5	444	1.9	1.7–2.2
Air Force	10,890	8,772	80.6	79.8–81.3	1,937	17.8	17.0–18.6	132	1.2	1.0–1.4	49	0.5	0.3–0.6
Females	6,808	5,776	84.8	83.9–85.8	928	13.6	12.7–14.6	81	1.2	0.9–1.5	23	0.3	0.2–0.5
Navy	2,104	1,721	81.8	79.7–83.9	346	16.4	14.4–18.5	23	1.1	0.5–1.7	14	0.6	0.2–1.1
Army	2,513	2,098	83.5	81.9–85.1	366	14.6	13.0–16.1	43	1.7	1.1–2.3	6	0.2	0.0–0.4
Air Force	2,191	1,956	89.3	88.1–90.5	217	9.9	8.7–11.0	15	0.7	0.4–1.0	3	0.1	0.0–0.4
Navy	11,612	8,594	74.0	72.9–75.2	2,574	22.2	21.1–23.3	263	2.3	1.8–2.7	182	1.6	1.2–1.9
Army	25,356	17,526	69.1	68.3–70.0	6,617	26.1	25.3–26.9	762	3.0	2.7–3.3	450	1.8	1.5–2.0
Air Force	13,081	10,728	82.0	81.3–82.7	2,154	16.5	15.8–17.1	147	1.1	0.9–1.3	52	0.4	0.3–0.5
Officers	12,034	9,667	80.3	79.7–81.0	2,103	17.5	16.8–18.1	204	1.7	1.5–1.9	59	0.5	0.4–0.6
Non-commissioned officers	22,319	16,878	75.6	75.0–76.3	4,774	21.4	20.8–22.0	408	1.8	1.6–2.0	260	1.2	1.0–1.3
Other ranks	15,696	10,303	65.6	64.3–67.0	4,468	28.5	27.2–29.8	561	3.6	3.0–4.1	365	2.3	1.9–2.8
Never deployed	19,010	13,877	73.0	72.0–74.0	4,394	23.1	22.2–24.0	459	2.4	2.0–2.8	280	1.5	1.2–1.8
Ever deployed	31,039	22,971	74.0	73.4–74.7	6,951	22.4	21.8–23.0	713	2.3	2.1–2.5	404	1.3	1.1–1.5

Table B.32: *Frequency of alcohol consumption: How often do you have a drink containing alcohol?*

		Never			Monthly or less			2 to 4 times a month			2 to 3 times a week			4 or more times a week		
	N	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Total	50,049	2,187	4.4	4.1–4.6	10,648	21.3	20.8–21.8	17,208	34.4	33.8–34.9	14,477	28.9	28.4–29.5	5,529	11.0	10.7–11.4
Males	43,241	1,774	4.1	3.8–4.4	8,565	19.8	19.3–20.3	14,951	34.6	33.9–35.2	12,952	30.0	29.4–30.5	4,999	11.6	11.2–11.9
Navy	9,508	328	3.4	2.9–4.0	1,947	20.5	19.3–21.7	3,335	35.1	33.7–36.5	2,920	30.7	29.4–32.0	978	10.3	9.5–11.1
Army	22,843	971	4.2	3.9–4.6	4,366	19.1	18.3–19.9	7,832	34.3	33.4–35.2	6,739	29.5	28.6–30.4	2,936	12.9	12.2–13.5
Air Force	10,890	476	4.4	4.0–4.8	2,251	20.7	19.9–21.5	3,785	34.8	33.8–35.7	3,293	30.2	29.4–31.1	1,085	10.0	9.4–10.5
Females	6,808	413	6.1	5.5–6.7	2,083	30.6	29.4–31.8	2,256	33.1	31.9–34.3	1,525	22.4	21.4–23.4	531	7.8	7.2–8.4
Navy	2,104	123	5.9	4.7–7.0	627	29.8	27.3–32.3	786	37.3	34.8–39.9	467	22.2	20.0–24.3	101	4.8	3.9–5.7
Army	2,513	152	6.0	5.1–7.0	777	30.9	29.0–32.9	784	31.2	29.3–33.1	540	21.5	19.8–23.2	260	10.4	9.2–11.5
Air Force	2,191	138	6.3	5.4–7.2	679	31.0	29.2–32.8	687	31.3	29.6–33.1	518	23.7	22.1–25.2	170	7.7	6.7–8.7
Navy	11,612	451	3.9	3.4–4.4	2,575	22.2	21.1–23.3	4,120	35.5	34.2–36.7	3,387	29.2	28.0–30.3	1,079	9.3	8.6–9.9
Army	25,356	1,123	4.4	4.1–4.8	5,143	20.3	19.6–21.0	8,616	34.0	33.1–34.8	7,279	28.7	27.9–29.5	3,196	12.6	12.0–13.2
Air Force	13,081	614	4.7	4.3–5.1	2,930	22.4	21.7–23.1	4,472	34.2	33.4–35.0	3,811	29.1	28.4–29.9	1,254	9.6	9.1–10.1
Officers	12,034	412	3.4	3.1–3.7	1,692	14.1	13.5–14.6	3,841	31.9	31.1–32.7	4,067	33.8	33.0–34.6	2,022	16.8	16.2–17.4
Non-commissioned officers	22,319	995	4.5	4.2–4.7	5,094	22.8	22.2–23.4	7,462	33.4	32.7–34.1	6,383	28.6	27.9–29.3	2,385	10.7	10.2–11.1
Other ranks	15,696	781	5.0	4.4–5.6	3,861	24.6	23.4–25.8	5,905	37.6	36.2–39.0	4,026	25.6	24.4–26.9	1,122	7.1	6.4–7.9
Never deployed	19,010	935	4.9	4.5–5.4	4,425	23.3	22.4–24.2	6,696	35.2	34.2–36.2	5,226	27.5	26.6–28.4	1,728	9.1	8.5–9.7
Ever deployed	31,040	1,253	4.0	3.8–4.3	6,223	20.0	19.5–20.6	10,511	33.9	33.2–34.5	9,251	29.8	29.2–30.5	3,802	12.2	11.8–12.7

Table B.33: *Quantity of alcohol consumption: How many 'standard' drinks containing alcohol do you have on a typical day when you are drinking?*

		N/A			1 or 2			3 or 4			5 or 6			7 or 9			10 or more		
	N	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Total	50,049	2,877	5.7	5.5–6.0	15,504	31.0	30.5–31.5	17,127	34.2	33.7–34.8	8,684	17.4	16.9–17.8	3,439	6.9	6.5–7.2	2,419	4.8	4.5–5.1
Males	43,241	2,358	5.5	5.1–5.8	12,510	28.9	28.4–29.5	14,953	34.6	34.0–35.2	7,897	18.3	17.7–18.8	3,208	7.4	7.0–7.8	2,316	5.4	5.0–5.7
Navy	9,508	436	4.6	4.0–5.2	2,659	28.0	26.7–29.2	3,478	36.6	35.2–38.0	1,807	19.0	17.8–20.2	732	7.7	6.9–8.5	396	4.2	3.5–4.8
Army	22,843	1,312	5.7	5.3–6.2	6,086	26.6	25.9–27.4	7,494	32.8	31.9–33.7	4,391	19.2	18.4–20.0	1,916	8.4	7.8–9.0	1,643	7.2	6.6–7.8
Air Force	10,890	610	5.6	5.1–6.1	3,764	34.6	33.7–35.5	3,981	36.6	35.6–37.5	1,698	15.6	14.9–16.3	560	5.1	4.7–5.6	277	2.5	2.2–2.9
Females	6,808	519	7.6	7.0–8.3	2,995	44.0	42.8–45.2	2,174	31.9	30.7–33.1	786	11.5	10.7–12.4	231	3.4	2.9–3.9	103	1.5	1.2–1.9
Navy	2,104	144	6.9	5.6–8.1	809	38.4	36.0–40.9	711	33.8	31.3–36.4	323	15.3	13.4–17.3	89	4.3	3.1–5.4	27	1.3	0.7–1.9
Army	2,513	204	8.1	7.0–9.3	1,051	41.8	39.8–43.8	799	31.8	29.8–33.7	315	12.5	11.1–14.0	88	3.5	2.7–4.3	55	2.2	1.5–2.9
Air Force	2,191	170	7.8	6.7–8.8	1,134	51.8	49.9–53.7	664	30.3	28.6–32.1	148	6.7	5.8–7.7	54	2.5	1.8–3.1	21	0.9	0.5–1.4
Navy	11,612	580	5.0	4.4–5.5	3,468	29.9	28.8–31.0	4,190	36.1	34.9–37.3	2,130	18.3	17.3–19.4	822	7.1	6.4–7.8	423	3.6	3.1–4.2
Army	25,356	1,517	6.0	5.5–6.4	7,138	28.2	27.4–28.9	8,292	32.7	31.9–33.5	4,707	18.6	17.8–19.3	2,004	7.9	7.4–8.4	1,699	6.7	6.2–7.2
Air Force	13,081	780	6.0	5.5–6.4	4,899	37.5	36.6–38.3	4,645	35.5	34.7–36.3	1,846	14.1	13.5–14.7	614	4.7	4.3–5.1	297	2.3	2.0–2.6
Officers	12,034	511	4.2	3.9–4.6	5,253	43.6	42.8–44.5	4,258	35.4	34.6–36.2	1,386	11.5	11.0–12.1	464	3.9	3.5–4.2	163	1.4	1.1–1.6
Non-commissioned officers	22,319	1,318	5.9	5.6–6.2	7,032	31.5	30.8–32.2	7,917	35.5	34.8–36.2	3,827	17.1	16.6–17.7	1,382	6.2	5.8–6.6	842	3.8	3.5–4.1
Other ranks	15,696	1,047	6.7	6.0–7.4	3,219	20.5	19.4–21.6	4,952	31.6	30.2–32.9	3,470	22.1	20.9–23.3	1,594	10.2	9.3–11.0	1,414	9.0	8.2–9.9
Never deployed	19,007	1,189	6.3	5.8–6.8	5,546	29.2	28.3–30.0	6,271	33.0	32.0–33.9	3,517	18.5	17.7–19.3	1,473	7.7	7.1–8.4	1,014	5.3	4.8–5.9
Ever deployed	31,043	1,688	5.4	5.1–5.8	9,958	32.1	31.5–32.7	10,856	35.0	34.3–35.7	5,166	16.6	16.1–17.2	1,967	6.3	6.0–6.7	1,405	4.5	4.2–4.9

Table B.34: *Percentage of ADF reporting a problem with drinking*

		No			Probably not			Unsure			Possibly			Definitely		
	N	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Total	50,049	45,776	91.5	91.1–91.8	2,547	5.1	4.8–5.4	713	1.4	1.3–1.6	827	1.7	1.5–1.8	186	0.4	0.3–0.4
Males	43,241	39,262	90.8	90.4–91.2	2,369	5.5	5.2–5.8	657	1.5	1.3–1.7	768	1.8	1.6–1.9	184	0.4	0.3–0.5
Navy	9,508	8,531	89.7	88.8–90.6	558	5.9	5.2–6.5	187	2.0	1.5–2.4	186	2.0	1.6–2.4	46	0.5	0.3–0.7
Army	22,843	20,508	89.8	89.2–90.4	1,365	6.0	5.5–6.4	365	1.6	1.3–1.9	495	2.2	1.9–2.4	111	0.5	0.4–0.6
Air Force	10,890	10,224	93.9	93.4–94.3	447	4.1	3.7–4.5	106	1.0	0.8–1.2	87	0.8	0.6–1.0	27	0.3	0.1–0.4
Females	6,808	6,513	95.7	95.2–96.2	178	2.6	2.2–3.0	55	0.8	0.6–1.1	60	0.9	0.7–1.1	2	0.0	0.0–0.1
Navy	2,104	2,023	96.2	95.3–97.1	49	2.3	1.7–2.9	21	1.0	0.4–1.6	10	0.5	0.2–0.8	0	0.0	0.0–0.0
Army	2,513	2,380	94.7	93.8–95.6	71	2.8	2.2–3.5	29	1.2	0.7–1.6	31	1.2	0.8–1.6	2	0.1	0.0–0.2
Air Force	2,191	2,110	96.3	95.6–97.0	58	2.6	2.0–3.3	5	0.2	0.1–0.4	18	0.8	0.5–1.2	0	0.0	0.0–0.0
Navy	11,612	10,554	90.9	90.1–91.6	607	5.2	4.7–5.8	208	1.8	1.4–2.2	196	1.7	1.4–2.0	46	0.4	0.3–0.5
Army	25,356	22,888	90.3	89.7–90.8	1,436	5.7	5.2–6.1	394	1.6	1.3–1.8	526	2.1	1.8–2.3	113	0.4	0.3–0.6
Air Force	13,081	12,334	94.3	93.9–94.7	504	3.9	3.5–4.2	111	0.8	0.7–1.0	105	0.8	0.7–0.9	27	0.2	0.1–0.3
Officers	12,034	11,073	92.0	91.6–92.5	614	5.1	4.7–5.5	124	1.0	0.9–1.2	196	1.6	1.4–1.8	28	0.2	0.1–0.3
Non-commissioned officers	22,319	20,401	91.4	91.0–91.8	1,134	5.1	4.8–5.4	274	1.2	1.1–1.4	414	1.9	1.7–2.1	97	0.4	0.3–0.5
Other ranks	15,696	14,302	91.1	90.3–91.9	799	5.1	4.5–5.7	315	2.0	1.6–2.4	218	1.4	1.0–1.7	62	0.4	0.2–0.6
Never deployed	19,010	17,516	92.1	91.6–92.7	942	5.0	4.5–5.4	251	1.3	1.0–1.6	257	1.4	1.1–1.6	44	0.2	0.1–0.3
Ever deployed	31,040	28,260	91.0	90.6–91.5	1,605	5.2	4.9–5.5	462	1.5	1.3–1.7	571	1.8	1.7–2.0	142	0.5	0.4–0.6

Table B.35: *Percentage of ADF who reported difficulties reducing their alcohol intake*

		Very easy			Fairly easy			Neither difficult nor easy			Fairly difficult			Very difficult			N/A		
	N	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
Total	50,049	32,543	65.0	64.5–65.6	8,296	16.6	16.1–17.0	3,228	6.4	6.2–6.8	1,057	2.1	1.9–2.3	213	0.4	0.3–0.5	4,711	9.4	9.1–9.7
Males	43,241	27,821	64.3	63.7–65.0	7,505	17.4	16.9–17.9	2,982	6.9	6.6–7.2	961	2.2	2.0–2.4	209	0.5	0.4–0.6	3,762	8.7	8.3–9.1
Navy	9,508	6,145	64.6	63.2–66.0	1,718	18.1	16.9–19.2	667	7.0	6.2–7.8	261	2.7	2.3–3.2	45	0.5	0.3–0.7	672	7.1	6.3–7.8
Army	22,843	14,571	63.8	62.9–64.7	3,937	17.2	16.5–18.0	1,685	7.4	6.9–7.9	519	2.3	2.0–2.6	132	0.6	0.4–0.7	1,999	8.8	8.2–9.3
Air Force	10,890	7,105	65.2	64.3–66.2	1,850	17.0	16.3–17.7	631	5.8	5.3–6.3	181	1.7	1.4–1.9	32	0.3	0.2–0.4	1,090	10.0	9.4–10.6
Females	6,808	4,722	69.4	68.2–70.5	791	11.6	10.8–12.4	246	3.6	3.1–4.1	95	1.4	1.1–1.7	4	0.1	0.0–0.1	950	13.9	13.1–14.8
Navy	2,104	1,542	73.3	71.0–75.6	219	10.4	8.8–12.0	72	3.4	2.5–4.3	26	1.2	0.7–1.8	4	0.2	0.0–0.4	242	11.5	9.8–13.2
Army	2,513	1,666	66.3	64.3–68.3	327	13.0	11.6–14.4	103	4.1	3.3–4.9	29	1.1	0.7–1.5	0	0.0	0.0–0.0	388	15.5	14.0–16.9
Air Force	2,191	1,514	69.1	67.3–70.9	245	11.2	10.0–12.4	71	3.3	2.6–3.9	41	1.9	1.4–2.4	0	0.0	0.0–0.0	319	14.6	13.2–15.9
Navy	11,612	7,687	66.2	65.0–67.4	1,937	16.7	15.7–17.6	738	6.4	5.7–7.0	287	2.5	2.1–2.9	49	0.4	0.2–0.6	914	7.9	7.2–8.6
Army	25,356	16,237	64.0	63.2–64.9	4,264	16.8	16.1–17.5	1,788	7.1	6.6–7.5	547	2.2	1.9–2.4	132	0.5	0.4–0.7	2,388	9.4	8.9–9.9
Air Force	13,081	8,619	65.9	65.1–66.7	2,096	16.0	15.4–16.7	703	5.4	5.0–5.8	222	1.7	1.5–1.9	32	0.2	0.2–0.3	1,409	10.8	10.2–11.3
Officers	12,034	7,984	66.3	65.6–67.1	2,174	18.1	17.4–18.7	714	5.9	5.5–6.3	266	2.2	2.0–2.5	40	0.3	0.2–0.4	855	7.1	6.7–7.5
Non-commissioned officers	22,319	14,500	65.0	64.3–65.7	3,484	15.6	15.1–16.1	1,431	6.4	6.0–6.8	458	2.1	1.8–2.3	76	0.3	0.3–0.4	2,370	10.6	10.2–11.1
Other ranks	15,696	10,058	64.1	62.7–65.5	2,638	16.8	15.7–17.9	1,084	6.9	6.2–7.6	333	2.1	1.7–2.6	97	0.6	0.4–0.9	1,486	9.5	8.7–10.3
Never deployed	19,009	11,920	62.7	61.7–63.7	3,169	16.7	15.9–17.4	1,259	6.6	6.1–7.2	445	2.3	2.0–2.7	78	0.4	0.3–0.6	2,138	11.2	10.6–11.9
Ever deployed	31,039	20,622	66.4	65.8–67.1	5,127	16.5	16.0–17.1	1,970	6.3	6.0–6.7	612	2.0	1.8–2.2	135	0.4	0.3–0.5	2,573	8.3	7.9–8.7

Table B.36: *Properties of AUDIT for predicting 30-day ICD-10 any alcohol disorder*

Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
0	1.00	1.00–1.00	0.00	0.00–0.00	0.01	0.01–0.01	–	–
1	1.00	1.00–1.00	0.05	0.02–0.07	0.01	0.01–0.02	1.00	1.00–1.00
2	1.00	1.00–1.00	0.13	0.10–0.16	0.01	0.01–0.02	1.00	1.00–1.00
3	1.00	1.00–1.00	0.21	0.18–0.25	0.01	0.01–0.02	1.00	1.00–1.00
4	1.00	1.00–1.00	0.32	0.28–0.36	0.01	0.01–0.02	1.00	1.00–1.00
5	1.00	1.00–1.00	0.49	0.45–0.53	0.02	0.01–0.03	1.00	1.00–1.00
6	1.00	1.00–1.00	0.60	0.56–0.63	0.02	0.01–0.04	1.00	1.00–1.00
7	1.00	1.00–1.00	0.70	0.66–0.73	0.03	0.02–0.05	1.00	1.00–1.00
8	0.95	0.89–1.00	0.76	0.73–0.78	0.04	0.02–0.06	1.00	1.00–1.00
9	0.83	0.64–1.00	0.83	0.81–0.85	0.05	0.02–0.07	1.00	1.00–1.00
10	0.72	0.50–0.94	0.86	0.84–0.88	0.05	0.02–0.07	1.00	0.99–1.00
11	0.72	0.50–0.94	0.88	0.87–0.90	0.06	0.03–0.09	1.00	0.99–1.00
12	0.63	0.38–0.87	0.91	0.90–0.92	0.07	0.03–0.10	1.00	0.99–1.00
13	0.49	0.25–0.72	0.94	0.93–0.95	0.07	0.03–0.11	0.99	0.99–1.00
14	0.43	0.20–0.65	0.95	0.94–0.96	0.08	0.03–0.13	0.99	0.99–1.00
15	0.41	0.18–0.64	0.96	0.95–0.97	0.10	0.03–0.16	0.99	0.99–1.00
16	0.38	0.16–0.61	0.97	0.96–0.98	0.12	0.04–0.20	0.99	0.99–1.00
17	0.28	0.09–0.47	0.98	0.97–0.99	0.13	0.04–0.22	0.99	0.99–1.00
18	0.24	0.06–0.43	0.99	0.98–0.99	0.16	0.04–0.28	0.99	0.99–1.00
19	0.21	0.03–0.39	0.99	0.99–0.99	0.17	0.03–0.32	0.99	0.99–1.00
20	0.19	0.02–0.37	0.99	0.99–1.00	0.22	0.03–0.41	0.99	0.99–1.00
21	0.08	0.00–0.16	0.99	0.99–1.00	0.12	0.00–0.23	0.99	0.99–1.00
22	0.08	0.00–0.16	1.00	0.99–1.00	0.14	0.00–0.29	0.99	0.99–1.00
23	0.06	0.00–0.13	1.00	0.99–1.00	0.14	0.00–0.32	0.99	0.99–1.00
24	0.05	0.00–0.11	1.00	0.99–1.00	0.14	0.00–0.35	0.99	0.99–1.00
25	0.05	0.00–0.11	1.00	0.99–1.00	0.14	0.00–0.35	0.99	0.99–1.00
26	0.03	0.00–0.08	1.00	1.00–1.00	0.13	0.00–0.38	0.99	0.99–1.00
27	0.03	0.00–0.08	1.00	1.00–1.00	0.29	0.00–0.75	0.99	0.99–1.00
28	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.99	0.99–0.99
29	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.99	0.99–0.99
30	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–0.99
31	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–0.99
32	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–0.99
33	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–0.99
34	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–0.99

Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
35	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–0.99
36	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–0.99
37	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–0.99
38	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–0.99
39	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–0.99
40	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–0.99

AUC	
Value	95% CI
0.91	0.87–0.96

Table B.37: *Properties of AUDIT for predicting 30-day ICD-10 alcohol harmful use*

Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
0	1.00	1.00–1.00	0.00	0.00–0.00	0.00	0.00–0.00	–	–
1	1.00	1.00–1.00	0.05	0.02–0.07	0.00	0.00–0.00	1.00	1.00–1.00
2	1.00	1.00–1.00	0.13	0.09–0.16	0.00	0.00–0.01	1.00	1.00–1.00
3	1.00	1.00–1.00	0.21	0.17–0.25	0.00	0.00–0.01	1.00	1.00–1.00
4	1.00	1.00–1.00	0.32	0.28–0.36	0.00	0.00–0.01	1.00	1.00–1.00
5	1.00	1.00–1.00	0.49	0.45–0.53	0.00	0.00–0.01	1.00	1.00–1.00
6	1.00	1.00–1.00	0.59	0.55–0.63	0.01	0.00–0.01	1.00	1.00–1.00
7	1.00	1.00–1.00	0.69	0.66–0.72	0.01	0.00–0.01	1.00	1.00–1.00
8	1.00	1.00–1.00	0.75	0.73–0.78	0.01	0.00–0.02	1.00	1.00–1.00
9	0.57	0.07–1.00	0.82	0.80–0.84	0.01	0.00–0.01	1.00	1.00–1.00
10	0.47	0.03–0.92	0.85	0.84–0.87	0.01	0.00–0.01	1.00	1.00–1.00
11	0.47	0.03–0.92	0.88	0.86–0.89	0.01	0.00–0.02	1.00	1.00–1.00
12	0.47	0.03–0.92	0.91	0.89–0.92	0.01	0.00–0.02	1.00	1.00–1.00
13	0.40	0.00–0.80	0.93	0.92–0.94	0.01	0.00–0.03	1.00	1.00–1.00
14	0.15	0.07–0.36	0.95	0.94–0.96	0.01	0.00–0.02	1.00	1.00–1.00
15	0.15	0.07–0.36	0.96	0.95–0.97	0.01	0.00–0.02	1.00	1.00–1.00
16	0.15	0.07–0.36	0.97	0.96–0.98	0.01	0.00–0.03	1.00	1.00–1.00
17	0.15	0.07–0.36	0.98	0.97–0.98	0.02	0.01–0.04	1.00	1.00–1.00
18	0.15	0.07–0.36	0.99	0.98–0.99	0.02	0.01–0.05	1.00	1.00–1.00
19	0.15	0.07–0.36	0.99	0.98–0.99	0.03	0.01–0.07	1.00	1.00–1.00
20	0.08	0.08–0.24	0.99	0.99–1.00	0.02	0.02–0.06	1.00	1.00–1.00
21	0.08	0.08–0.24	0.99	0.99–1.00	0.03	0.03–0.08	1.00	1.00–1.00
22	0.08	0.08–0.24	0.99	0.99–1.00	0.03	0.03–0.10	1.00	1.00–1.00
23	0.00	0.00–0.00	1.00	0.99–1.00	0.00	0.00–0.00	1.00	1.00–1.00
24	0.00	0.00–0.00	1.00	0.99–1.00	0.00	0.00–0.00	1.00	1.00–1.00
25	0.00	0.00–0.00	1.00	0.99–1.00	0.00	0.00–0.00	1.00	1.00–1.00
26	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	1.00	1.00–1.00
27	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	1.00	1.00–1.00
28	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	1.00	1.00–1.00
29	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	1.00	1.00–1.00
30	0.00	0.00–0.00	1.00	1.00–1.00	–	–	1.00	1.00–1.00
31	0.00	0.00–0.00	1.00	1.00–1.00	–	–	1.00	1.00–1.00
32	0.00	0.00–0.00	1.00	1.00–1.00	–	–	1.00	1.00–1.00
33	0.00	0.00–0.00	1.00	1.00–1.00	–	–	1.00	1.00–1.00
34	0.00	0.00–0.00	1.00	1.00–1.00	–	–	1.00	1.00–1.00

Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
35	0.00	0.00–0.00	1.00	1.00–1.00	–	–	1.00	1.00–1.00
36	0.00	0.00–0.00	1.00	1.00–1.00	–	–	1.00	1.00–1.00
37	0.00	0.00–0.00	1.00	1.00–1.00	–	–	1.00	1.00–1.00
38	0.00	0.00–0.00	1.00	1.00–1.00	–	–	1.00	1.00–1.00
39	0.00	0.00–0.00	1.00	1.00–1.00	–	–	1.00	1.00–1.00
40	0.00	0.00–0.00	1.00	1.00–1.00	–	–	1.00	1.00–1.00

AUC	
Value	95% CI
0.87	0.72–0.98

Table B.38: *Properties of AUDIT for predicting 30-day ICD-10 alcohol dependence*

Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
0	1.00	1.00–1.00	0.00	0.00–0.00	0.01	0.00–0.01	–	–
1	1.00	1.00–1.00	0.05	0.02–0.07	0.01	0.00–0.01	1.00	1.00–1.00
2	1.00	1.00–1.00	0.13	0.10–0.16	0.01	0.00–0.01	1.00	1.00–1.00
3	1.00	1.00–1.00	0.21	0.18–0.25	0.01	0.00–0.01	1.00	1.00–1.00
4	1.00	1.00–1.00	0.32	0.28–0.36	0.01	0.00–0.02	1.00	1.00–1.00
5	1.00	1.00–1.00	0.49	0.45–0.53	0.01	0.01–0.02	1.00	1.00–1.00
6	1.00	1.00–1.00	0.59	0.56–0.63	0.02	0.01–0.03	1.00	1.00–1.00
7	1.00	1.00–1.00	0.69	0.66–0.73	0.02	0.01–0.04	1.00	1.00–1.00
8	0.94	0.85–1.00	0.76	0.73–0.78	0.03	0.01–0.04	1.00	1.00–1.00
9	0.91	0.81–1.00	0.83	0.81–0.85	0.04	0.02–0.06	1.00	1.00–1.00
10	0.80	0.59–1.00	0.86	0.84–0.88	0.04	0.02–0.07	1.00	1.00–1.00
11	0.80	0.59–1.00	0.88	0.87–0.90	0.05	0.02–0.08	1.00	1.00–1.00
12	0.67	0.41–0.94	0.91	0.90–0.92	0.05	0.02–0.09	1.00	0.99–1.00
13	0.51	0.24–0.79	0.94	0.92–0.95	0.06	0.02–0.10	1.00	0.99–1.00
14	0.51	0.24–0.79	0.95	0.94–0.96	0.07	0.02–0.12	1.00	0.99–1.00
15	0.49	0.22–0.76	0.96	0.95–0.97	0.09	0.03–0.15	1.00	0.99–1.00
16	0.45	0.18–0.72	0.97	0.96–0.98	0.11	0.03–0.19	1.00	0.99–1.00
17	0.33	0.09–0.56	0.98	0.97–0.99	0.11	0.03–0.20	0.99	0.99–1.00
18	0.27	0.05–0.50	0.99	0.98–0.99	0.14	0.02–0.26	0.99	0.99–1.00
19	0.23	0.01–0.45	0.99	0.99–0.99	0.14	0.00–0.29	0.99	0.99–1.00
20	0.23	0.01–0.45	0.99	0.99–1.00	0.20	0.01–0.39	0.99	0.99–1.00
21	0.08	0.01–0.18	0.99	0.99–1.00	0.09	0.02–0.19	0.99	0.99–1.00
22	0.08	0.01–0.18	0.99	0.99–1.00	0.11	0.02–0.23	0.99	0.99–1.00
23	0.08	0.01–0.18	1.00	0.99–1.00	0.14	0.03–0.32	0.99	0.99–1.00
24	0.06	0.03–0.15	1.00	0.99–1.00	0.14	0.06–0.35	0.99	0.99–1.00
25	0.06	0.03–0.15	1.00	0.99–1.00	0.14	0.06–0.35	0.99	0.99–1.00
26	0.04	0.03–0.11	1.00	1.00–1.00	0.13	0.12–0.38	0.99	0.99–1.00
27	0.04	0.03–0.11	1.00	1.00–1.00	0.29	0.17–0.75	0.99	0.99–1.00
28	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.99	0.99–1.00
29	0.00	0.00–0.00	1.00	1.00–1.00	0.00	0.00–0.00	0.99	0.99–1.00
30	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–1.00
31	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–1.00
32	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–1.00
33	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–1.00
34	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–1.00

Cut-off	Sensitivity		Specificity		Positive predictive value		Negative predictive value	
	Value	95% CI	Value	95% CI	Value	95% CI	Value	95% CI
35	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–1.00
36	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–1.00
37	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–1.00
38	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–1.00
39	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–1.00
40	0.00	0.00–0.00	1.00	1.00–1.00	–	–	0.99	0.99–1.00

AUC	
Value	95% CI
0.93	0.89–0.97

Section 3 data tables

Table B.39: *Estimated prevalence of reported stigma and barriers to care in the non-MEAO subpopulation, by type and sex*

	Males			Females			Persons		
	N=26,169			N=4,679			N=30,848		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Q5.1 Proportion that sought help	4,190	16.01	(15.4, 16.7)	1,332	28.5	(27.0, 29.9)	5,522	17.9	(17.3,18.5)
Q5.2 Not knowing where to get help									
Strongly disagree	11,928	45.6	(44.7, 46.5)	2,450	52.4	(50.7, 54.0)	14,378	46.6	(45.8,47.4)
Disagree	10,413	39.8	(38.9, 40.7)	1,711	36.6	(35.0, 38.1)	12,124	39.3	(38.5,40.1)
Uncertain	2,140	8.2	(7.6, 8.7)	263	5.6	(4.8, 6.4)	2,403	7.8	(7.3,8.3)
Agree	1,379	5.3	(4.8, 5.7)	213	4.6	(3.8, 5.3)	1,592	5.2	(4.8,5.5)
Strongly agree	310	1.2	(1.0, 1.4)	41	0.9	(0.6, 1.2)	351	1.1	(1.0,1.3)
Q5.3 Difficulty getting time off work									
Strongly disagree	9,641	36.8	(36.0, 37.7)	1,756	37.5	(36.0, 39.1)	11,396	36.9	(36.2,37.7)
Disagree	9,365	35.8	(34.9, 36.7)	1,596	34.1	(32.6, 35.7)	10,960	35.5	(34.8,36.3)
Uncertain	3,311	12.7	(12.0, 13.3)	651	13.9	(12.8, 15.1)	3,962	12.8	(12.3,13.4)
Agree	2,773	10.6	(10.0, 11.2)	523	11.2	(10.1, 12.2)	3,296	10.7	(10.2,11.2)
Strongly agree	1,080	4.1	(3.7, 4.5)	153	3.3	(2.7, 3.9)	1,233	4.0	(3.6,4.3)
Q5.4 Harm my career or career prospects									
Strongly disagree	6,477	24.7	(24.0, 25.5)	1,203	25.7	(24.3, 27.1)	7,680	24.9	(24.2,25.6)
Disagree	6,847	26.2	(25.4, 27.0)	1,244	26.6	(25.2, 28.0)	8,091	26.2	(25.5,26.9)
Uncertain	5,813	22.2	(21.4, 23.0)	958	20.5	(19.1, 21.8)	6,771	22.0	(21.3,22.6)
Agree	4,739	18.1	(17.4, 18.8)	848	18.1	(16.8, 19.4)	5,587	18.1	(17.5,18.7)
Strongly agree	2,293	8.8	(8.2, 9.3)	426	9.1	(8.1, 10.1)	2,719	8.8	(8.3,9.3)

	Males			Females			Persons		
	N=26,169			N=4,679			N=30,848		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Q5.5 People would treat me differently									
Strongly disagree	5,900	22.5	(21.8,23.3)	1,119	23.9	(22.5,25.3)	7,019	22.8	(22.1,23.4)
Disagree	6,859	26.2	(25.4,27.0)	1,260	26.9	(25.5,28.4)	8,118	26.3	(25.6,27.0)
Uncertain	6,197	23.7	(22.9,24.5)	1,001	21.4	(20.0,22.8)	7,198	23.3	(22.6,24.0)
Agree	5,450	20.8	(20.1,21.6)	998	21.3	(20.0,22.7)	6,447	20.9	(20.2,21.6)
Strongly agree	1,764	6.7	(6.3,7.2)	302	6.4	(5.6,7.3)	2,065	6.7	(6.3,7.1)
Q5.6 Seen as weak									
Strongly disagree	6,408	24.5	(23.7,25.3)	1,217	26.0	(24.6,27.4)	7,625	24.7	(24.0,25.4)
Disagree	7,913	30.2	(29.4,31.1)	1,393	29.8	(28.3,31.3)	9,306	30.2	(29.4,30.9)
Uncertain	5,255	20.1	(19.3,20.8)	871	18.6	(17.3,19.9)	6,126	19.9	(19.2,20.5)
Agree	4,717	18.0	(17.3,18.7)	872	18.6	(17.4,19.9)	5,589	18.1	(17.5,18.7)
Strongly agree	1,877	7.2	(6.7,7.7)	326	7.0	(6.1,7.8)	2,202	7.1	(6.7,7.6)
Q5.7 Stop me from being deployed									
Strongly disagree	4,889	18.7	(18.0,19.4)	1,015	21.7	(20.3,23.0)	5,904	19.1	(18.5,19.8)
Disagree	4,518	17.3	(16.6,18.0)	811	17.3	(16.1,18.6)	5,329	17.3	(16.7,17.9)
Uncertain	7,071	27.0	(26.2,27.8)	1,169	25.0	(23.6,26.4)	8,240	26.7	(26.0,27.4)
Agree	5,974	22.8	(22.1,23.6)	1,052	22.5	(21.1,23.8)	7,025	22.8	(22.1,23.5)
Strongly agree	3,718	14.2	(13.6,14.9)	633	13.5	(12.4,14.7)	4,350	14.1	(13.5,14.7)

Table B.40: *Prevalence of reported stigma and barriers to care in the ADF, by type and rank*

	Officers			Non-commissioned officers			Other ranks		
	N=7,017			N=11,188			N=12,643		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Q5.1 Proportion that sought help	1,126	16	(15.2,16.9)	2,042	18.3	(17.4, 19.1)	2354	18.6	(17.5, 19.8)
Q5.2 Not knowing where to get help									
Strongly disagree	3,687	52.5	(51.3, 53.8)	5,139	45.9	(44.8,47.0)	5,552	43.9	(42.3, 45.5)
Disagree	2,729	38.9	(37.7, 40.1)	4,639	41.7	(40.4, 42.5)	4,756	37.6	(36.0, 39.2)
Uncertain	306	4.4	(3.9, 4.9)	733	6.6	(6.0, 7.1)	1,364	10.8	(9.8, 11.8)
Agree	233	3.3	(2.9, 3.8)	553	4.9	(4.5, 5.4)	806	6.4	(5.6, 7.1)
Strongly agree	62	0.9	(0.7, 1.1)	124	1.1	(0.9, 1.3)	165	1.3	(0.9, 1.7)
Q5.3 Difficulty getting time off work									
Strongly disagree	3,110	44.3	(43.1,45.5)	4,365	39.0	(38.0, 40.1)	3,921	31	(29.5, 32.5)
Disagree	2,501	35.6	(34.5, 36.8)	4,285	38.3	(37.2, 39.4)	4,174	33	(31.5, 34.5)
Uncertain	561	8.0	(7.3, 8.7)	1,246	11.1	(10.4, 11.8)	2,155	17	(15.8, 18.3)
Agree	677	9.6	(8.9, 10.4)	957	8.6	(7.9, 9.2)	1,662	13.1	(12.1, 14.2)
Strongly agree	167	2.4	(2.0, 2.8)	335	3.0	(2.6, 3.4)	730	5.8	(5.0, 6.5)
Q5.4 Harm my career or career prospects									
Strongly disagree	1,730	24.7	(23.6, 25.7)	2,817	25.2	(24.2, 26.1)	3,133	24.8	(23.4, 26.2)
Disagree	1,888	26.9	(25.8, 28.0)	3,159	28.2	(27.3, 29.2)	3,044	24.1	(22.7, 25.4)
Uncertain	1,407	20.1	(19.1, 21.0)	2,380	21.3	(20.4, 22.2)	2,984	23.6	(22.2, 25.0)
Agree	1,406	20.0	(19.0, 21.0)	1,905	17.0	(16.2, 17.9)	2,275	18	(16.8, 19.2)
Strongly agree	586	8.3	(7.7, 9.0)	926	8.3	(7.7, 8.9)	1,207	9.55	(8.6, 10.5)

	Officers			Non-commissioned officers			Other ranks		
	N=7,017			N=11,188			N=12,643		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Q5.5 People would treat me differently									
Strongly disagree	1,548	22.1	(21.0, 23.1)	2,523	22.6	(21.6, 23.5)	2,949	23.3	(22.0, 24.7)
Disagree	1,926	27.4	(26.3, 28.5)	3,086	27.6	(26.6, 28.6)	3,106	24.6	(23.2, 26.0)
Uncertain	1,598	22.8	(21.7, 23.8)	2,596	23.2	(22.3, 24.1)	3,003	23.8	(22.4, 25.1)
Agree	1,578	22.5	(21.5, 23.5)	2,321	20.7	(19.8, 21.6)	2,548	20.2	(18.9, 21.4)
Strongly agree	367	5.2	(4.7, 5.8)	662	5.9	(5.4, 6.4)	1,036	8.2	(7.3, 9.1)
Q5.6 Seen as weak									
Strongly disagree	1,724	24.6	(23.5,25.6)	2,838	25.4	(24.4,26.3)	3,063	24.2	(22.9,25.6)
Disagree	2,271	32.4	(31.2,33.5)	3,577	32.0	(31.0,33.0)	3,457	27.3	(25.9,28.8)
Uncertain	1,339	19.1	(18.1,20.1)	2,149	19.2	(18.3,20.1)	2,638	20.9	(19.6,22.2)
Agree	1,335	19.0	(18.0,20.0)	1,925	17.2	(16.4,18.0)	2,329	18.4	(17.2,19.7)
Strongly agree	348	5.0	(4.4,5.5)	699	6.2	(5.7,6.8)	1,155	9.14	(8.2,10.1)
Q5.7 Stop me from being deployed									
Strongly disagree	1,385	19.7	(18.8,20.7)	2,079	18.6	(17.7,19.4)	2,440	19.3	(18.0,20.6)
Disagree	1,234	17.6	(16.6,18.5)	1,987	17.8	(16.9,18.6)	2,107	16.7	(15.5,17.9)
Uncertain	1,859	26.5	(25.4,27.6)	2,895	25.9	(24.9,26.8)	3,486	27.6	(26.1,29.0)
Agree	1,710	24.4	(23.3,25.4)	2,598	23.2	(22.3,24.2)	2,717	21.5	(20.2,22.8)
Strongly agree	828	11.8	(11.0,12.6)	1,628	14.6	(13.8,15.3)	1,894	15	(13.8,16.1)

Table B.41: *Prevalence of reported stigma and barriers to care in the ADF, by type and Service*

	Navy								
	Male			Female			Total		
	N=6,284			N=1,500			N=7,784		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Q5.1 Proportion that sought help	1,019	16.2	(14.9, 17.5)	403	26.9	(24.1, 29.7)	1,422	18.3	(17.1, 19.5)
Q5.2 Not knowing where to get help									
Strongly disagree	2,728	43.4	(41.6, 45.3)	735	49.0	(45.8, 52.2)	3,463	44.5	(42.9, 46.1)
Disagree	2,530	40.3	(38.4, 42.1)	572	38.1	(35.0, 41.2)	3,102	39.8	(38.3, 41.4)
Uncertain	590	9.4	(8.2, 10.6)	101	6.7	(5.1, 8.4)	691	8.9	(7.9, 9.9)
Agree	358	5.7	(4.8, 6.6)	77	5.1	(3.6, 6.6)	435	5.6	(4.8, 6.4)
Strongly agree	78	1.2	(0.8, 1.7)	15	1.0	(0.4, 1.7)	93	1.2	(0.8, 1.6)
Q5.3 Difficulty getting time off work									
Strongly disagree	2,149	34.2	(32.4, 35.9)	512	34.1	(31.1, 37.2)	2,661	34.2	(32.7, 35.7)
Disagree	2,265	36.0	(34.3, 37.8)	485	32.4	(29.4, 35.3)	2,750	35.3	(33.8, 36.9)
Uncertain	821	13.1	(11.7, 14.4)	232	15.5	(13.1, 17.9)	1,053	13.5	(12.4, 14.7)
Agree	756	12.0	(10.8, 13.3)	207	13.8	(11.5, 16.0)	963	12.4	(11.2, 13.5)
Strongly agree	294	4.7	(3.8, 5.5)	63	4.2	(2.9, 5.5)	357	4.6	(3.9, 5.3)
Q5.4 Harm my career or career prospects									
Strongly disagree	1,579	25.1	(23.5, 26.7)	361	24.1	(21.3, 26.8)	1,940	24.9	(23.5, 26.3)
Disagree	1,599	25.4	(23.8, 27.1)	373	24.9	(22.1, 27.6)	1,972	25.3	(23.9, 26.7)
Uncertain	1,285	20.4	(18.9, 22.0)	315	21.0	(18.3, 23.6)	1,600	20.5	(19.2, 21.9)
Agree	1,224	19.5	(18.0, 21.0)	299	19.9	(17.4, 22.5)	1,523	19.6	(18.3, 20.9)
Strongly agree	597	9.5	(8.4, 10.6)	153	10.2	(8.2, 12.2)	750	9.6	(8.7, 10.6)

	Army									Air Force								
	Male			Female			Total			Male			Female			Total		
	N=13,692			N=1,834			N=15,526			N=6,193			N=1,345			N=7,538		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
	2,183	15.9	(15.0, 16.9)	508	27.7	(25.4, 30)	2,692	17.3	(16.4, 18.2)	988	16	(14.9, 17.0)	420	31.2	(28.7, 33.7)	1,408	18.7	(17.7, 19.7)
	6,719	49.1	(47.7, 50.4)	1,027	56.0	(53.5, 58.5)	7,746	49.9	(48.6, 51.1)	2,481	40.1	(38.6, 41.5)	688	51.2	(48.4, 54.0)	3,169	42	(40.8, 43.3)
	5,123	37.4	(36.1, 38.8)	611	33.3	(30.9, 35.8)	5,734	36.9	(35.7, 38.1)	2,760	44.6	(43.1, 46.0)	528	39.3	(36.5, 42.0)	3,288	43.6	(42.3, 44.9)
	1,050	7.7	(6.9, 8.5)	107	5.8	(4.5, 7.2)	1,157	7.5	(6.7, 8.2)	500	8.1	(7.3, 8.9)	55	4.1	(3.0, 5.2)	555	7.4	(6.7, 8.1)
	631	4.6	(4.0, 5.2)	70	3.8	(2.8, 4.9)	701	4.5	(4.0, 5.1)	390	6.3	(5.6, 7.0)	66	4.9	(3.7, 6.2)	456	6.1	(5.4, 6.7)
	170	1.2	(0.9, 1.5)	19	1.0	(0.5, 1.5)	189	1.2	(0.9, 1.5)	63	1.0	(0.7, 1.3)	7	0.5	(0.1, 0.9)	70	0.9	(0.7, 1.2)
	5,186	37.9	(36.6, 39.2)	701	38.2	(35.8, 40.6)	5,886	37.9	(36.7, 39.1)	2,306	37.2	(35.8, 38.6)	543	40.4	(37.6, 43.1)	2,849	37.8	(36.5, 39.0)
	4,639	33.9	(32.6, 35.2)	635	34.6	(32.2, 37.1)	5,274	34.0	(32.8, 35.1)	2,462	39.8	(38.3, 41.2)	475	35.3	(32.7, 38.0)	2,937	39.0	(37.7, 40.2)
	1,813	13.2	(12.3, 14.2)	253	13.8	(12.0, 15.6)	2,067	13.3	(12.4, 14.2)	677	10.9	(10.0, 11.9)	165	12.3	(10.5, 14.1)	842	11.2	(10.3, 12.0)
	1,441	10.5	(9.6, 11.4)	189	10.3	(8.7, 12.0)	1,630	10.5	(9.7, 11.3)	576	9.3	(8.5, 10.2)	127	9.4	(7.8, 11.0)	703	9.3	(8.6, 10.1)
	613	4.5	(3.9, 5.1)	55	3.0	(2.1, 3.9)	669	4.3	(3.8, 4.9)	172	2.8	(2.3, 3.3)	35	2.6	(1.7, 3.5)	207	2.7	(2.3, 3.2)
	3,468	25.3	(24.1, 26.5)	471	25.7	(23.4, 27.9)	3,939	25.4	(24.3, 26.5)	1,430	23.1	(21.9, 24.3)	371	27.6	(25.1, 30.1)	1,801	23.9	(22.8, 25.0)
	3,414	24.9	(23.7, 26.1)	523	28.5	(26.2, 30.8)	3,937	25.4	(24.3, 26.4)	1,835	29.6	(28.3, 31.0)	348	25.9	(23.5, 28.3)	2,183	29.0	(27.8, 30.1)
	3,061	22.4	(21.2, 23.5)	350	19.1	(17.1, 21.1)	3,411	22.0	(20.9, 23.0)	1,468	23.7	(22.4, 24.9)	293	21.8	(19.5, 24.1)	1,761	23.4	(22.2, 24.5)
	2,516	18.4	(17.3, 19.4)	324	17.7	(15.7, 19.7)	2,841	18.3	(17.3, 19.3)	998	16.1	(15.1, 17.2)	224	16.7	(14.6, 18.7)	1,223	16.2	(15.3, 17.2)
	1,233	9.0	(8.2, 10.0)	165	9.0	(7.5, 10.5)	1,399	9.0	(8.3, 9.7)	462	7.5	(6.7, 8.2)	108	8.0	(6.5, 9.6)	570	7.6	(6.9, 8.3)

	Navy								
	Male			Female			Total		
	N=6,284			N=1,500			N=7,784		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Q5.5 People would treat me differently									
Strongly disagree	1,462	23.3	(21.7, 24.8)	330	22.0	(19.3, 24.6)	1,792	23.0	(21.7, 24.4)
Disagree	1,646	26.2	(24.6, 27.8)	380	25.3	(22.6, 28.0)	2,026	26.0	(24.6, 27.4)
Uncertain	1,464	23.3	(21.7, 24.9)	334	22.3	(19.5, 25.0)	1,798	23.1	(21.7, 24.5)
Agree	1,311	20.9	(19.4, 22.4)	340	22.7	(20.0, 25.4)	1,652	21.2	(19.9, 22.5)
Strongly agree	401	6.4	(5.4, 7.3)	116	7.7	(5.9, 9.5)	517	6.6	(5.8, 7.5)
Q5.6 Seen as weak									
Strongly disagree	1,568	25.0	(23.3, 26.6)	392	26.1	(23.3, 28.9)	1,960	25.2	(23.8, 26.6)
Disagree	1,872	29.8	(28.1, 31.5)	418	27.9	(25.0, 30.7)	2,290	29.4	(27.9, 30.9)
Uncertain	1,297	20.6	(19.1, 22.2)	299	20.0	(17.3, 22.6)	1,596	20.5	(19.2, 21.8)
Agree	1,164	18.5	(17.1, 20.0)	279	18.6	(16.1, 21.1)	1,443	18.5	(17.3, 19.8)
Strongly agree	383	6.1	(5.2, 7.0)	112	7.5	(5.7, 9.2)	495	6.4	(5.5, 7.2)
Q5.7 Stop me from being deployed									
Strongly disagree	1,215	19.3	(17.9, 20.8)	315	21.0	(18.4, 23.6)	1,530	19.7	(18.4, 20.9)
Disagree	1,202	19.1	(17.7, 20.6)	229	15.3	(13.0, 17.5)	1,431	18.4	(17.1, 19.6)
Uncertain	1,591	25.3	(23.7, 26.9)	374	24.9	(22.1, 27.7)	1,965	25.2	(23.8, 26.7)
Agree	1,451	23.1	(21.5, 24.6)	376	25.1	(22.4, 27.8)	1,827	23.5	(22.1, 24.8)
Strongly agree	825	13.1	(11.9, 14.4)	206	13.7	(11.5, 16.0)	1,031	13.3	(12.1, 14.4)

	Army									Air Force								
	Male			Female			Total			Male			Female			Total		
	N=13,692			N=1,834			N=15,526			N=6,193			N=1,345			N=7,538		
	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI	N	%	95% CI
	3,196	23.3	(22.2, 24.5)	456	24.9	(22.6, 27.1)	3,652	23.5	(22.5, 24.6)	1,242	20.1	(18.9, 21.2)	333	24.8	(22.4, 27.2)	1,576	20.9	(19.8, 22.0)
	3,449	25.2	(24.0, 26.4)	493	26.9	(24.6, 29.1)	3,941	25.4	(24.3, 26.5)	1,764	28.5	(27.2, 29.8)	387	28.8	(26.3, 31.3)	2,151	28.5	(27.4, 29.7)
	3,145	23.0	(21.8, 24.1)	375	20.4	(18.4, 22.5)	3,520	22.7	(21.6, 23.7)	1,588	25.6	(24.4, 26.9)	292	21.7	(19.4, 24.0)	1,880	24.9	(23.8, 26.1)
	2,885	21.1	(20.0, 22.2)	411	22.4	(20.3, 24.5)	3,296	21.2	(20.2, 22.2)	1,254	20.2	(19.1, 21.4)	246	18.3	(16.2, 20.5)	1,500	19.9	(18.9, 20.9)
	1,018	7.4	(6.7, 8.2)	100	5.4	(4.2, 6.6)	1,117	7.2	(6.5, 7.9)	345	5.6	(4.9, 6.3)	86	6.4	(5.0, 7.8)	431	5.7	(5.1, 6.3)
	3,397	24.8	(23.6, 26.0)	473	25.8	(23.5, 28.1)	3,870	24.9	(23.8, 26.0)	1,444	23.3	(22.1, 24.6)	352	26	(23.7, 28.6)	1,795	23.8	(22.7, 24.9)
	3,940	28.8	(27.5, 30.0)	527	28.8	(26.4, 31.1)	4,468	28.8	(27.6, 29.9)	2,100	33.9	(32.5, 35.3)	448	33	(30.7, 35.9)	2,548	33.8	(32.6, 35.0)
	2,635	19.2	(18.1, 20.3)	339	18.5	(16.5, 20.5)	2,974	19.2	(18.2, 20.2)	1,324	21.4	(20.2, 22.6)	233	17	(15.2, 19.4)	1,557	20.7	(19.6, 21.7)
	2,566	18.7	(17.7, 19.8)	379	20.7	(18.5, 22.8)	2,945	19.0	(18.0, 19.9)	987	15.9	(14.9, 17.0)	215	16	(14.0, 17.9)	1,201	15.9	(15.0, 16.9)
	1,155	8.4	(7.6, 9.2)	116	6.3	(5.1, 7.6)	1,270	8.2	(7.5, 8.9)	339	5.5	(4.8, 6.1)	98	7	(5.8, 8.8)	437	5.8	(5.2, 6.4)
	2,598	19.0	(17.9, 20.1)	397	21.7	(19.6, 23.8)	2,996	19.3	(18.3, 20.3)	1,075	17.4	(16.3, 18.5)	303	22.5	(20.2, 24.8)	1,378	18.3	(17.3, 19.3)
	2,192	16.0	(15.0, 17.0)	331	18.0	(16.1, 20.0)	2,523	16.2	(15.3, 17.2)	1,124	18.1	(17.0, 19.3)	251	18.7	(16.5, 20.8)	1,375	18.2	(17.2, 19.2)
	3,381	24.7	(23.5, 25.9)	424	23.1	(21.0, 25.3)	3,805	24.5	(23.4, 25.6)	2,099	33.9	(32.5, 35.3)	371	27.6	(25.1, 30.1)	2,470	32.8	(31.5, 34.0)
	3,261	23.8	(22.7, 25.0)	419	22.9	(20.7, 25.0)	3,680	23.7	(22.6, 24.8)	1,262	20.4	(19.2, 21.6)	256	19.0	(16.9, 21.2)	1,518	20.1	(19.1, 21.2)
	2,260	16.5	(15.5, 17.5)	262	14.3	(12.5, 16.1)	2,522	16.2	(15.3, 17.2)	633	10.2	(9.3, 11.1)	164	12.2	(10.4, 14.0)	797	10.6	(9.8, 11.4)

***Table B.42:** Prevalence of reported stigma and barriers to care in the ADF, by type and deployment history*

	Never deployed			Deployed		
	N=16,966			N=12,899		
	N	%	95% CI	N	%	95% CI
Q5.1 Proportion that sought help	3,277	17.9	(17.1, 18.7)	2,246	17.9	(17.0, 18.8)
Q5.2 Not knowing where to get help						
Strongly disagree	8,286	45.3	(44.2, 46.3)	6,092	48.6	(47.4, 49.8)
Disagree	7,274	39.7	(38.7, 40.8)	4,850	38.7	(37.5, 39.9)
Uncertain	1,565	8.5	(7.9, 9.2)	838	6.7	(6.0, 7.4)
Agree	979	5.3	(4.8, 5.8)	613	4.9	(4.3, 5.4)
Strongly agree	208	1.1	(0.9, 1.4)	144	1.1	(0.9, 1.4)
Q5.3 Difficulty getting time off work						
Strongly disagree	6,493	35.5	(34.4, 36.5)	4,903	39.1	(37.9, 40.3)
Disagree	6,484	35.4	(34.4, 36.4)	4,476	35.7	(34.5, 36.9)
Uncertain	2,498	13.6	(12.9, 14.4)	1,464	11.7	(10.8, 12.5)
Agree	2,073	11.3	(10.6, 12.0)	1,223	9.8	(9.0, 10.5)
Strongly agree	763	4.2	(3.7, 4.6)	470	3.7	(3.2, 4.3)
Q5.4 Harm my career or career prospects						
Strongly disagree	4,522	24.7	(23.8, 25.6)	3,157	24.1	(24.1, 26.3)
Disagree	4,883	26.7	(25.7, 27.6)	3,208	24.5	(24.5, 26.7)
Uncertain	4,154	22.7	(21.8, 23.6)	2,618	19.9	(19.9, 21.9)
Agree	3,180	17.4	(16.5, 18.2)	2,407	18.2	(18.2, 20.2)
Strongly agree	1,572	8.6	(8.0, 9.2)	1,147	8.4	(8.4, 9.9)
Q5.5 People would treat me differently						
Strongly disagree	4,102	22.4	(21.5,23.3)	2,917	23.3	(22.2,24.3)
Disagree	4,960	27.1	(26.1,28.0)	3,159	25.2	(24.1,26.3)
Uncertain	4,257	23.2	(22.3,24.2)	2,941	23.5	(22.4,24.5)
Agree	3,747	20.5	(19.6,21.3)	2,700	21.5	(20.5,22.6)
Strongly agree	1,245	6.8	(6.2,7.4)	820	6.5	(5.9,7.2)
Q5.6 Seen as weak						
Strongly disagree	4,445	24.3	(23.3,25.2)	3,180	25.4	(24.3,26.4)
Disagree	5,724	31.3	(30.3,32.3)	3,581	28.6	(27.5,29.7)
Uncertain	3,645	19.9	(19.0,20.8)	2,482	19.8	(18.8,20.8)
Agree	3,214	17.6	(16.7,18.4)	2,375	18.9	(18.0,19.9)
Strongly agree	1,283	7.0	(6.4,7.6)	919	7.3	(6.6,8.0)

	Never deployed			Deployed		
	N=16,966			N=12,899		
	N	%	95% CI	N	%	95% CI
Q5.7 Stop me from being deployed						
Strongly disagree	3,526	19.3	(18.4,20.1)	2,377	19.0	(18.0,19.9)
Disagree	3,294	18.0	(17.2,18.8)	2,035	16.2	(15.3,17.1)
Uncertain	5,239	28.6	(27.6,29.6)	3,001	23.9	(22.9,25.0)
Agree	3,863	21.1	(20.2,22.0)	3,162	25.2	(24.1,26.3)
Strongly agree	2,389	13.0	(12.3,13.8)	1,962	15.6	(14.7,16.6)

Annex A data tables

Table B.43: *Demographic profile of Phase 1 survey respondents and non-respondents*

Characteristic	Population (N=50,049)		Respondents (N=24,481, 48.9%)		Non-respondents (N=25,568, 51.1%)	
	N	%	N	%	N	%
Sex						
Female	6,808	13.6	3,888	15.9	2,920	11.4
Male	43,241	86.4	20,593	84.1	22,648	88.6
Service						
Navy	11,612	23.2	5,392	22.0	6,220	24.3
Females	2,104	4.2	1,053	4.3	1,051	4.1
Males	9,508	19.0	4,339	17.7	5,169	20.2
Army	25,356	50.7	11,429	46.7	13,927	54.5
Females	2,513	5.0	1,437	5.9	1,076	4.2
Males	22,843	45.6	9,992	40.8	12,851	50.3
Air Force	13,081	26.1	7,660	31.3	5,421	21.2
Females	2,191	4.4	1,398	5.7	793	3.1
Males	10,890	21.8	6,262	25.6	4,628	18.1
Age	33.2 (M)	9.2 (SD)	35.5 (M)	9.3 (SD)	30.9 (M)	8.4 (SD)
18–27	18,422	36.8	6,514	26.6	11,908	46.6
28–37	16,688	33.3	8,285	33.8	8,403	32.9
38–47	10,984	21.9	6,899	28.2	4,085	16.0
48–57	3,748	7.5	2,640	10.8	11,008	4.3
58–over	207	0.4	143	0.6	64	0.3
Marital status						
Married	31,500	62.9	18,882	77.1	12,618	49.4
Not married	18,549	37.1	5,599	22.9	12,950	50.6
Education[a]		**% (95% CI)**				
Missing	–	–	396	1.6		
Primary school	89	0.2 (0.1, 0.2)	47	0.2		
Secondary school up to Grade 10	5,389	10.8 (10.4, 11.1)	2,445	10.0		
Secondary school up to Grade 11–12	15,620	31.2 (30.7, 31.7)	6,831	27.9		
Certificate	11,927	23.8 (23.4, 24.3)	5,268	21.5		
Diploma	6,569	13.1 (12.8, 13.4)	3,487	14.2		
Bachelor degree	5,132	10.3 (10.0, 10.5)	2,888	11.8		

Characteristic	Population (N=50,049)		Respondents (N=24,481, 48.9%)		Non-respondents (N=25,568, 51.1%)	
	N	%	N	%	N	%
Postgraduate	5,322	10.6 (10.4, 10.8)	3,119	12.7		
Length of service (years)[a, b]	**Mean (95% CI)**					
Regular	11.6 (11.5, 11.7)	8.8 (SD)	12.9 (M)	8.9 (SD)		
Reserve	4.4 (4.3, 4.6)	5.0 (SD)	4.6 (M)	5.2 (SD)		
Rank						
Commissioned officer	12,034	24.0	7,268	29.7	4,766	18.6
Non-commissioned officer	22,319	44.6	12,381	50.6	9,938	38.9
Other ranks	15,696	31.4	4,832	19.7	10,864	42.5
MEC status						
MEC 1	32,816	65.6	14,954	61.1	17,862	69.9
MEC 2	11,712	23.4	6,726	27.5	4,986	19.5
MEC 3	4,485	8.9	2,301	9.4	2,184	8.5
MEC 4	1,036	2.1	500	2.0	536	2.1
ADF deployment						
Missing	983	2.0	0	0.0	983	3.8
Yes	32,080	64.1	15,952	65.2	16,128	63.1
No	16,986	33.9	8,529	34.8	8,457	33.1
Months deployed over last 3 years[a]	3.7 (3.7, 3.8)	4.6 (SD)	3.6 (M)	4.5 (SD)		
Months deployed over last 3 years on ship (non-MEAO Navy)[c]	10.6 (10.3, 10.9)	9.7 (SD)	9.8 (M)	9.5 (SD)		
Currently on operational deployment (non-MEAO)[d]		**% (95% CI)**				
Missing	–	–	252	1.7		
Yes	2,453	8.0 (7.5, 8.4)	1,065	7.4		
No	28,395	92.0 (91.6, 92.5)	13,128	90.9		
Length intending to stay in military (non-MEAO)[d]	11.9 (11.7, 12.0)	10.2 (SD)	12.3 (M)	10.4 (SD)		
Length of service in the ADF (years)	11.6 (M)	8.8 (SD)	13.7 (M)	9.3 (SD)	9.7 (M)	7.8 (SD)

a Population prevalences estimated from 23,156 survey responses.

b Length of service among those who have served as a regular or reservist.

c Population prevalence estimated from 3,156 survey responses.

d Population prevalences estimated from 13,265 survey responses.

Table B.44: *Consent and CIDI completion rates*

	Total sample	
	No.	%
Consent to complete a survey questionnaire	26,281	N/A
Consent to being contacted to do a telephone interview/for follow-up studies	20,198	76.9
Consent to allow linkage of information contained in my electronic ADF psychological screening records with the study data	21,768	82.8
Consent to allow CMVH to obtain from the ADF, contact details to invite your partner/spouse to participate in a family study	17,554	66.8
CIDI completed	1,798	6.8

Table B.45: *Number of days between completing Phase 1 questionnaire and Phase 2 CIDI interview*

	Total	28 or less days from completing questionnaire to interview		60 or less days from completing questionnaire to interview		More than 60 days from completing questionnaire to interview	
	No.	No.	%	No.	%	No.	%
CIDI	1,798	640	35.6	1,573	87.5	225	12.5

Table B.46: *Demographic profile of the CIDI sample*

Characteristic	CIDI sample (N=3,688, 100%)		CIDI respondents (N=1,798, 48.8%)		CIDI non-respondents (N=1,890, 51.2%)	
	No.	%	No.	%	No.	%
Sex						
Females	907	24.6	438	24.4	469	24.8
Males	2,781	75.4	1,360	75.6	1,421	75.2
Service						
Navy	837	22.7	384	21.4	453	24.0
Females	227	6.2	100	5.6	127	6.7
Males	610	16.5	284	15.8	326	17.2
Army	1,325	35.9	716	39.8	609	32.2
Females	322	8.7	165	9.2	157	8.3
Males	1,003	27.2	551	30.6	452	23.9
Air Force	1,526	41.4	698	38.8	828	43.8
Females	358	9.7	173	9.6	185	9.8
Males	1,168	31.7	525	29.2	643	34.0
Age	37.3 (M)	9.4 (SD)	38.3 (M)	9.4 (SD)	36.4 (M)	9.3 (SD)
18–27	733	19.9	300	16.7	433	22.9
28–37	1,183	32.1	546	30.4	637	33.7
38–47	1,246	33.8	662	36.8	584	30.9
48–57	500	13.6	271	15.1	229	12.1
58–over	26	0.7	19	1.1	7	0.4

Characteristic	CIDI sample (N=3,688, 100%)		CIDI respondents (N=1,798, 48.8%)		CIDI non-respondents (N=1,890, 51.2%)	
	No.	%	No.	%	No.	%
Marital status						
Yes	2,862	77.6	1,388	77.2	1,474	78.0
No	826	22.4	410	22.8	416	22.0
Rank						
Officer	1,233	33.4	655	36.4	578	30.6
Non-commissioned officer	1,881	51.0	889	49.4	992	52.5
Other ranks	574	15.6	254	14.1	320	16.9
MEC status						
MEC 1	1,989	53.9	906	50.4	1,083	57.3
MEC 2	1,184	32.1	611	34.0	573	30.3
MEC 3	413	11.2	224	12.5	189	10.0
MEC 4	102	2.8	57	3.2	45	2.4
ADF deployment						
Yes	2,288	62.0	1,111	61.8	1,177	62.3
No	1,400	38.0	687	38.2	713	37.7
Length of service in the ADF	15.3 (M)	9.5 (SD)	16.2 (M)	9.8 (SD)	14.3 (M)	9.2 (SD)

Table B.47: *Phase 2: Breakdown of CIDI completers by band and Service*

	Navy			Army			Air Force		
		Completed			Completed			Completed	
	Selected	No.	%	Selected	No.	%	Selected	No.	%
Band 3	312	154	49.4	761	433	56.9	366	201	54.9
Band 2	221	98	44.3	279	138	49.5	405	171	42.2
Band 1	304	132	43.4	285	145	50.9	755	326	43.2

ANNEX C: HEALTH AND WELLBEING SURVEY

This annex contains the questionnaire that was used for the Health and Wellbeing Survey.

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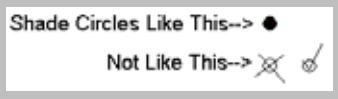
Health and Wellbeing Survey

Instructions to complete:

This questionnaire asks about your physical and mental health. All information you provide in this questionnaire will be de-identified and will not be linked to other data we have collected about your health without your consent.

Please complete all sections by following the instructions at the beginning of each question. Please shade circles, rather than ticking or crossing them, and write clearly and in capital letters.



If you make a mistake and wish to change your answer, simply cross out your mistake and choose the answer that is right for you.

Please use blue or black pen, not pencil.

Some questions may seem repetitive, but this is necessary due to the questions being grouped into scales.

If you have any questions, please call us on 1800 232 904.

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SUPPORT

If you find involvement in the survey distressing in any way you can talk to someone about it.

+ **All Hours Support Line** 1800 628 036; Outside Australia +61 2 9425 3878
  A confidential telephone triage support service for ADF members and their families

+ **Lifeline** 13 11 14

+ **Veterans and Veterans' Family Counselling Service** 1800 011 046

+ **Veterans' Affairs Network (VAN)** 1300 551 918; Non-metro 1800 555 254

+ **Department of Veterans' Affairs** 13 32 54

+ **National Office for the Military Compensation and Rehabilitation Service** 1300 550 461

If you prefer to speak to an independent University or Defence Force representative not involved in the study, contact an Ethics Officer:

+ **The Australian Defence Force Human Research Ethics Committee**
  Executive Secretary
  (02) 6266 3837; ADHREC@defence.gov.au

+ **The University of Adelaide Research Branch**
  Secretary, Human Research Ethics Committee
  (08) 8303 6028

IF YOU DO NOT WANT TO PARTICIPATE IN THIS STUDY - PLEASE PHONE THE TOLL FREE NUMBER 1800 232 904

For questions, problems or concerns, please contact the following:

+ **The Study Team**
  The Centre for Military and Veterans' Health
  1800 232 904; cmvh@adelaide.edu.au

+ **Principal Investigator: Prof Alexander McFarlane**
  University of Adelaide
  (08) 8303 5200; alexander.mcfarlane@adelaide.edu.au

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Section One: Background Details

1.1 What is today's date? (dd/mm/yyyy) ☐☐ / ☐☐ / 2011

1.2 Are you male or female? ○ Male ○ Female

1.3 What is your date of birth? (dd/mm/yyyy) ☐☐ / ☐☐ / ☐☐☐☐

1.4 Are you currently in a significant intimate relationship?
○ Yes - go to question 1.4a
○ No - go to question 1.4b

1.4a Are you:
- ○ Married and living together
- ○ Married with unaccompanied spouse (i.e. married partner currently lives elsewhere)
- ○ Living with partner (ADF recognised)
- ○ Living with partner (not ADF recognised)
- ○ In a long term relationship but not living together

1.4b Are you:
- ○ Never married
- ○ Previously married but now divorced
- ○ Previously married but now separated
- ○ Other, please specify:

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

1.5 Which category best describes the highest educational qualification you have completed? Choose one.
- ○ Primary school
- ○ Secondary school up to grade 10
- ○ Secondary school grades 11-12
- ○ Certificate (trade, apprenticeship, technicians etc)
- ○ Diploma (associate, undergraduate)
- ○ Bachelor degree
- ○ Post-graduate qualification

1.6 What is your Service?
- ○ Royal Australian Navy
- ○ Australian Regular Army
- ○ Royal Australian Air Force

1.7 To the nearest year, how long have you served with the Australian Defence Force: (if less than 1 year, please enter 1)

a) As a regular? ☐☐ years *or* ○ Not applicable

b) As a reservist? ☐☐ years *or* ○ Not applicable

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Section One: Background Details

1.8 What is your CURRENT rank?	○ Senior Commissioned Officer (CMDR / LTCOL / WGCDR and above) ○ Commissioned Officer (LCDR / MAJ / SQNLDR and below) ○ Senior Non-Commissioned Officer (PO / SGT and above) ○ Junior Non-Commissioned Officer (LS / CPL and below) ○ Other ranks (AB / SMN / PTE / LAC / AC or equivalent)
1.9 In the past THREE YEARS, roughly how many months in total have you been away on operational deployment? (if less than 1 month, please enter 1)	☐☐ months
1.10 If in the Navy, in the past THREE YEARS, roughly how many months in total have you been deployed on a ship? (if less than 1 month, please enter 1)	☐☐ months *or* ○ Not applicable
1.11 Are you currently on operational deployment?	○ No ○ Yes
1.12 How long do you intend to stay in the military?	☐☐ years ☐☐ months

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Section Two: Your Health Now

2.1 In general, how would you say your health is?	○ Excellent ○ Very good ○ Good ○ Fair ○ Poor

In general, how would you rate your:	EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
2.2 Quality of life?	○	○	○	○	○
2.3 Eyesight (with glasses or contact lenses, if you wear them)?	○	○	○	○	○
2.4 Hearing?	○	○	○	○	○
2.5 Memory?	○	○	○	○	○
2.6 Teeth and gums?	○	○	○	○	○

The following questions inquire about how you have been feeling over the last four (4) weeks. Please read each question carefully and then indicate, by shading the circle, the response that best describes how you have been feeling.

	ALL OF THE TIME	MOST OF THE TIME	SOME OF THE TIME	A LITTLE OF THE TIME	NONE OF THE TIME
2.7 In the past four (4) weeks, about how often did you feel tired for no good reason?	○	○	○	○	○
2.8 In the past four (4) weeks, about how often did you feel nervous?	○	○	○	○	○
2.9 In the past four (4) weeks, about how often did you feel so nervous that nothing could calm you down?	○	○	○	○	○
2.10 In the past four (4) weeks, about how often did you feel hopeless?	○	○	○	○	○
2.11 In the past four (4) weeks, about how often did you feel restless or fidgety?	○	○	○	○	○
2.12 In the past four (4) weeks, about how often did you feel so restless that you could not sit still?	○	○	○	○	○
2.13 In the past four (4) weeks, about how often did you feel depressed?	○	○	○	○	○
2.14 In the past four (4) weeks, about how often did you feel that everything was an effort?	○	○	○	○	○
2.15 In the past four (4) weeks, about how often did you feel so sad that nothing could cheer you up?	○	○	○	○	○
2.16 In the past four (4) weeks, about how often did you feel worthless?	○	○	○	○	○

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Section Two: Your Health Now

The next few questions are about how these feelings may have affected you in the past four (4) weeks. You need not answer these questions if you answered 'None of the time' to all of the previous ten questions about your feelings.

2.17 In the past four (4) weeks, how many days were you TOTALLY UNABLE to work, study or manage your day to day activities because of these feelings? ☐☐ days

2.18 [Aside from those days], in the past four (4) weeks, HOW MANY DAYS were you able to work or study or manage your day to day activities, but had to CUT DOWN on what you did because of these feelings? ☐☐ days

2.19 In the past four (4) weeks, how many times have you seen a doctor or any other health professional about these feelings? ☐☐ times

2.20 In the past four (4) weeks, how often have physical health problems been the main cause of these feelings?

○ None of the time ○ A little of the time ○ Some of the time ○ Most of the time ○ All of the time

2.21 Please rate the following statements based on how you have felt in the <u>past 30 days</u> using the scale below.

	NOT TRUE AT ALL	RARELY TRUE	SOME-TIMES TRUE	OFTEN TRUE	TRUE NEARLY ALL THE TIME
a) I am able to adapt to change	○	○	○	○	○
b) I tend to bounce back after illness or hardship	○	○	○	○	○

2.22 How satisfied are you with your marriage / relationship?

○ Extremely satisfied
○ Satisfied
○ Neither satisfied or dissatisfied
○ Dissatisfied
○ Extremely dissatisfied
○ Not applicable

2.23 Overall, what impact have your military commitments had on your:

a) <u>Marriage / relationship?</u>
○ No impact
○ Positive impact
○ Negative impact
○ Not applicable

b) <u>Children?</u>
○ No impact
○ Positive impact
○ Negative impact
○ Not applicable

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Section Three: Lifestyle Behaviours

3.1 In the past year, have you used any of the following tobacco products?

	NO	YES
a. Cigarettes	○	○
b. Cigars	○	○
c. Pipes	○	○
d. Smokeless tobacco (e.g. chew, dip, snuff)	○	○

3.2 In your lifetime, have you smoked at least 100 cigarettes (5 packs)?

○ No - **please skip to question 3.9**

○ Yes - **continue to next question**

3.3 At what age did you start smoking? ☐☐ years old

3.4 How many years have you, or did you, smoke an average of at least 3 cigarettes per day (or one pack per week)? ☐☐ years

3.5 When smoking, how many packs per day did you, or do you, smoke?

○ Less than half a pack per day
○ Half to 1 pack per day
○ 1 to 2 packs per day
○ More than 2 packs per day

3.6 Have you ever tried to quit smoking?

○ Yes, and succeeded
○ Yes, but not successfully
○ No

3.7 If you have ever deployed, was your smoking pattern different while on deployment?

○ I have never deployed
○ I did not smoke on deployment
○ I smoked less than usual while on deployment
○ I smoked the same amount on deployment as when not deployed
○ I smoked more than usual while on deployment
○ I began / restarted smoking on deployment

3.8 If your smoking pattern changed during your deployment, what was the main reason?

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Section Three: Lifestyle Behaviours

3.9. How often do you have a drink containing alcohol?	Never	Monthly or Less	2 to 4 times a month	2 to 3 times a week	4 or more times a week
	○	○	○	○	○

In answering the following questions, please remember that a standard drink contains 10g of pure alcohol

3.10 How many 'standard' drinks (see above) containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more	N/A
	○	○	○	○	○	○

	NEVER	LESS THAN MONTHLY	MONTHLY	WEEKLY	DAILY OR ALMOST DAILY
3.11 How often do you have six or more drinks on one occasion?	○	○	○	○	○
3.12 How often during the last 12 months have you found that you were not able to stop drinking once you had started?	○	○	○	○	○
3.13 How often during the last 12 months have you failed to do what was normally expected from you because of drinking?	○	○	○	○	○

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Section Three: Lifestyle Behaviours

	NEVER	LESS THAN ONCE A MONTH	MONTHLY	WEEKLY	DAILY OR ALMOST DAILY
3.14 How often during the last 12 months have you needed a drink in the morning to get yourself going after a heavy drinking session?	○	○	○	○	○
3.15 How often during the last 12 months have you had a feeling of guilt or remorse after drinking?	○	○	○	○	○
3.16 How often during the last 12 months have you been unable to remember what happened the night before because you had been drinking?	○	○	○	○	○

3.17 Have you or someone else been injured as a result of your drinking?	No ○	Yes, but not in the last 12 months ○	Yes, during the last 12 months ○
3.18 Has a relative, a friend, a doctor or other health professional been concerned about your drinking or suggested you cut down?	No ○	Yes, but not in the last 12 months ○	Yes, during the last 12 months ○

3.19 Do you presently have a problem with drinking?	No ○	Probably not ○	Unsure ○	Possibly ○	Definitely ○

3.20 In the next 3 months, how difficult would you find it to cut down or stop drinking?	Very easy ○	Fairly easy ○	Neither difficult nor easy ○	Fairly difficult ○	Very difficult ○	N/A ○

3.21 On an average day, how many 250 - 375ml beverages containing caffeine do you drink (such as caffeine containing energy drinks, coffee, tea, coca-cola)?

○ None ○ 1-2 per day ○ 3-5 per day ○ 6-10 per day ○ 11 or more per day

3.22 How often do you currently take any of the following supplements?

	NEVER	LESS THAN ONCE A MONTH	MONTHLY	WEEKLY	DAILY OR ALMOST DAILY
a) Body building supplements (such as amino acids, weight gain products, creatine, etc.)	○	○	○	○	○
b) Energy supplements (such as energy drinks, pills, or energy enhancing herbs)	○	○	○	○	○
c) Weight loss supplements	○	○	○	○	○

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Section Four: Past Experiences

Please indicate if you have ever in your lifetime experienced any of the following events:

	EXPERIENCED EVENT	NO. OF TIMES	AGE FIRST TIME	AGE LAST TIME
4.1 Direct combat	O No O Yes			
4.2 Life-threatening accident	O No O Yes			
4.3 Fire, flood, or other natural disaster	O No O Yes			
4.4 Witness someone badly injured or killed	O No O Yes			
4.5 Rape	O No O Yes			
4.6 Sexual molestation	O No O Yes			
4.7 Serious physical attack or assault	O No O Yes			
4.8 Threatened / harassed without weapon	O No O Yes			
4.9 Threatened with weapon / held captive / kidnapped	O No O Yes			
4.10 Tortured or victim of terrorists	O No O Yes			
4.11 Domestic violence	O No O Yes			
4.12 Witnessed domestic violence	O No O Yes			
4.13 Finding dead body	O No O Yes			
4.14 Witnessed someone suicide or attempt suicide	O No O Yes			
4.15 Child abuse - physical	O No O Yes			
4.16 Child abuse - emotional	O No O Yes			
4.17 Any other stressful event, please specify:	O No O Yes			
4.18 Did you ever suffer a great shock because one of these events happened to someone close to you? Please specify event type:	O No O Yes			

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Section Four: Past Experiences

4.19 Please shade the circle indicating your worst event.

- ○ Direct combat
- ○ Life-threatening accident
- ○ Fire, flood, or other natural disaster
- ○ Witness someone badly injured or killed
- ○ Rape
- ○ Sexual molestation
- ○ Serious physical attack or assault
- ○ Threatened / harassed without weapon
- ○ Threatened with weapon / held captive / kidnapped
- ○ Tortured or victim of terrorists
- ○ Domestic violence
- ○ Witness domestic violence
- ○ Finding dead body
- ○ Witness someone suicide or attempt suicide
- ○ Child abuse - physical
- ○ Child abuse - emotional
- ○ Any other stressful event
- ○ Event that happened to someone close to you

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Section Four: Past Experiences

Thinking about your response to the previous question (question 4.19):

Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, then shade the circle to the right to indicate how much you have been bothered by that problem in the past month.

	NOT AT ALL	A LITTLE BIT	MODERA-TELY	QUITE A BIT	EXTREM-ELY
4.20 Repeated, disturbing memories, thoughts or images of a stressful experience from the past?	○	○	○	○	○
4.21 Repeated, disturbing dreams of a stressful experience from the past?	○	○	○	○	○
4.22 Suddenly acting or feeling as if a stressful experience from the past were happening again (as if you were reliving it)?	○	○	○	○	○
4.23 Feeling very upset when something reminded you of a stressful experience from the past?	○	○	○	○	○
4.24 Having physical reactions (e.g. heart pounding, trouble breathing, sweating) when something reminded you of a stressful experience from the past?	○	○	○	○	○
4.25 Avoiding thinking about or talking about a stressful experience from the past or avoiding having feelings related to it?	○	○	○	○	○
4.26 Avoiding activities or situations because they reminded you of a stressful experience from the past?	○	○	○	○	○
4.27 Trouble remembering important parts of a stressful experience from the past?	○	○	○	○	○
4.28 Loss of interest in activities that you used to enjoy?	○	○	○	○	○
4.29 Feeling distant or cut off from other people?	○	○	○	○	○
4.30 Feeling emotionally numb or being unable to have loving feelings for those close to you?	○	○	○	○	○
4.31 Feeling as if your future somehow will be cut short?	○	○	○	○	○
4.32 Trouble falling or staying asleep?	○	○	○	○	○
4.33 Feeling irritable or having angry outbursts?	○	○	○	○	○
4.34 Having difficulty concentrating?	○	○	○	○	○
4.35 Being "superalert" or watchful or on guard?	○	○	○	○	○
4.36 Feeling jumpy or easily startled?	○	○	○	○	○

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Section Four: Past Experiences

4.37 Thinking over the past 4 weeks, shade the circle that best describes the amount of time you felt that way.

	NONE OF THE TIME	A LITTLE OF THE TIME	SOME OF THE TIME	MOST OF THE TIME	ALL OF THE TIME
a) I found myself getting angry at people or situations	○	○	○	○	○
b) When I got angry, I got really mad	○	○	○	○	○
c) When I got angry, I stayed angry	○	○	○	○	○
d) When I got angry at someone, I wanted to hit them	○	○	○	○	○
e) My anger interfered with my ability to get my work, study or other productive activity done	○	○	○	○	○
f) My anger prevented me from getting along with people as well as I'd have liked to	○	○	○	○	○
g) I became angry at myself when I did not perform as well or achieve what I wanted	○	○	○	○	○
h) I became angry at myself when I did not handle social situations as well as I wanted	○	○	○	○	○
i) My anger had a bad effect on my health	○	○	○	○	○

4.38 How often over the last month did you get into a fight with someone and hit the person?

○ Never ○ One time ○ Two times ○ Three or four times ○ Five or more times

4.39 How often over the last month did you threaten someone with physical violence?

○ Never ○ One time ○ Two times ○ Three or four times ○ Five or more times

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Section Four: Past Experiences

Over the last 2 weeks, how often have you been bothered by any of the following problems?

	NOT AT ALL	SEVERAL DAYS	MORE THAN HALF THE DAYS	NEARLY EVERY DAY
4.40 Little interest or pleasure in doing things	O	O	O	O
4.41 Feeling down, depressed, or hopeless	O	O	O	O
4.42 Trouble falling or staying asleep, or sleeping too much	O	O	O	O
4.43 Feeling tired or having little energy	O	O	O	O
4.44 Poor appetite or overeating	O	O	O	O
4.45 Feeling bad about yourself, or that you are a failure, or have let yourself or your family down	O	O	O	O
4.46 Trouble concentrating on things, such as reading the newspaper or watching television	O	O	O	O
4.47 Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual	O	O	O	O
4.48 Thoughts that you would be better off dead or of hurting yourself in some way	O	O	O	O

4.49 If you checked off any of these problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

O Not difficult at all O Somewhat difficult O Very difficult O Extremely difficult

The next group of questions are about anxiety.

	NO	YES
4.50 In the last 4 weeks, have you had an anxiety attack - suddenly feeling fear or panic?	O	O
If NO: please skip to question 4.65		
4.51 Has this ever happened before?	O	O
4.52 Do some of these attacks come suddenly out of the blue - that is, in situations where you don't expect to be nervous or uncomfortable?	O	O
4.53 Do these attacks bother you a lot or are you worried about having another attack?	O	O

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Section Four: Past Experiences

Think about your last bad anxiety attack.		
	NO	**YES**
4.54 Were you short of breath?	○	○
4.55 Did your heart race, pound, or skip?	○	○
4.56 Did you have chest pain or pressure?	○	○
4.57 Did you sweat?	○	○
4.58 Did you feel as if you were choking?	○	○
4.59 Did you have hot flushes or chills?	○	○
4.60 Did you have nausea or an upset stomach, or the feeling that you were going to have diarrhoea?	○	○
4.61 Did you feel dizzy, unsteady, or faint?	○	○
4.62 Did you have tingling or numbness in parts of your body?	○	○
4.63 Did you tremble or shake?	○	○
4.64 Were you afraid you were dying?	○	○

Over the last 4 weeks, how often have you been bothered by any of the following problems?			
	NOT AT ALL	**SEVERAL DAYS**	**MORE THAN HALF THE DAYS**
4.65 Feeling nervous, anxious, on edge, or worrying a lot about different things?	○	○	○
If NOT AT ALL: please skip to question 4.72			
4.66 Feeling restless so that it is hard to sit still	○	○	○
4.67 Getting tired very easily	○	○	○
4.68 Muscle tension, aches, or soreness	○	○	○
4.69 Trouble falling asleep or staying asleep	○	○	○
4.70 Trouble concentrating on things, such as reading a book or watching TV	○	○	○
4.71 Becoming easily annoyed or irritable	○	○	○

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Section Four: Past Experiences

Please shade the circles that best describe your experience.		
4.72 In the last 12 months, have you ever felt that life was not worth living?	○ No	○ Yes
4.73 In the last 12 months, have you ever felt so low that you thought about committing suicide?	○ No	○ Yes
4.74 In the last 12 months, have you made a suicide plan?	○ No	○ Yes
4.75 In the last 12 months, have you attempted suicide?	○ No	○ Yes

If you require support in relation to any issues you have identified in this survey, we encourage you to refer to the contacts provided on the inside cover.

4.76 Please rate your current (i.e. last 2 weeks) sleeping pattern:

	NONE	MILD	MODERATE	SEVERE	VERY
Difficulty falling asleep:	○	○	○	○	○
Difficulty staying asleep:	○	○	○	○	○
Problem waking up too early:	○	○	○	○	○

4.77 How satisfied / dissatisfied are you with your current sleep pattern?

○ Very satisfied ○ Satisfied ○ Neutral ○ Dissatisfied ○ Very dissatisfied

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Section Five: Getting Help

5.1 Have you sought help for a stress, emotional, mental health or family problem in the last 12 months? ○ No ○ Yes

Here is a list of concerns that a person might have when they consider seeking help for these problems. Please indicate how each of these concerns might affect YOUR decision to seek help.

	STRONGLY DISAGREE	DISAGREE	UNCERTAIN	AGREE	STRONGLY AGREE
5.2 I wouldn't know where to get help	○	○	○	○	○
5.3 I would have difficulty getting time off work	○	○	○	○	○
5.4 It would harm my career or career prospects	○	○	○	○	○
5.5 People would treat me differently	○	○	○	○	○
5.6 I would be seen as weak	○	○	○	○	○
5.7 It would stop me from being deployed	○	○	○	○	○

You are over half way through the questionnaire. Keep going!

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Section Six: Social Support

The next group of questions are about your relationships with other people.

	OFTEN	SOMETIMES	RARELY	NEVER
6.1 How often do friends make you feel cared for?	O	O	O	O
6.2 How often do they express interest in how you are doing?	O	O	O	O
6.3 How often do friends make too many demands on you?	O	O	O	O
6.4 How often do they criticise you?	O	O	O	O
6.5 How often do friends create tensions or arguments with you?	O	O	O	O

	OFTEN	SOMETIMES	RARELY	NEVER
6.6 How often do family make you feel cared for?	O	O	O	O
6.7 How often do family express interest in how you are doing?	O	O	O	O
6.8 How often do they make too many demands on you?	O	O	O	O
6.9 How often do family criticise you?	O	O	O	O
6.10 How often do they create tensions or arguments with you?	O	O	O	O

The next group of questions are about your relationship with the members of your workplace.

	OFTEN	SOMETIMES	RARELY	NEVER
6.11 How often do members of your workplace make you feel supported?	O	O	O	O
6.12 How often do they express interest in how you are doing?	O	O	O	O
6.13 How often do they make too many demands on you?	O	O	O	O
6.14 How often do they criticise you?	O	O	O	O
6.15 How often do they create tensions or arguments with you?	O	O	O	O

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Section Six: Social Support

	OFTEN	SOMETIMES	RARELY	NEVER
6.16 How often does your direct supervisor (i.e. the person who writes your performance report) make you feel supported?	○	○	○	○
6.17 How often does he / she express interest in how you are doing?	○	○	○	○
6.18 How often does he / she make too many demands on you?	○	○	○	○
6.19 How often does he / she criticise you?	○	○	○	○
6.20 How often does he / she create tensions or arguments with you?	○	○	○	○

6.21 In the last month, the level of morale in my immediate workplace / work team was high.

○ Strongly disagree ○ Disagree ○ Neither agree nor disagree ○ Agree ○ Strongly agree

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Section Seven: Recent Health Symptoms

7.1 During the past 4 weeks, how much have you been bothered by any of the following problems?

	NOT BOTHERED AT ALL	BOTHERED A LITTLE	BOTHERED A LOT
a) Stomach pain	○	○	○
b) Back pain	○	○	○
c) Pain in your arms, legs, or joints (knees, hips, etc.)	○	○	○
d) Menstrual cramps or other problems with your periods [*Women only*]	○	○	○
e) Headaches	○	○	○
f) Chest pain	○	○	○
g) Dizziness	○	○	○
h) Fainting spells	○	○	○
i) Feeling your heart pound or race	○	○	○
j) Shortness of breath	○	○	○
k) Pain or problems during sexual intercourse	○	○	○
l) Constipation, loose bowels, or diarrhea	○	○	○
m) Nausea, gas, or indigestion	○	○	○
n) Feeling tired or having low energy	○	○	○
o) Trouble sleeping	○	○	○

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Section Seven: Recent Health Symptoms

7.2 During your lifetime, did you experience any of the following events?		
Blast or Explosion IED (improvised explosive device)	○ No	○ Yes
RPG (rocket propelled grenade), Land Mine, Grenade, etc.	○ No	○ Yes
Vehicular accident / crash (any vehicle, including aircraft)	○ No	○ Yes
Fragment wound or bullet wound above the shoulders	○ No	○ Yes
Fall	○ No	○ Yes

If NO to all events in 7.2: please skip to question 8.1. Otherwise, continue.

7.3 How many times in total have you experienced each of the following symptoms immediately after any of the events listed above?	
Loss of consciousness / "knocked out"	☐☐ times
Being dazed, confused, or "seeing stars"	☐☐ times
Not remembering the event	☐☐ times
Concussion	☐☐ times
Head injury	☐☐ times

7.4 Did any of the following problems begin or get worse after any of the events listed above?					
Memory problems or lapses	○ No	○ Yes	Irritability	○ No	○ Yes
Balance problems or dizziness	○ No	○ Yes	Headaches	○ No	○ Yes
Sensitivity to bright light	○ No	○ Yes	Sleep problems	○ No	○ Yes

7.5 In the past week, have you had any of these symptoms?					
Memory problems or lapses	○ No	○ Yes	Irritability	○ No	○ Yes
Balance problems or dizziness	○ No	○ Yes	Headaches	○ No	○ Yes
Sensitivity to bright light	○ No	○ Yes	Sleep problems	○ No	○ Yes

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Section Eight: Occupational Issues

	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE OR DISAGREE	AGREE	STRONGLY AGREE	N/A
8.1 I am adequately recognised and rewarded for my work by:						
My current remuneration package (i.e. salary, allowances, medical superannuation)	○	○	○	○	○	
Verbal recognition	○	○	○	○	○	
Awards / Honours / Medals	○	○	○	○	○	○
8.2 I have experienced bullying in my job	○	○	○	○	○	
8.3 I believe Defence appropriately handles bullying	○	○	○	○	○	

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Section Nine: Evaluation Questions

9.1 Do you have any additional comments you would like to add? ○ Yes ○ No

If **YES**: please give details in the space provided

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Section Ten: Brief Deployment History

10.1 Have you been on an ADF operational deployment? (war-like, peacekeeping, peace-monitoring or humanitarian support)

○ Yes - **please continue** ○ No - **please skip to question 10.3**

Instructions: Please indicate which of the following major operations you have been deployed on (*please complete as much of this information as you can*).

COUNTRY	OPERATION NAME	YEAR(S) DEPLOYMENT(S) STARTED	NO. OF TIMES DEPLOYED IN YEAR	TOTAL TIME DEPLOYED (MONTHS)
○ Afghanistan or areas supporting operations in Afghanistan	○ OP SLIPPER	○ 2001		
		○ 2002		
		○ 2003		
		○ 2004		
		○ 2005		
		○ 2006		
		○ 2007		
		○ 2008		
		○ 2009		
		○ 2010		

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Section Ten: Brief Deployment History

COUNTRY	OPERATION NAME	YEAR(S) DEPLOYMENT(S) STARTED	NO. OF TIMES DEPLOYED IN YEAR	TOTAL TIME DEPLOYED (MONTHS)
○ Iraq or areas supporting operations in Iraq	○ OP BASTILLE	○ 2002		
		○ 2003		
	○ OP FALCONER	○ 2003		
	○ OP CATALYST	○ 2003		
		○ 2004		
		○ 2005		
		○ 2006		
		○ 2007		
		○ 2008		
		○ 2009		
	○ OP KRUGER	○ 2009		
		○ 2010		
○ Solomon Islands	○ OP ANODE	○ 2003		
		○ 2004		
		○ 2005		
		○ 2006		
		○ 2007		
		○ 2008		
		○ 2009		
		○ 2010		

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Section Ten: Brief Deployment History

COUNTRY	OPERATION NAME	YEAR(S) DEPLOYMENT(S) STARTED	NO. OF TIMES DEPLOYED IN YEAR	TOTAL TIME DEPLOYED (MONTHS)
○ East Timor	○ InterFET, OP FABER, OP SPITFIRE, OP WARDEN	○ 1999 ○ 2000		
	○ OP TANAGER	○ 2000 ○ 2001 ○ 2002		
	○ OP CITADEL	○ 2002 ○ 2003 ○ 2004		
	○ OP SPIRE	○ 2004 ○ 2005 ○ 2006 ○ 2007		
	○ OP ASTUTE, OP CHIRON, OP TOWER	○ 2005 ○ 2006 ○ 2007 ○ 2008 ○ 2009 ○ 2010		

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Section Ten: Brief Deployment History

COUNTRY	OPERATION NAME	YEAR(S) DEPLOYMENT(S) STARTED	NO. OF TIMES DEPLOYED IN YEAR	TOTAL TIME DEPLOYED (MONTHS)
○ Bougainville	○ OP BEL ISI I	○ 1997		
		○ 1998		
	○ OP BEL ISI II	○ 1999		
		○ 2000		
		○ 2001		
		○ 2002		
		○ 2003		

10.2 What other Operations have you been deployed on (war like, peacekeeping, peace-monitoring or humanitarian support), including UN missions (e.g. OP Palate, OP Riverbank), Humanitarian Missions (e.g. OP Pakistan Assist, OP Sumatra Assist), secondments to foreign militaries (e.g. OP Enduring Freedom, OP Herrick), and border protection (e.g. Op Resolute)?

COUNTRY	OPERATION NAME	YEAR(S) DEPLOYMENT(S) STARTED	NO. OF TIMES DEPLOYED IN YEAR	TOTAL TIME DEPLOYED (MONTHS)

10.3 Have you worked in the Middle East in a role outside of the ADF (e.g. as a security contractor or for an NGO)? ○ Yes ○ No

Thank you for completing this questionnaire. Your participation is appreciated.

ABBREVIATIONS AND ACRONYMS

ABS	Australian Bureau of Statistics
ADF	Australian Defence Force
ASDS	Acute Stress Disorder Scale
ASIST	Applied Suicide Intervention Skills Training
AUDIT	Alcohol Use Disorders Identification Test
CI	confidence interval
CIDI	Composite International Diagnostic Interview
CIMHS	Critical Incident Mental Health Support
DSM-IV	*Diagnostic and Statistical Manual of Mental Disorders*
ICD-10	International Statistical Classification of Diseases and Related Health Problems, 10th revision
JeHDI	Joint electronic Health Data Information
K10	Kessler Psychological Distress Scale
LASER	Longitudinal ADF Study Examining Resilience
MEAO	Middle East Area of Operations
MEC	medical employment classification
MHPWS	Mental Health Prevalence and Wellbeing Study
MilHOP	Military Health Outcomes Program
MTBI	mild traumatic brain injury
OR	odds ratio
p	p-value
PCL	Posttraumatic Stress Disorder Checklist
PMKeyS	Personnel Management Key Solution
POPS	Post-operational Psychological Screening
PTSD	post-traumatic stress disorder
ROC	Receiver Operating Characteristic
RR	relative risk
RtAPS	Return to Australia Psychological Screen
SD	standard deviation
SMART	Self-Management and Resilience Training
WHO	World Health Organization

GLOSSARY

Note: Terms that occur within an entry that are defined elsewhere in the glossary are italicised.

12-month prevalence – Meeting *diagnostic criteria* for an *ICD-10* mental disorder and then having reported symptoms in the 12 months before the interview.

ADF personnel – A member of the Permanent Navy, the Regular Army or the Permanent Air Force. This includes reserves that render continuous full-time service, or are on duty or in uniform.

affective disorders – Affective disorders are a *class of mental disorder*. The affective disorders included in the survey were *depressive episodes* (mild, moderate and severe), *dysthymia* and *bipolar affective disorder*. A key feature of these mental disorders is mood disturbance.

agoraphobia – Marked fear or avoidance of situations such as crowds, public places, travelling alone, or travelling away from home, which is accompanied by symptoms such as palpitations, sweating, shaking, or dry mouth, as well as other anxiety symptoms such as chest pain, choking sensations, dizziness, and sometimes feelings of unreality, fear of dying, losing control or going mad.

alcohol dependence – Characterised by an increased prioritisation of alcohol in a person's life. The defining feature of alcohol dependence is a strong, overwhelming desire to use alcohol despite the individual experiencing a number of associated problems. A diagnosis was given if the person reported three or more of the following symptoms in the previous 12 months:

- strong and irresistible urge to consume alcohol
- a tolerance to the effects of alcohol
- inability to stop or reduce alcohol consumption
- withdrawal symptoms upon cessation or reduction of alcohol intake
- continuing to drink despite it causing emotional or physical problems
- reduction in important activities because of or in order to drink.

alcohol harmful use – Diagnosis not only requires high levels of alcohol consumption, but that the alcohol use is damaging to the person's physical or mental health. Each participant was initially asked if they consumed 12 or more standard alcoholic drinks in a 12-month period. If so, they were then asked a series of questions about their level of consumption. A diagnosis of alcohol harmful use was applied if the alcohol interfered with either work or other responsibilities; caused arguments with their family or friends; was consumed in a situation where the person could get hurt; resulted in the person being stopped or arrested by police; or if the person continued to consume alcohol despite experiencing social or interpersonal problems as a consequence of their drinking during the previous 12 months. A person could not meet criteria for alcohol harmful use if they met criteria for *alcohol dependence*.

alcohol misuse – Alcohol use that has the potential to cause harm and disrupt an individual's functioning.

anxiety disorders – Anxiety disorders are a *class of mental disorder*. This class of mental disorder involves the experience of intense and debilitating anxiety. The anxiety disorders covered in the survey were *panic attacks*, *panic disorder*, *social phobia*, *specific phobia*, *agoraphobia*, *generalised anxiety disorder*, *post-traumatic stress disorder* and *obsessive-compulsive disorder*.

AUDIT (Alcohol Use Disorders Identification Test) – A brief self-report screening instrument developed by the World Health Organization. This instrument consists of 12 questions to examine the quantity and frequency of alcohol consumption (questions 1 to 3), possible symptoms of dependence (questions 4–6), the reactions or problems related to alcohol (questions 7–10), and the patient's perception of the extent of any problem with alcohol (questions A and B).

band – Variable with three levels formed from responses to the *PCL* and *AUDIT*.

- Band 1: PCL > 33 or AUDIT > 10
- Band 2: (PCL > 25 and PCL <= 33 and AUDIT <= 10) or (AUDIT > 7 and PCL <= 33 and AUDIT <= 10)
- Band 3: PCL <= 25 and AUDIT <= 7

bipolar affective disorder – Associated with fluctuations of mood that are significantly disturbed. These fluctuations of mood are markedly elevated on some occasions (*hypomanic episodes* or *mania*) and can be markedly lowered on other occasions (*depressive episodes*). A diagnosis of bipolar affective disorder was applied in the study if the individual met criteria for mania or hypomania in the previous 12 months.

CIDI (Composite International Diagnotic Interview) – The World Mental Health Survey Initiative Composite International Diagnostic Interview. The CIDI is an extensive survey instrument designed for the collection of data on *mental disorders* and associated factors. In its current form (version 3.0), the CIDI provides estimates of lifetime and *12-month prevalence* of *mental disorders*, the impact of these disorders on functioning, and types and frequency of service use.

class of mental disorder – *Mental disorders* are grouped into classes of disorders that share common features. Three classes of mental disorders were included in the survey. These were *affective disorders*, *anxiety disorders* and alcohol disorders.

co-morbidity – The occurrence of more than one disorder at the same time.

confidence interval – A 95% confidence interval contains a range of values for which, if the procedure were repeated on multiple samples, the true population parameter would lie within the interval with probability 0.95.

days out of role – This measure captures the impact of *mental disorders* on people's ability to function in their day-to-day activities. Respondents were asked two separate questions about the 30 days before the interview:

- the number of days that they were unable to work or carry out normal activities because of their mental health
- the number of days that they had to cut down on what they did because of their mental health.

Days out of role for all *ICD-10* disorders are presented as both the mean number of days out of role and as subgroups of 0, 1–7, 8–14, 15–21 and 22–28 days.

Analyses presented in this report take into account both the prevalence of the disorders and the rate of partial or total days out of role associated with each disorder. To calculate the severity of the impact of a particular disorder, on days out of role for example, the percentage of the weighted total number of days out of role in the previous four weeks accounted for by those with that particular disorder was used.

depressive episodes – Are a characteristic of a major depressive disorder and require that an individual has suffered from depressed mood lasting a minimum of two weeks, with associated symptoms such as feelings of worthlessness, lack of appetite, difficulty with memory, reduction in energy, low self-esteem, concentration problems and suicidal thoughts. Depressive episodes can be mild, moderate or severe. All three are included under the same heading.

diagnostic criteria – The survey was designed to estimate the prevalence of common *mental disorders* defined according to clinical diagnostic criteria, as directed by the *ICD-10* diagnostic criteria for a disorder, usually involving specification of:

- the nature, number and combination of symptoms
- a time period over which the symptoms have been continuously experienced
- the level of distress or impairment experienced
- circumstances for exclusion of a diagnosis, such as it being due to a general medical condition or the symptoms being associated with another mental disorder.

doctor visits – This measure captures health service use relating to psychological distress over the previous four weeks.

The mean number of times that the participant with an *ICD-10* disorder had seen a doctor or *other health professional* in the previous four weeks for feelings of psychological distress was reported.

Analyses presented in this report take into account both the prevalence of the disorders and the number of doctor visits associated with each disorder. To calculate the severity of the impact of a particular disorder, on the number of doctor visits for example, the percentage of the weighted total number of doctor visits in the previous four weeks accounted for by those with that particular disorder was used. This was referred to as 'the percentage of doctor visits'.

dysthymia – Is characterised as a chronic or pervasive disturbance of mood lasting several years that is not sufficiently severe or in which the *depressive episodes* are not sufficiently prolonged to warrant a diagnosis of a recurrent depressive disorder. Hierarchy rules have been applied to dysthymia such that in order to have this disorder, a person cannot have met criteria for either a hypomanic or manic episode and could not have reported episodes of severe or moderate depression within the first two years of dysthymia.

eligible for CIDI – Personnel who completed the *PCL*, *AUDIT* and *K10* and gave consent to be contacted about an interview.

generalised anxiety disorder – Generalised and persistent worry, anxiety or apprehension about everyday events and activities lasting a minimum of six months that is accompanied by anxiety symptoms as described under *agoraphobia*. Other symptoms may include symptoms of tension, such as an inability to relax and muscle tension, and other non-specific symptoms, such as irritability and difficulty concentrating.

health professional – Includes:

- general practitioner
- psychiatrist
- psychologist
- mental health nurse
- other professionals providing specialist mental health services
- other specialist doctor or surgeon
- other professional providing general services, such as social worker, occupational therapist and counsellor
- complementary and alternative medicine therapist.

These health professionals have been grouped in a number of ways for the purposes of reporting. See *mental health professionals*, *other mental health professionals* and *other health professionals*.

hypomanic episodes – Last at least four consecutive days and are considered abnormal to the individual. These episodes are characterised by increased activity, talkativeness, elevated mood, disrupted concentration, decreased need for sleep and disrupted judgment manifested as risk taking. In a subgroup of people, these disorders are particularly characterised by irritability. To meet criteria for the 'with hierarchy' version, the person cannot have met criteria for an episode of *mania*.

ICD-10 – International Statistical Classification of Diseases and Related Health Problems, 10th revision.

K10 – The Kessler Psychological Distress Scale, a short 10-item measure used in the ADF to assess psychological distress and to monitor depressive and anxiety symptomatology, which was developed in the context of the US national co-morbidity study. High scores on this instrument have been shown to have a strong association with the diagnosis of *anxiety* and *affective disorders* based on the *CIDI* (version 3.0) and a lesser but still significant association with the presence of any current *mental disorder*.

lifetime prevalence – Meeting *diagnostic criteria* for a *mental disorder* at any point in the respondent's lifetime.

mania – Is similar to hypomania but is more severe in nature. Lasting slightly longer (a minimum of a week), these episodes often lead to severe interference with personal functioning. In addition to the symptoms outlined under *hypomanic episodes*, mania is often associated with feelings of grandiosity, marked sexual indiscretions and racing thoughts.

MEC status – Medical employment classification, divided into four levels:

- MEC 1 – Members who are medically fit for employment in a deployed or seagoing environment without restriction.
- MEC 2 – Members who have medical conditions that require access to various levels of medical support or employment restrictions; however, they remain medically fit for duties in their occupation in a deployed or seagoing environment. In allocation of subclassifications of MEC 2, access to the level of medical support will always take precedence over specified employment restrictions.

- MEC 3 – Members who have medical conditions that make them medically unfit for duties in their occupation in a deployed or seagoing environment. The member so classified should be medically managed towards recovery and should be receiving active medical management with the intention of regaining MEC 1 or 2 within 12 months of allocation of MEC 3. After a maximum of 12 months their MEC is to be reviewed. If still medically unfit for military duties in any operational environment, they are to be downgraded to MEC 4 or, if appropriate, referred to a Medical Employment Classification Review Board for consideration of an extension to retain MEC 3 classification.
- MEC 4 – Members who are medically unfit for deployment or seagoing service in the long term. Members who are classified as MEC 4 for their military occupation will be subject to review and confirmation of their classification by a Medical Employment Classification Review Board.

mental disorders – Mental disorders are defined according to the detailed *diagnostic criteria* within classification systems. This publication reports data for *ICD-10*. They are characterised by alterations in mood, thought, and behaviour.

mental health problems – These include, but are not restricted to, stress, anxiety, depression or dependence on alcohol or drugs. Individuals with mental health problems may never meet the diagnostic threshold for a *mental disorder*.

mental health professional – Psychiatrists, psychologists and *other mental health professionals*, including mental health nurses and *other health professionals* working in specialised mental health settings.

missing values – Responses were only used if the participant responded to all of the questions from that section.

obsessive-compulsive disorder – A disorder characterised by obsessional thoughts (ideas, images, impulses) or compulsive acts (ritualised behaviour). These thoughts and acts are often distressing and typically cannot be avoided, despite the sufferer recognising their ineffectiveness.

odds ratio – The odds of an event is the ratio of the probability of the event to the probability against the event. The odds ratio of an event is the ratio of the odds of the event occurring in one group to the odds of it occurring in another group.

optimal epidemiological cut-off – Is the value that brings the number of false positives (mistaken identifications of disorder) and false negatives (missed identifications of disorder) closest together, thereby counterbalancing these sources of error most accurately. Therefore, this cut-off would give the closest estimate to the true prevalence of 30-day *ICD-10* disorder as measured by the *CIDI* and should be used to monitor disorder trends.

optimal screening cut-off – Is the value that maximises the sum of the sensitivity and specificity (the proportion of those with and without the disease who are correctly classified). This cut-off can be used to identify individuals who might need care.

other health professional – Defined in the *CIDI* as including social workers, occupational therapists and counsellors providing general services; medical doctors other than psychiatrists or general practitioners; and practitioners of complementary and alternative medicines.

other mental health professional – Defined in the *CIDI* as mental health nurses and *other health professionals* working in specialised mental health settings.

panic attack – Sudden onset of extreme fear or anxiety, often accompanied by palpitations, chest pain, choking sensations, dizziness, and sometimes feelings of unreality, fear of dying, losing control, or going mad.

panic disorder – Recurrent *panic attacks* that are unpredictable in nature.

PCL (Posttraumatic Stress Disorder Checklist) – A self-report measure that provides an assessment of self-reported *post-traumatic stress disorder* symptoms. There are several versions of the PCL. The PCL-Military (PCL-M) covers particular military events whereas the PCL-Specific (PCL-S) is a non-military version that refers to a specific traumatic event. As the PCL-Civilian (PCL-C) is not linked to a specific event and relates to more general traumatic exposure, this scale was considered the most appropriate for inclusion in ADF psychological screening.

post-traumatic stress disorder – A stress reaction to an exceptionally threatening or traumatic event that would cause pervasive distress in almost anyone. Symptoms are categorised into three groups: re-experiencing symptoms such as memories or flashbacks, avoidance symptoms, and either hyperarousal symptoms (increased arousal and sensitivity to cues) or inability to recall important parts of the experience.

prevalence of mental disorders – The proportion of people in a given population who meet *diagnostic criteria* for any *mental disorder* in a given timeframe. See also *12-month prevalence* and *lifetime prevalence*.

protocol 1 – *CIDI* selection on the basis of *band*, sex and *Service*.

psychological first aid – Initial supportive care aimed at reducing and facilitating short- and long-term adaptive functioning.

rank – Three levels: officer, non-commissioned officer and other ranks.

Service – Three Services: Navy, Army and Air Force.

social phobia – Marked fear or avoidance of being the centre of attention or being in situations where it is possible to behave in a humiliating or embarrassing way accompanied by anxiety symptoms as well as either blushing, fear of vomiting, or fear of defecation or micturition.

specific phobia – Marked fear or avoidance of a specific object or situation such as animals, birds, insects, heights, thunder, flying, small enclosed spaces, sight of blood or injury, injections, dentists, or hospitals, accompanied by anxiety symptoms as described under *agoraphobia*.

standard drink – Ten grams of alcohol.

subpopulation 1 – *ADF personnel* who had been deployed to the Middle East Area of Operations.

subpopulation 2 – *ADF personnel* who had never been on operational deployment or personnel who had deployed to an operation other than the Middle East Area of Operations.

suicidal ideation – Thoughts about and/or making plans to engage in suicidal behaviour.

suicidality – Covers *suicidal ideation*, plans and *suicide attempts*.

suicide – Self-inflicted death with evidence (either explicit or implicit) that the person intended to die.

suicide attempt – Action that does not result in death, but where the person was aware that their action might have potentially caused death.

surveillance – To capture information used by command to assist in the operational transition process, and for review of operational issues; and by Defence psychologists to identify trends for incorporation into future pre-deployment preparation.

two-phase design – A well-accepted epidemiological approach to the investigation of the *prevalence of mental disorders*. In the first phase, participants complete a screening questionnaire, which is generally economical in terms of time and resources. Based on the results of this screening and demographic information, certain participants are selected for a more accurate but costly formal diagnostic interview.

weighting – The process of adjusting the results for the participants who were interviewed to infer results for the total ADF population. Weighting involves the allocation of a representative value or weight to the data for each interviewee based on the stratification variables of interest. The weight can be considered an indication of how many individuals in the ADF population are represented by each study participant.

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