

SECTION 1

PREVALENCE OF MENTAL DISORDERS IN THE ADF

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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.

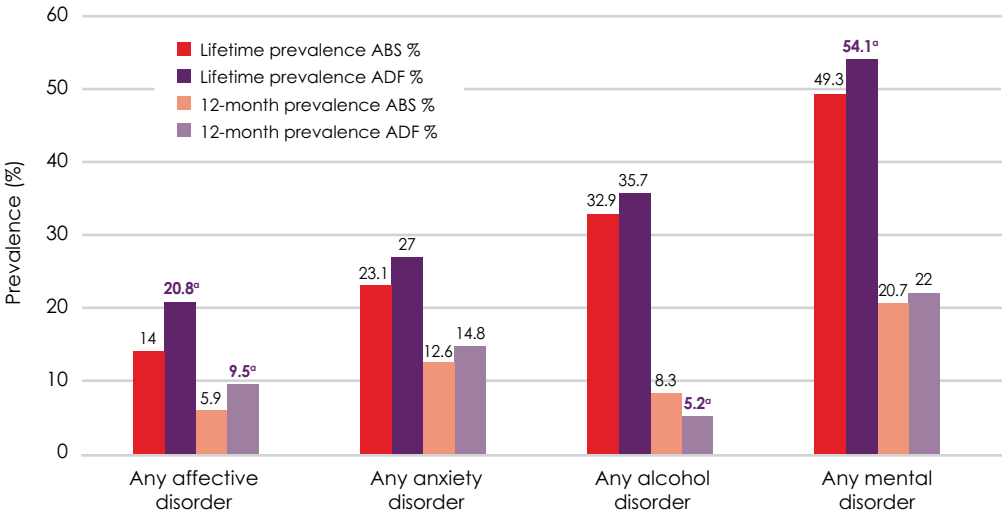
An estimated 11,016 ADF members met ICD–10 criteria for a mental disorder in the previous 12 months. Of these, 4,757 had an affective disorder, 7,420 had an anxiety disorder and 2,590 had an alcohol disorder. Table 1.1 and Figure 1.1 show the estimated prevalence of lifetime and 12-month mental disorders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



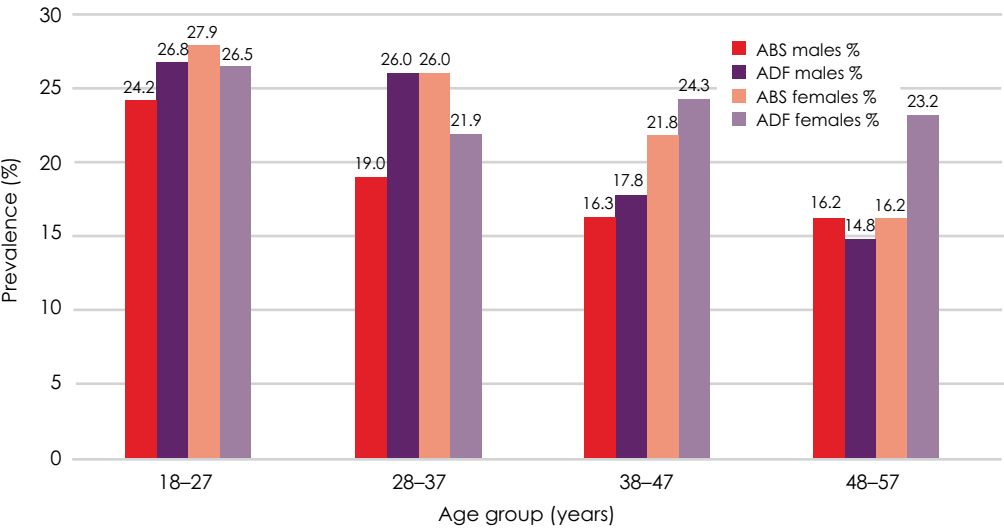
^a Significantly different from the ABS study.

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

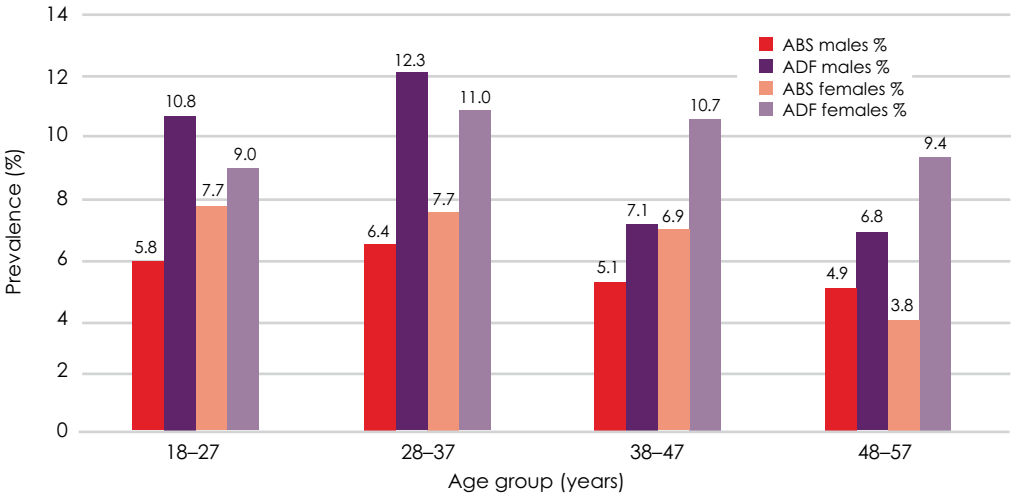
Figure 1.2: Estimated prevalence of 12-month mental disorders by age and sex in the ADF compared to the ABS study



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.

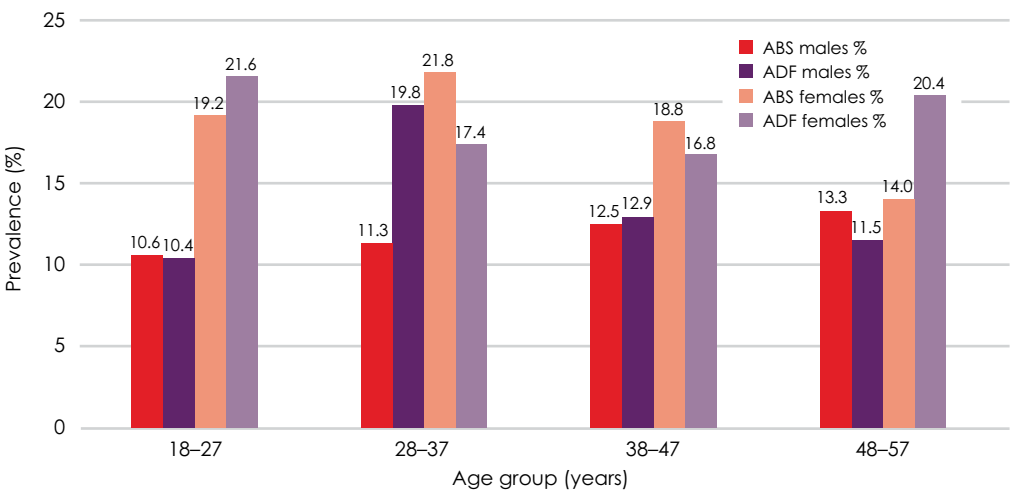
Figure 1.3: Estimated prevalence of 12-month affective disorder by age and sex in the ADF compared to the ABS study



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.

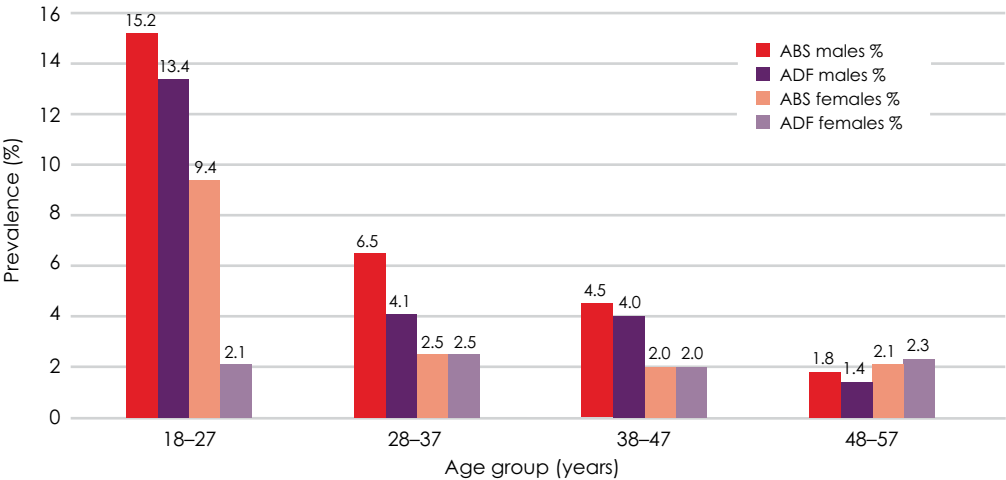
Figure 1.4: Estimated prevalence of 12-month anxiety disorder by age and sex in the ADF compared to the ABS study



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

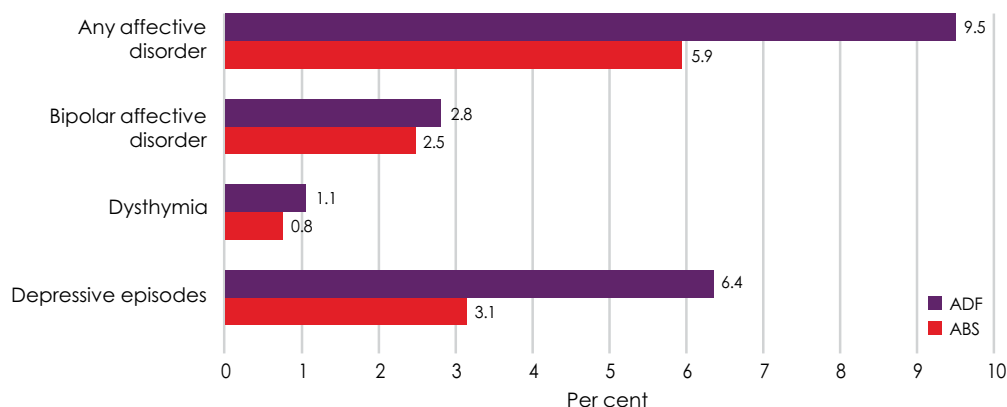
^a Significantly different from the ABS study.

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.

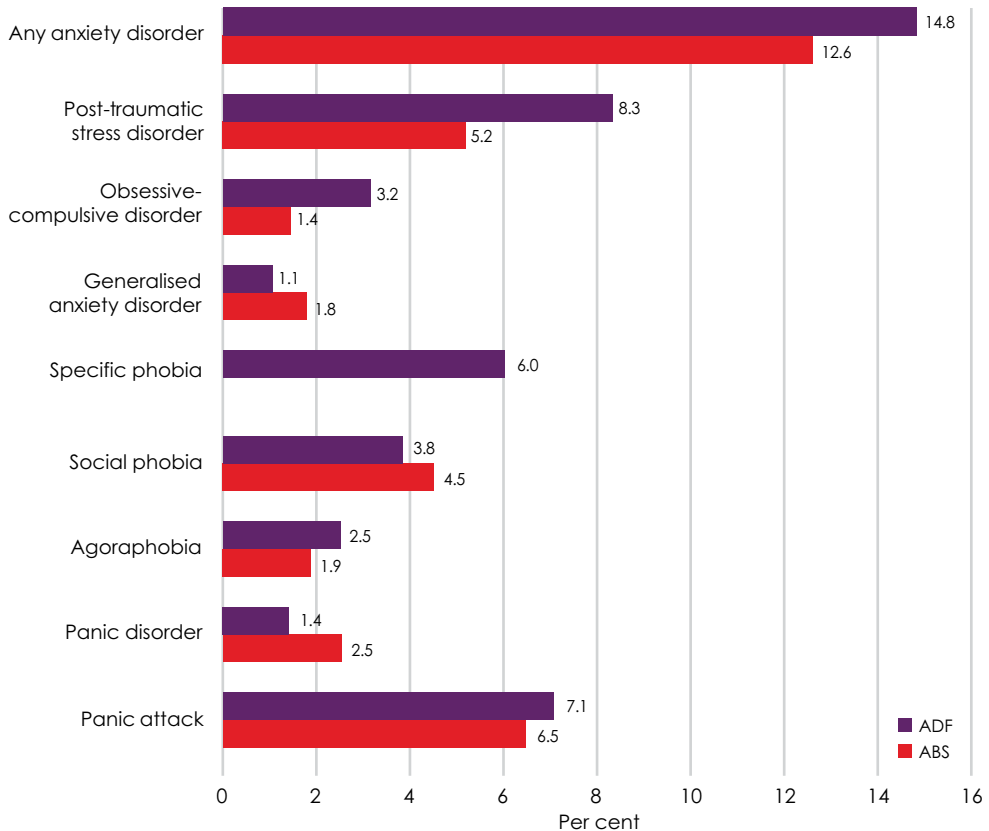
Figure 1.6: Estimated prevalence of 12-month affective disorders, ADF and ABS study



^a Significantly different from the ABS study.

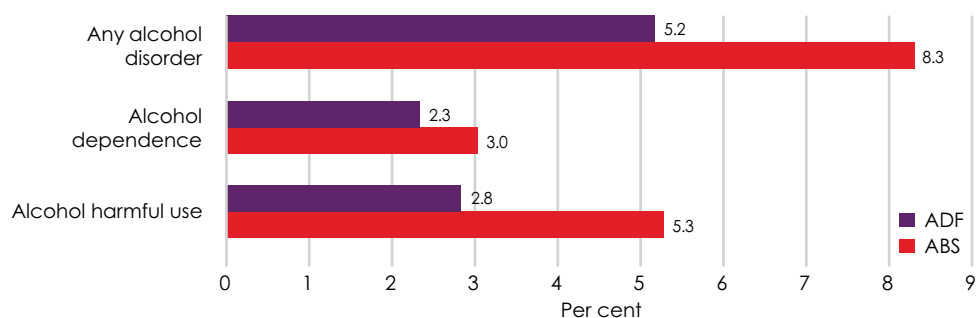
As summarised in Figure 1.6, 12-month affective disorders were associated with the largest deviation from the Australian community, with depressive episodes in both male and female ADF personnel (6% and 8.7% respectively) significantly higher than the general community rates (2.9%, 4.4%) (difference 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.

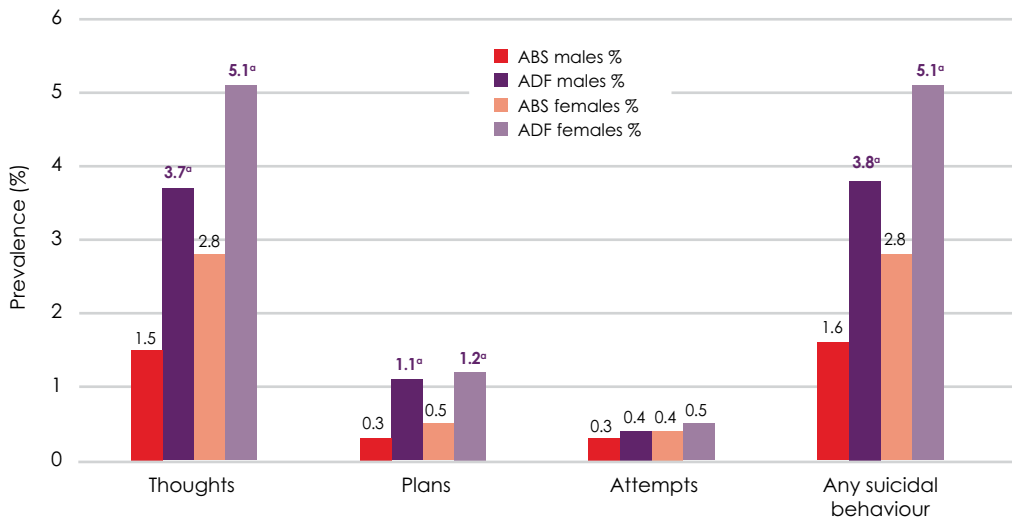
1.1.4 Suicidality in the ADF compared to the Australian community

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

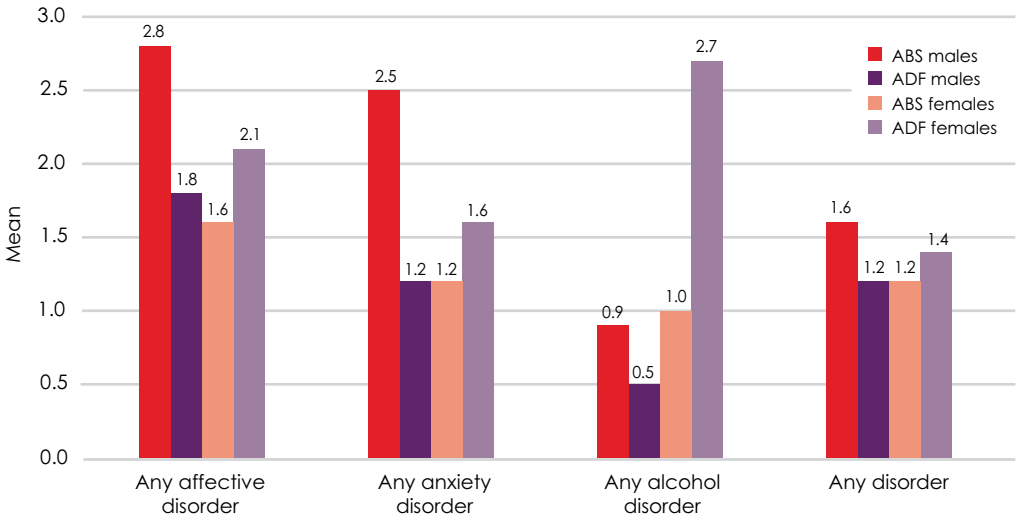
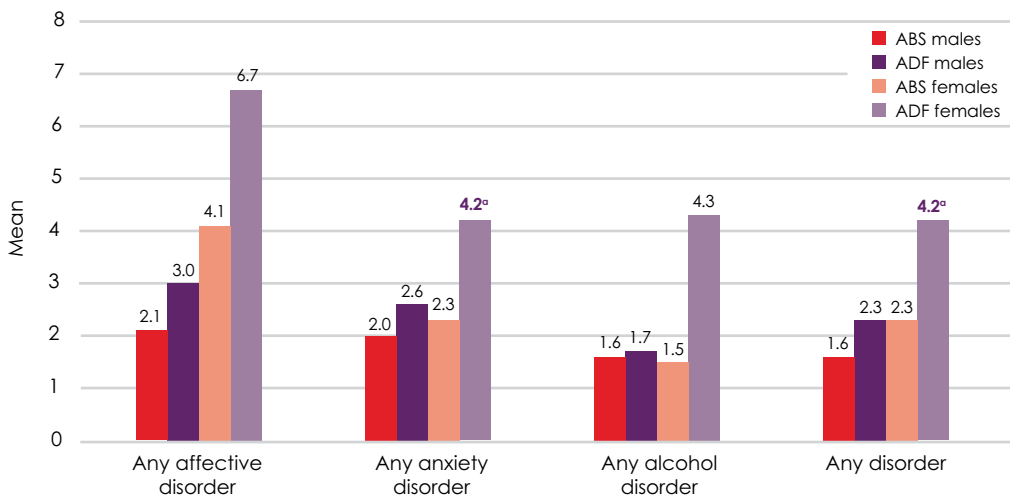


Figure 1.11: Estimated mean **partial** days out of role due to psychological distress in the previous month, by mental disorder class and sex in the ADF compared to the ABS study



^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.

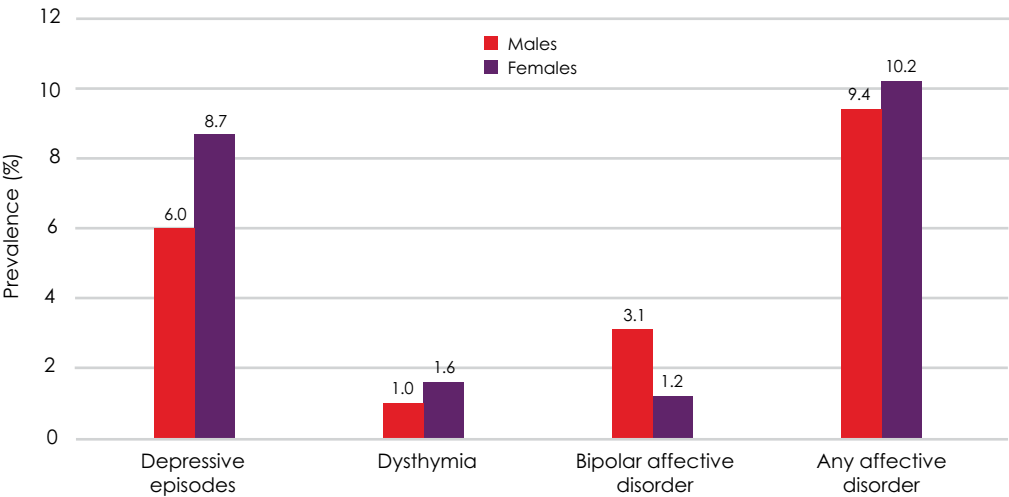
- **Hypomanic episodes** last at least four consecutive days and are considered abnormal to the individual. These episodes are characterised by increased activity, talkativeness, elevated mood, disrupted concentration, decreased need for sleep and disrupted judgment manifest as risk taking (for example, 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

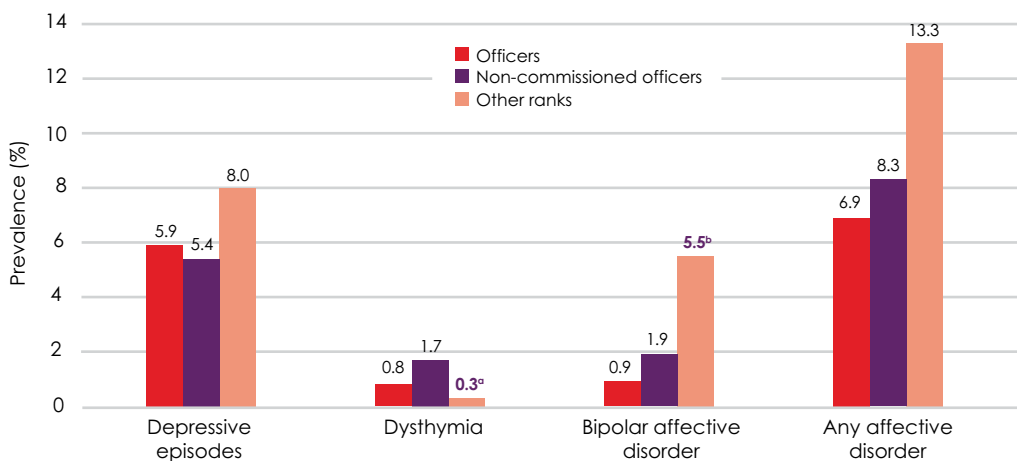
Table 1.6: Estimated prevalence of 12-month ICD-10 affective disorders in the ADF, by affective disorder type and rank

	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

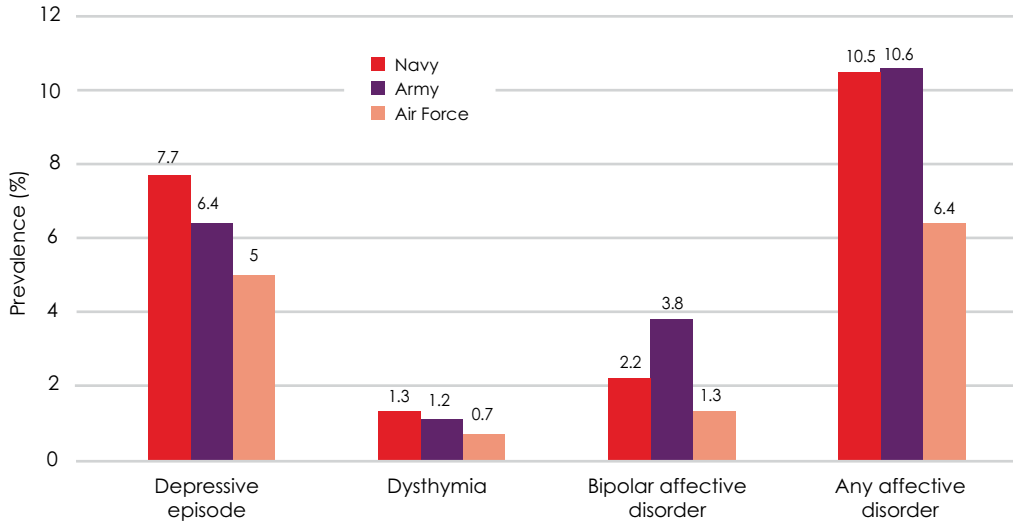
Table 1.8: Estimated prevalence of 12-month ICD-10 affective disorders in the Army, by affective disorder type and sex

	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.

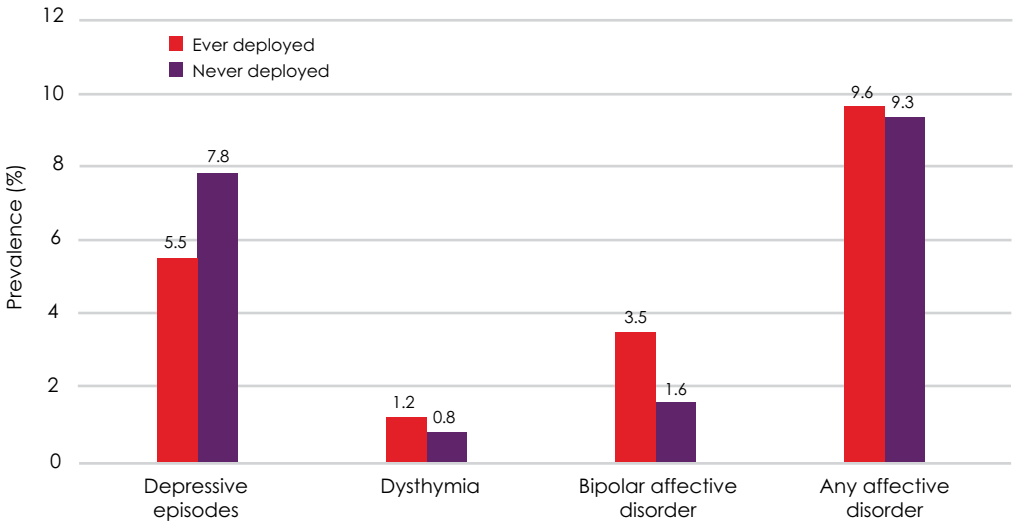
When looking at depressive episodes, which account for the significant majority of the affective disorders, the preponderance of women affected by this condition is apparent across the three Services, but there is no significant sex by Service interaction.

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.

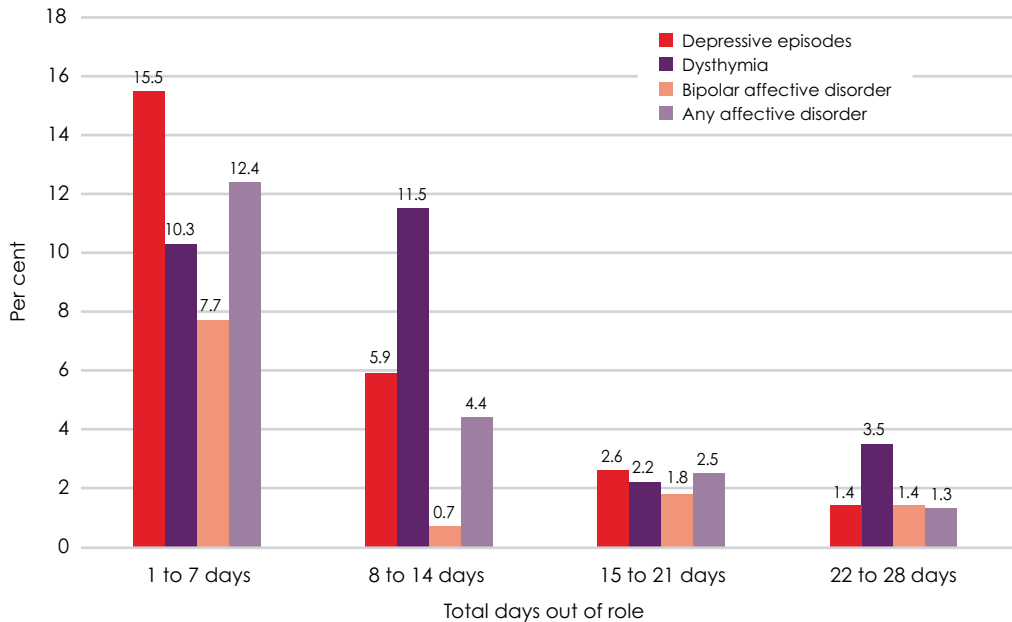
1.2.2 Impact of affective disorders

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

ICD-10 affective disorder	Mean number of total days out of role		Percentage of total days out of role	
	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.

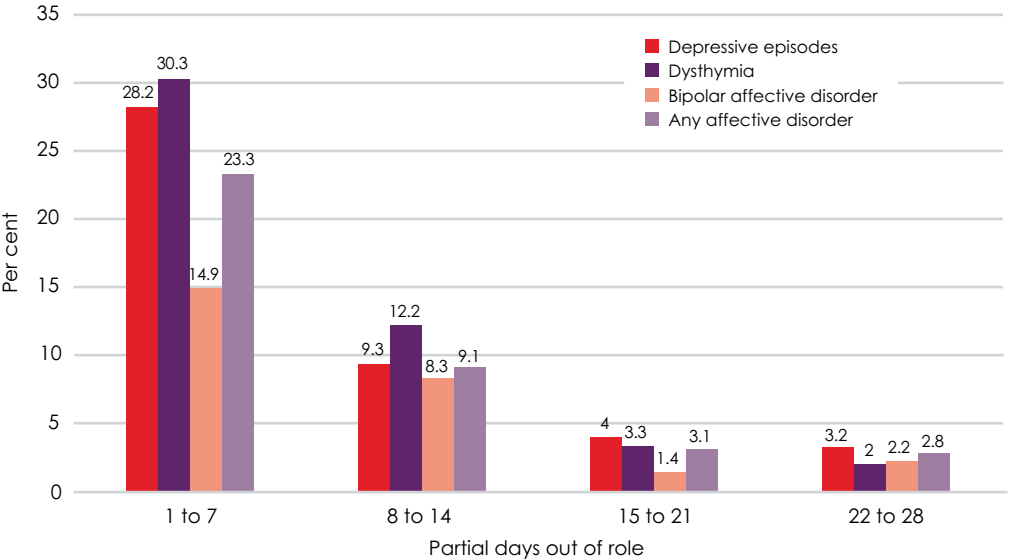
By taking into account both the prevalence of the disorders and the number of total days out of role (Table 1.11), however, depressive episodes with a 12-month prevalence of 6.4% emerged as a particularly important determinant of the number of total days out of role in the ADF. Depressive episodes accounted 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	–

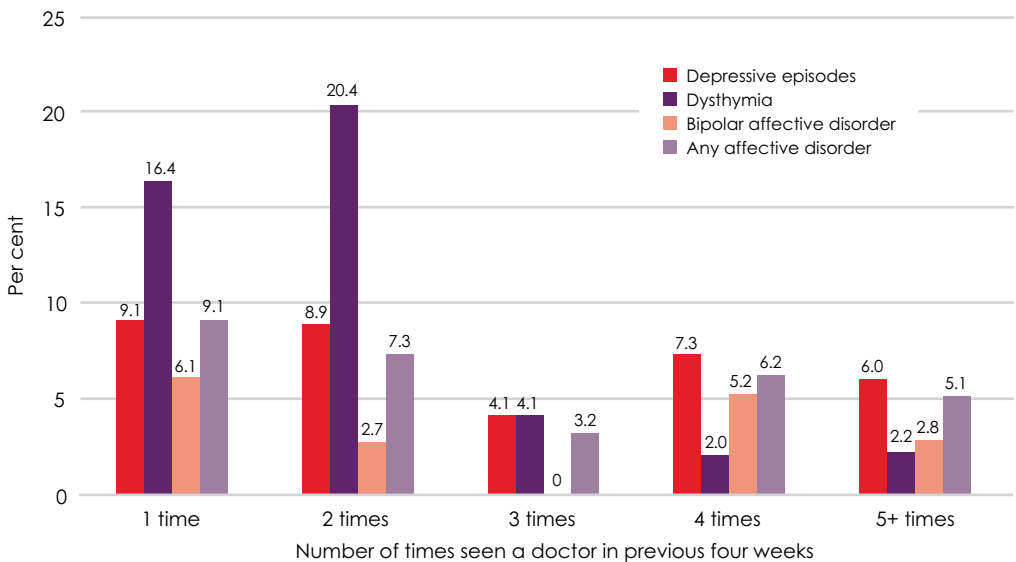
a Does not cover all members with this disorder, but percentages are out of the total number with responses.

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 Model. 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).

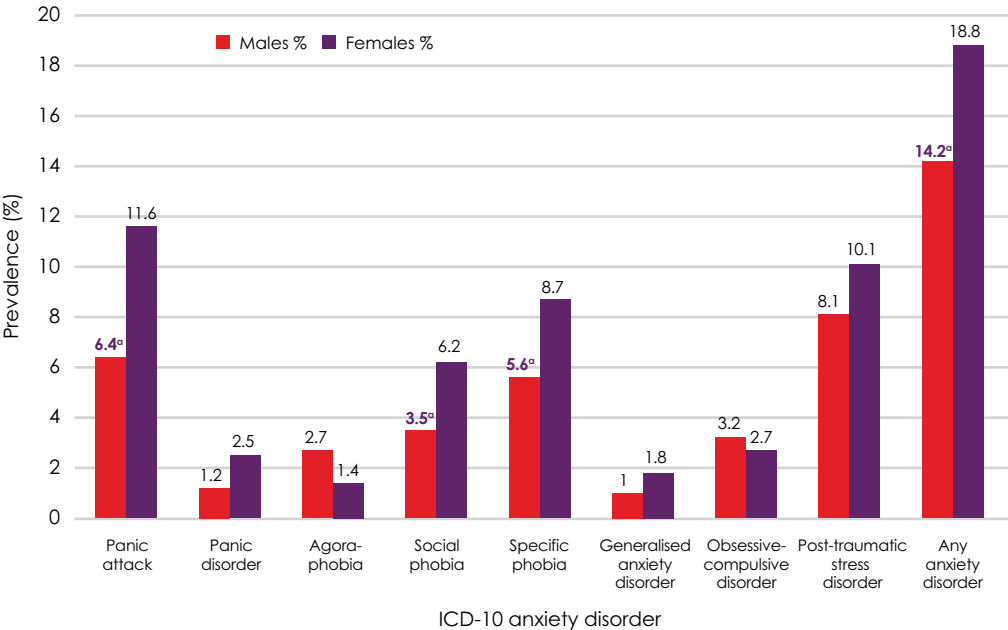
b Females v males (OR 1.77, 95% CI 1.07–2.93).

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

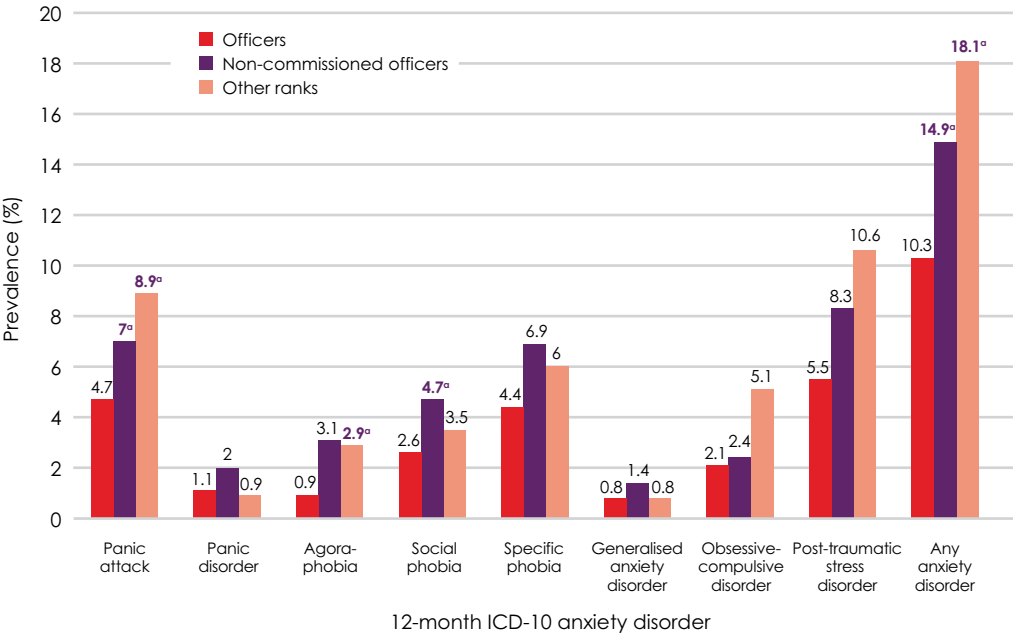
a Non-commissioned officers v officers (OR 1.65, 95% CI 1.14–2.39), other ranks v officers (OR 1.81, 95% CI 1.07–3.03).

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

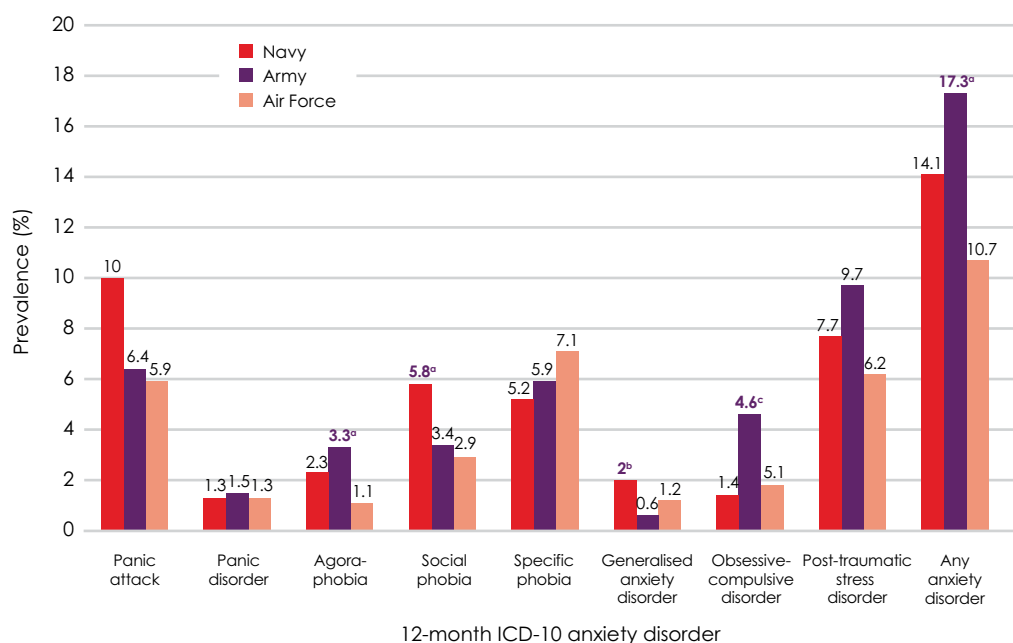
ICD-10 disorder	Army males N=22,843			Army females N=2,513			Army total N=25,356		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Panic attack	1,354	5.9	3.9–8.0	257	10.2	5.7–14.8	1,611	6.4	4.5–8.3
Panic disorder	373	1.6	0.9–2.4	8	0.3	0.0–0.9	381	1.5	0.8–2.2
Agoraphobia	789	3.5	2.2–4.7	54	2.2	0.1–4.2	844	3.3	2.2–4.5
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	1,112	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.

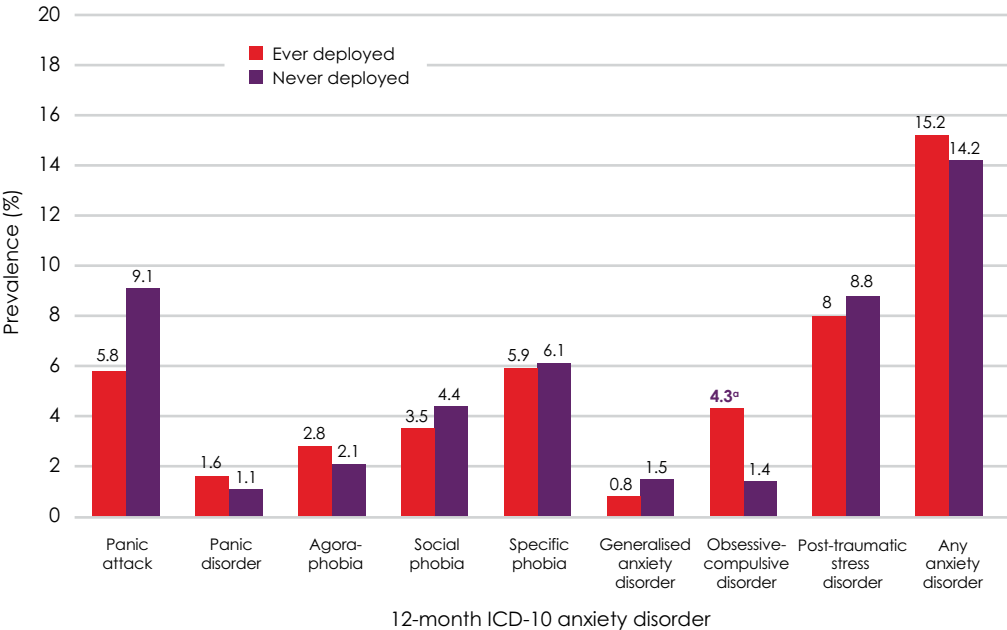
1.3.1.3 Deployment history

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*

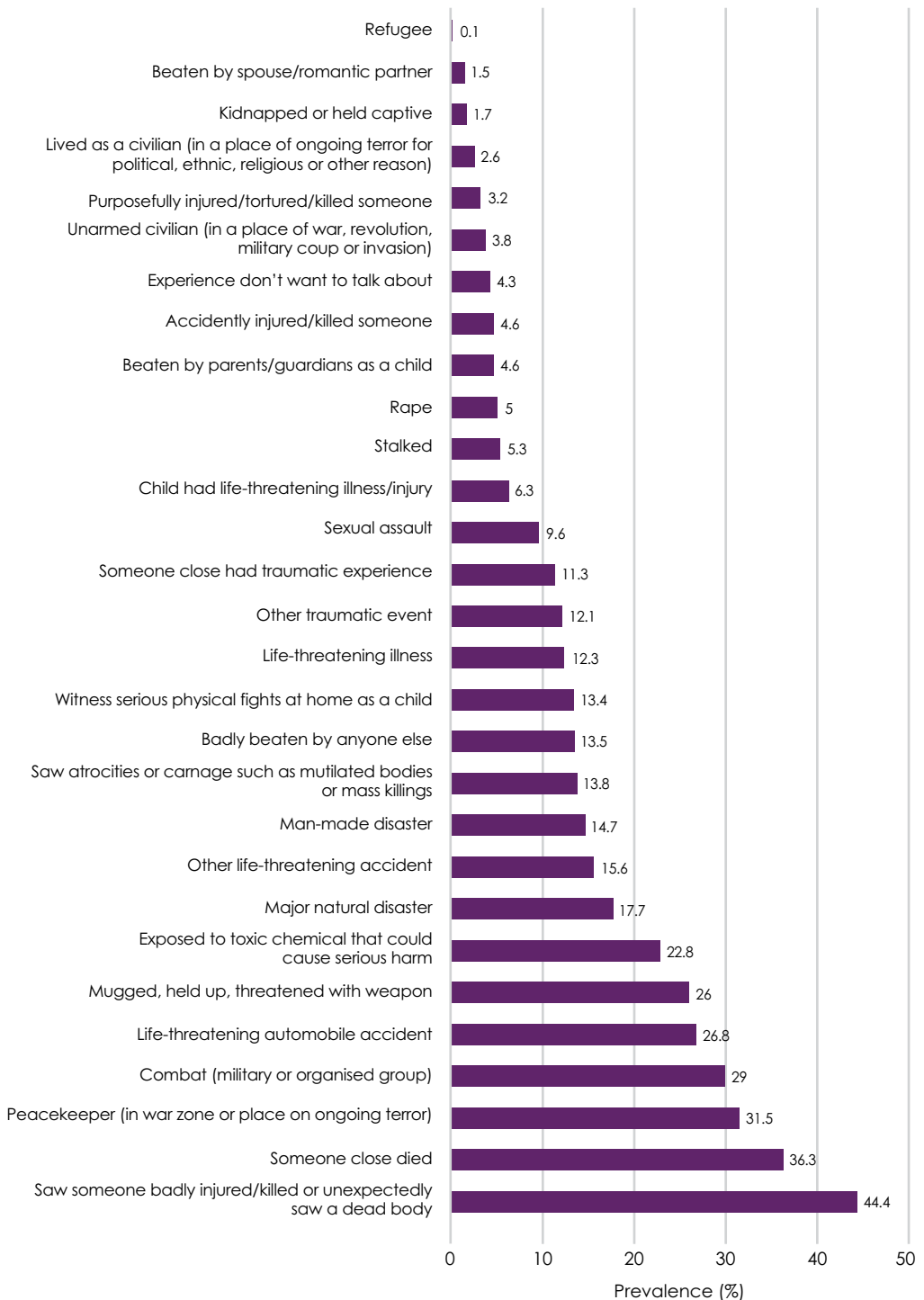
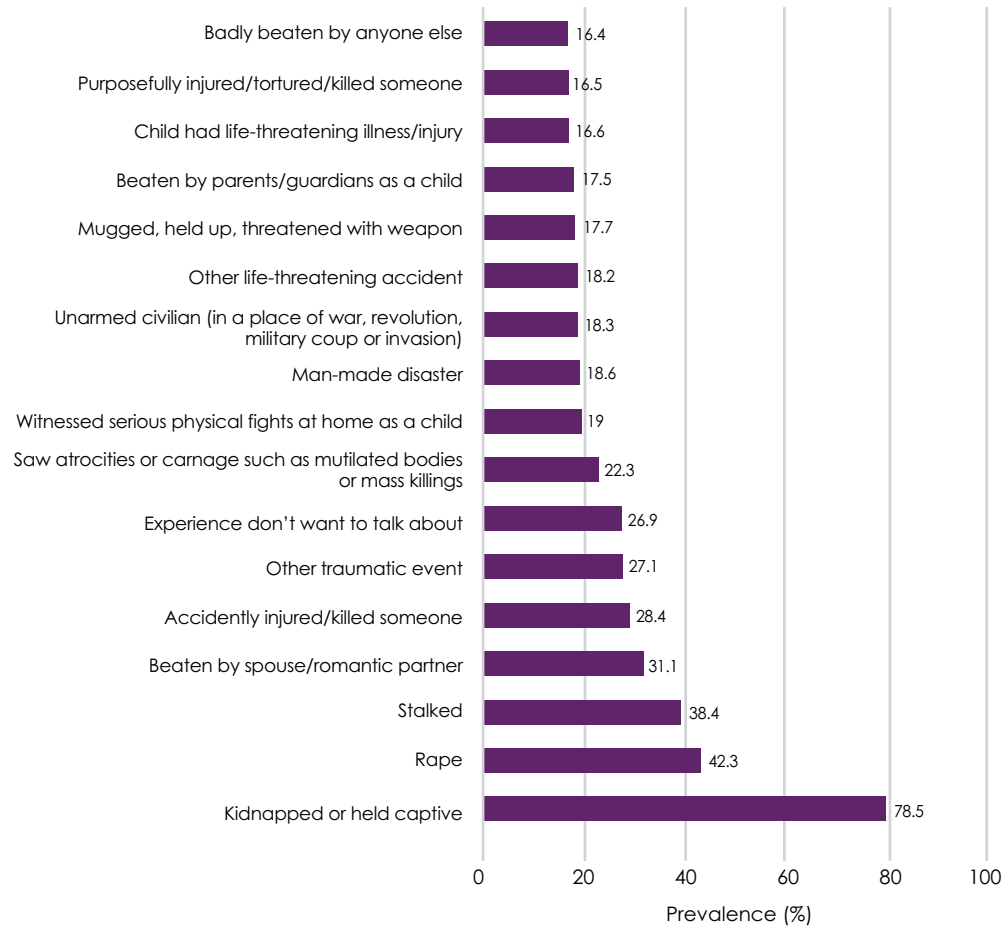


Figure 1.24: *Estimated prevalence of post-traumatic stress disorder from specific event types*



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

ICD-10 anxiety disorder	Mean number of total days out of role		Percentage of total days out of role	
	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.

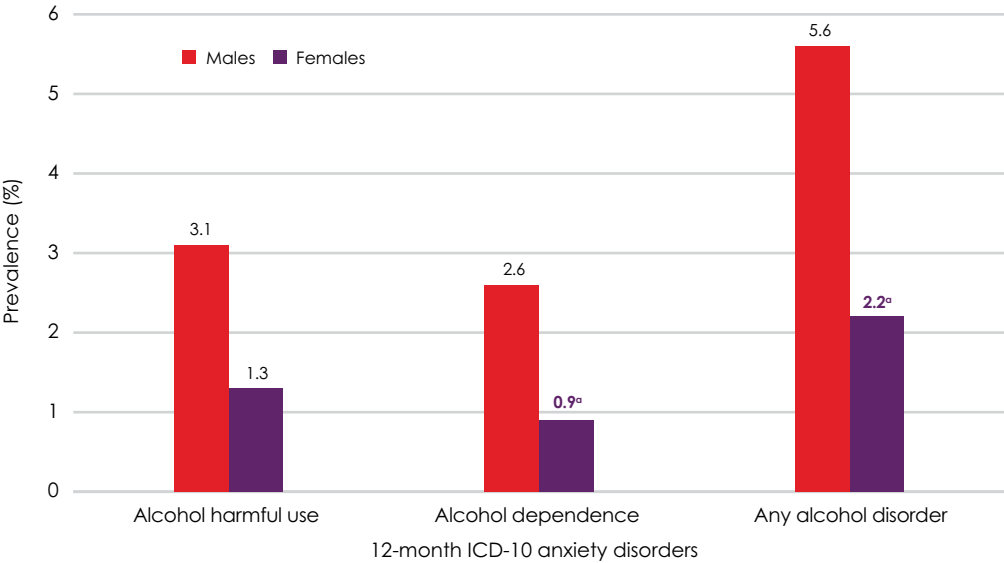
Table 1.25: Estimated prevalence of 12-month ICD-10 alcohol disorders in the ADF, by alcohol disorder type and sex

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.

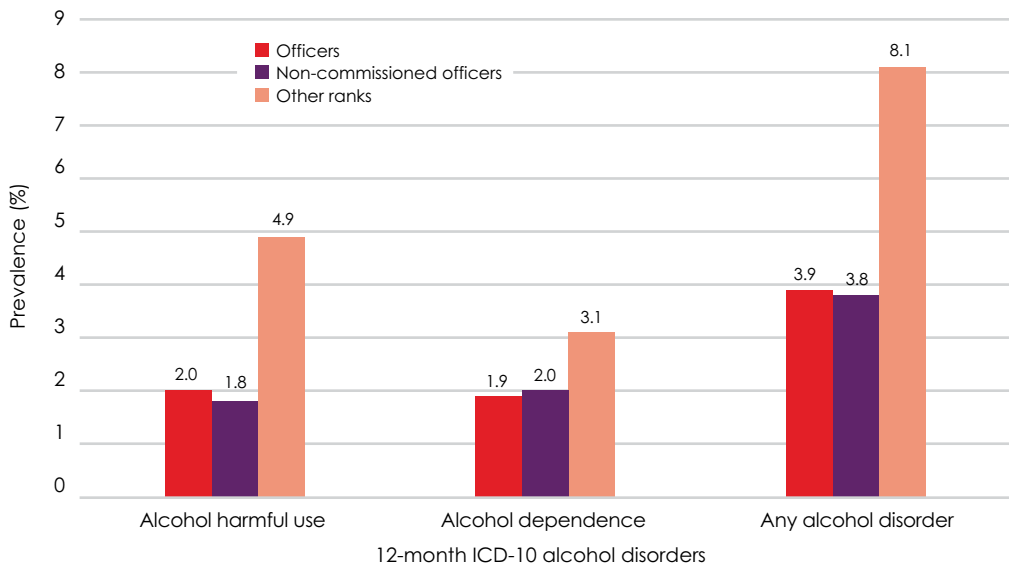
1.4.1 Prevalence of alcohol disorders in different population subgroups

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

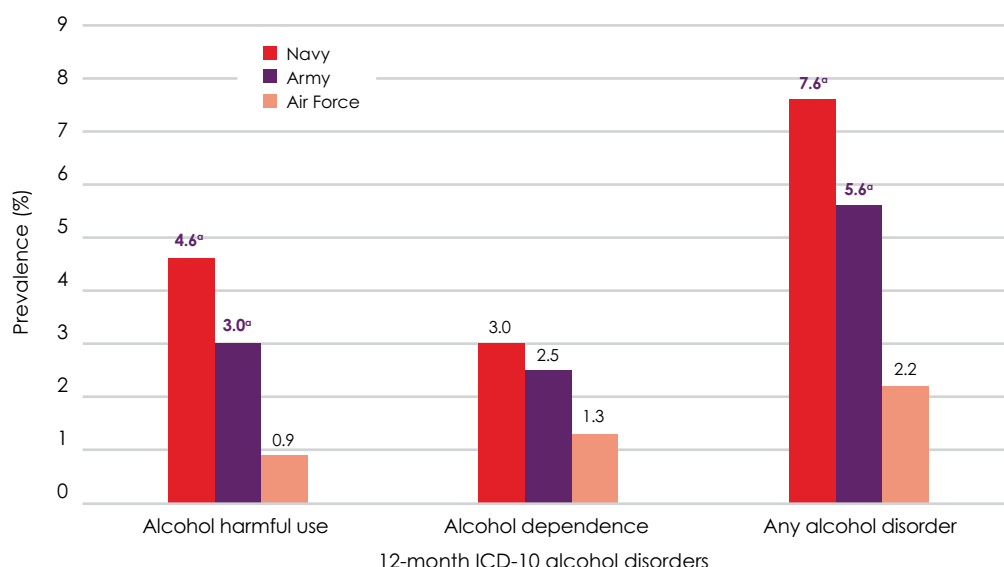
Table 1.28: Estimated prevalence of 12-month ICD-10 alcohol disorders in the Army, by alcohol disorder type and sex

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.

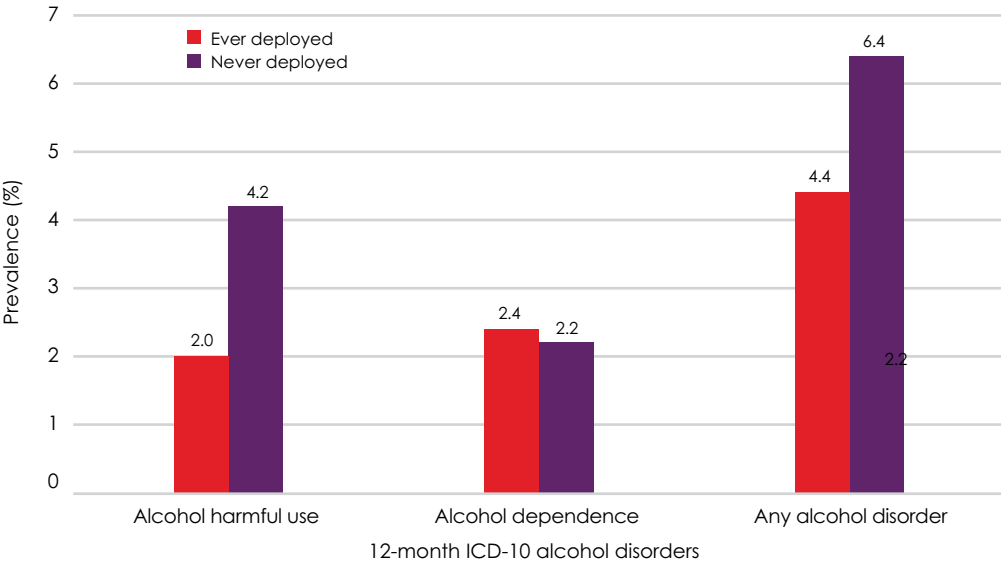
When the individual Services are considered (tables 1.27, 1.28 and 1.29), the Navy tended to have the highest rates of alcohol disorders followed by the Army and then the Air Force. For example, 7.6% (95% CI 3.8, 11.4) of Navy personnel met criteria for an ICD-10 alcohol disorder, in contrast to 5.6% (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

ICD-10 alcohol disorder	Ever deployed N=31,056			Never deployed N=18,993		
	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.

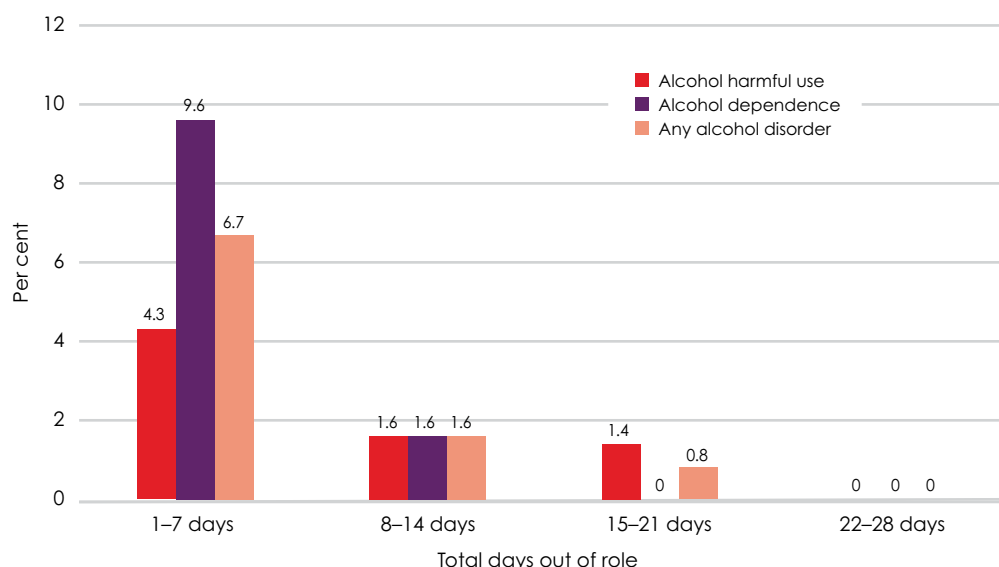
1.4.2 Impact of alcohol disorders

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.

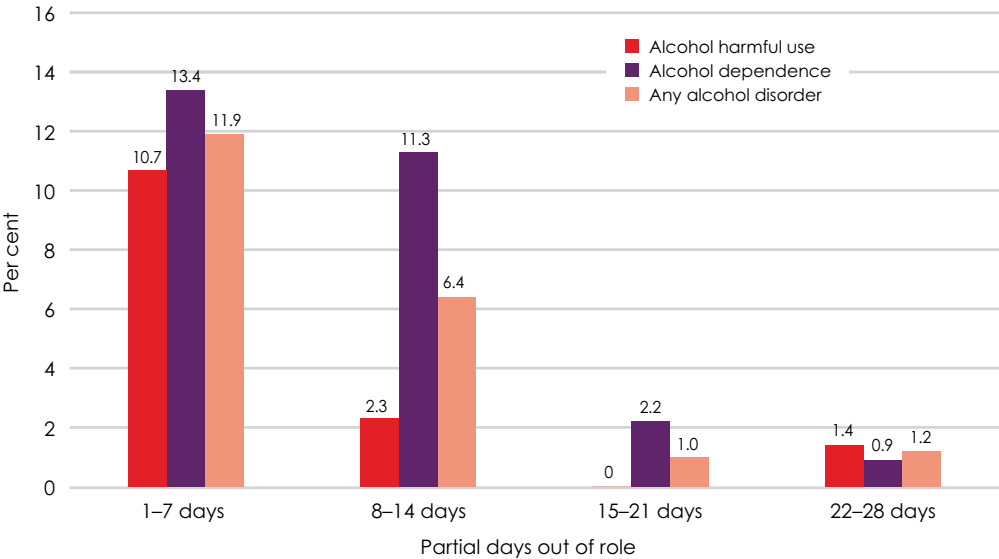
ADF personnel with an alcohol disorder reported an average of 0.6 (95% CI 0.2, 1.0) days out of role in the previous four weeks. Alcohol harmful use was associated with greatest mean number of total days out of role (mean 0.7, 95% CI 0.1–1.2) and also accounted for the greatest proportion of total days 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

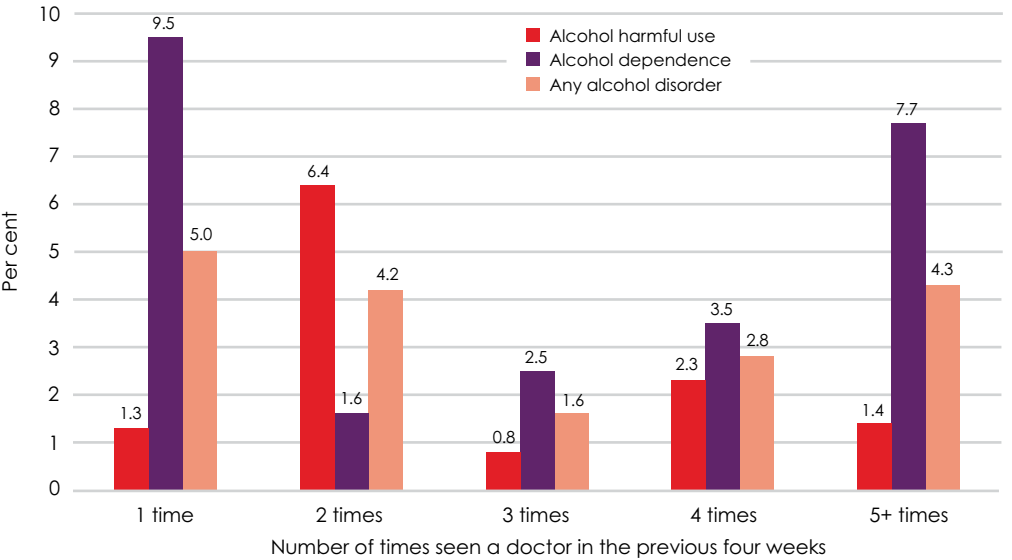
Table 1.33: Twelve-month service use, by type of 12-month alcohol disorder

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*

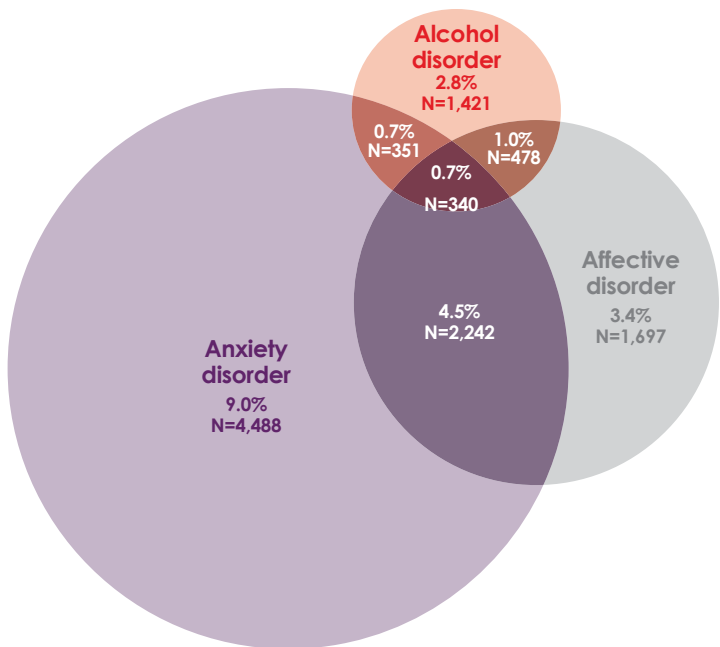
ICD-10 disorder group	Total			Males			Females		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
No disorder	39,033	78.0	74.8–81.1	33,866	78.3	74.7–81.9	5,167	75.9	71.8–80.0
Any alcohol disorder only	1,421	2.8	1.7–4.0	1,383	3.2	1.8–4.6	38	0.6	0.0–1.2
Any anxiety disorder only	4,488	9.0	6.7–11.2	3,624	8.4	5.8–11.0	864	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*

ICD-10 disorder group	Navy			Army			Air Force		
	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*

Any suicidality	Total	No			Yes		
	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 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.

References

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: American Psychiatric Association.
- Angst, J., Cui, L., Swendsen, J., Rothen, S., Cravchik, A., Kessler, R. C., & Merikangas, K. R. (2010). Major depressive disorder with subthreshold bipolarity in the national comorbidity survey replication. *American Journal of Psychiatry*, 167(10), 1194–1201.
- Arsenault-Lapierre, G., Kim, C., & Turecki, G. (2004). Psychiatric diagnoses in 3275 suicides: A meta-analysis. *BMC Psychiatry*, 4(1), 37–48.
- Australian Bureau of Statistics. (2008). *National Survey of Mental Health and Wellbeing: Summary of results, 2007*. Canberra: Australian Bureau of Statistics.
- Beautrais, A. L., Joyce, P. R., Mulder, R. T., Fergusson, D. M., Deavoll, B. J., & Nightingale, S. K. (1996). Prevalence and comorbidity of mental disorders in persons making serious suicide attempts: A case-control study. *American Journal of Psychiatry*, 153(8), 1009–1014.

- Belik, S. L., Stein, M. B., Asmundson, G. J. G., & Sareen, J. (2010). Are Canadian soldiers more likely to have suicidal ideation and suicide attempts than Canadian civilians? *American Journal of Epidemiology*, 172(11), 1250–1258.
- Bell, N. S., Harford, T. C., Amoroso, P. J., Hollander, I. E., & Kay, A. B. (2010). Prior health care utilization patterns and suicide among US Army soldiers. *Suicide and Life-Threatening Behavior*, 40(4), 407–415.
- Booth-Kewley, S., Highfill-Mcroy, R. M., Larson, G. E., & Garland, C. F. (2010). Psychosocial predictors of military misconduct. *Journal of Nervous and Mental Disease*, 198(2), 91–98.
- Browne, T., Iversen, A., Hull, L., Workman, L., Barker, C., Horn, O., . . . Fear, N. T. (2008). How do experiences in Iraq affect alcohol use among male UK armed forces personnel? *Occupational & Environmental Medicine*, 65, 628–633.
- Canadian Forces. (2011). *Canadian Forces Cancer and Mortality Study: Causes of death*. Retrieved from <http://www.statcan.gc.ca/pub/82-584-x/82-584-x2011001-eng.htm>
- Carr, J. R., Hoge, C. W., Gardner, J., & Potter, R. (2004). Suicide surveillance in the US military: Reporting and classification biases in rate calculations. *Suicide and Life-Threatening Behavior*, 34(3), 233–241.
- Centers for Disease Control and Prevention. (2005). National Centers for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System (WISQARS) 2005. Retrieved from <http://www.cdc.gov/ncipc/wisqars>.
- Corrigan, P. W., & Watson, A. C. (2005). Findings from the National Comorbidity Survey on the frequency of violent behavior in individuals with psychiatric disorders. *Psychiatry Research*, 136(2–3), 153–162.
- Department of Defense. (2007). *US active duty military deaths per 1,000,000 serving, 1980–2006*. Retrieved from http://stadapp.dmdc.osd.mil/personnel/CASIA:TU/Death_Rates1.pdf
- Department of Defense. (2010). *The challenge and the promise: Strengthening the force, preventing suicide and saving lives*. Washington, DC: Department of Defense Task Force on the Prevention of Suicide by Members of the Armed Forces.
- Fava, M., Hwang, I., Rush, A. J., Sampson, N., Walters, E. E., & Kessler, R. C. (2010). The importance of irritability as a symptom of major depressive disorder: Results from the national comorbidity survey replication. *Molecular Psychiatry*, 15(8), 856–867.
- Fear, N. T., Ward, V. R., Harrison, K., Davison, L., Williamson, S., & Blatchley, N. F. (2009). Suicide among male regular UK Armed Forces personnel, 1984–2007. *Occupational and Environmental Medicine*, 66(7), 438–441.
- Fear, N. T., Jones, M., Murphy, D., Hull, L., Iversen, A. C., Coker, B., . . . Wessely, S. (2010). What are the consequences of deployment to Iraq and Afghanistan on the mental health of the UK armed forces? A cohort study. *Lancet* 375, 1783–1797.
- Fontana, A., & Rosenheck, R. (1995). Attempted suicide among Vietnam veterans: A model of etiology in a community sample. *American Journal of Psychiatry*, 152(1), 102–109.
- Gahm, G. A., & Reger, G. M. (2008). *Army Suicide Event Report (ASER) Calendar Year 2007*. Tacoma, WA: Suicide Risk Management and Surveillance Office, Madigan Army Medical Center.

- Goodale, P. A. (1999). Anger profile of suicidal inpatients: Vietnam veterans. *Dissertation Abstracts International*, 59, 5577-B.
- Grubaugh, A. L., Magruder, K. M., Waldrop, A. E., Elhai, J. D., Knapp, R. G., & Frueh, B. C. (2005). Subthreshold PTSD in primary care: Prevalence, psychiatric disorders, healthcare use, and functional status. *Journal of Nervous and Mental Disease*, 193(10), 658–664.
- Guerra, V. S., & Calhoun, P. S. (2011). Examining the relation between posttraumatic stress disorder and suicidal ideation in an OEF/OIF veteran sample. *Journal of Anxiety Disorders*, 25(1), 12–18.
- Helmkamp, J. C. (1995). Suicides in the military: 1980–1992. *Military Medicine*, 160(2), 45–50.
- Hoge, C. W., Auchterlonie, J. L., & Milliken, C. S. (2006). Mental health problems, use of mental health services, and attrition from military service after returning from deployment to Iraq or Afghanistan. *Journal of the American Medical Association*, 295(9), 1023–1032.
- Hoge, C. W., Castro, C. A., Messer, S. C., McGurk, D., Cotting, D. I., & Koffman, R. L. (2004). Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *New England Journal of Medicine*, 351(1), 13–22.
- Hotopf, M., Hull, L., Fear, N. T., Browne, T., Horn, O., Iversen, A., . . . Wessely, S. (2006). The health of UK military personnel who deployed to the 2003 Iraq war: a cohort study. *Lancet*, 367(9524), 1731–1741.
- Ikin, J. F., Sim, M. R., Creamer, M. C., Forbes, A. B., McKenzie, D. P., Kelsall, H. L., . . . Schwarz, H. (2004). War-related psychological stressors and risk of psychological disorders in Australian veterans of the 1991 Gulf War. *British Journal of Psychiatry*, 185, 116–126.
- Isometsä, E. T. (2001). Psychological autopsy studies: A review. *European Psychiatry*, 16(7), 379–385.
- Jacobson, I. G., Ryan, M. A. K., Hooper, T. I., Smith, T. C., Amoroso, P. J., Boyko, E. J., . . . Bell, N. S. (2010). Alcohol use and alcohol-related problems before and after military combat deployment. *Journal of the American Medical Association*, 300(6), 663–675.
- Kang, H. K., & Bullman, T. A. (1996). Mortality among US veterans of the Persian Gulf War. *New England Journal of Medicine*, 335(20), 1498–1504.
- Kang, H. K., & Bullman, T. A. (2001). Mortality among US veterans of the Persian Gulf War: 7-year follow-up. *American Journal of Epidemiology*, 154(5), 399–405.
- Kang, H. K., & Bullman, T. A. (2008). Risk of suicide among US veterans after returning from the Iraq or Afghanistan war zones. *Journal of the American Medical Association*, 300(6), 652–653.
- Kang, H. K., & Bullman, T. A. (2009). Is there an epidemic of suicides among current and former US military personnel? *Annals of Epidemiology*, 19(10), 757–760.
- Kaplan, M. S., Huguet, N., McFarland, B. H., & Newsom, J. T. (2007). Suicide among male veterans: A prospective population-based study. *Journal of Epidemiology and Community Health*, 61(7), 619–624.
- Kehle, S. M., Reddy, M. K., Ferrier-Auerbach, A. G., Erbes, C. R., Arbisi, P. A., & Polusny, M. A. (2011). Psychiatric diagnoses, comorbidity, and functioning in National Guard troops deployed to Iraq. *Journal of Psychiatric Research*, 45(1), 126–132.

- Kessler, R. C., Birnbaum, H., Bromet, E., Hwang, I., Sampson, N., & Shahly, V. (2010). Age differences in major depression: Results from the national comorbidity survey replication (NCS-R). *Psychological Medicine*, 40(2), 225–237.
- Kessler, R. C., Merikangas, K. R., & Wang, P. S. (2008). The prevalence and correlates of workplace depression in the national comorbidity survey replication. *Journal of Occupational and Environmental Medicine*, 50(4), 381–390.
- Kessler, R. C., Wai, T. C., Demler, O., & Walters, E. E. (2005). Prevalence, severity, and comorbidity of 12-month DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62(6), 617–627.
- King, R. A., Schwab-Stone, M., Flisher, A. J., Greenwald, S., Kramer, R. A., Goodman, S. H., . . . Gould, M. S. (2001). Psychosocial and risk behavior correlates of youth suicide attempts and suicidal ideation. *Journal of the American Academy of Child and Adolescent Psychiatry*, 40(7), 837–846.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16(9), 606–613.
- Krysinska, K., & Lester, D. (2010). Post-traumatic stress disorder and suicide risk: A systematic review. *Archives of Suicide Research*, 14(1), 1–23.
- Kuehn, B. M. (2009). Soldier suicide rates continue to rise: military, scientists work to stem the tide. *Journal of the American Medical Association*, 301(11), 1111–1113.
- Marshall, R. D., Olsson, M., Hellman, F., Blanco, C., Guardino, M., & Struening, E. L. (2001). Comorbidity, impairment, and suicidality in subthreshold PTSD. *American Journal of Psychiatry*, 158(9), 1467–1473.
- McFarlane, A., Browne, D., Bryant, R., O'Donnell, M., Silove, D., & Creamer, M. (2009). A longitudinal analysis of alcohol consumption and the risk of posttraumatic symptoms. *Journal of Affective Disorders*, 118(1–3), 166–172.
- McFarlane, A. C. (2004). The contribution of epidemiology to the study of traumatic stress. *Social Psychiatry and Psychiatric Epidemiology*, 39(11), 874–882.
- McFarlane, A. C. (2009). Phenomenology of posttraumatic stress disorder. In D. Stein, E. Hollander & B. Rothbaum (Eds.), *Textbook of anxiety disorders* (2nd ed., pp. 547–565). Arlington, VA: American Psychiatric Publishing.
- McKenzie, D. P., McFarlane, A. C., Creamer, M., Ikin, J. F., Forbes, A. B., Kelsall, H. L., . . . Sim, M. R. (2006). Hazardous or harmful alcohol use in Royal Australian Navy veterans of the 1991 Gulf War: identification of high risk subgroups. *Addictive Behaviors*, 31(9), 1683–1694. doi: 10.1016/j.addbeh.2005.12.027.
- McLaughlin, R., Nielsen, L., & Waller, M. (2008). An evaluation of the effect of military service on mortality: Quantifying the healthy soldier effect. *Annals of Epidemiology*, 18(12), 928–936.
- Merikangas, K. R., & Swanson, S. A. (2010). Comorbidity in anxiety disorders. *Current topics in behavioral neurosciences*, 2, 37–59.
- Milliken, C. S., Auchterlonie, J. L., & Hoge, C. W. (2007). Longitudinal assessment of mental health problems among active and reserve component soldiers returning from the Iraq war. *Journal of the American Medical Association*, 298(18), 2141–2148.
- Oquendo, M., Brent, D. A., Birmaher, B., Greenhill, L., Kolko, D., Stanley, B., . . . Mann, J. J. (2005). Posttraumatic stress disorder comorbid with major depression: Factors mediating the association with suicidal behavior. *American Journal of Psychiatry*, 162(3), 560–566.

- Riddle, J. R., Smith, T. C., Smith, B., Corbeil, T. E., Engel, C. C., Wells, T. S., . . . Blazer, D. (2007). Millennium Cohort: The 2001–2003 baseline prevalence of mental disorders in the US military. *Journal of Clinical Epidemiology*, 60(2), 192–201. doi: 10.1016/j.jclinepi.2006.04.008
- Rihmer, Z. (2007). Suicide risk in mood disorders. *Current Opinion in Psychiatry*, 20(1), 17–22.
- Ritchie, E. C., Keppler, W. C., & Rothberg, J. M. (2003). Suicidal admissions in the United States military. *Military Medicine*, 168(3), 177–181.
- Rona, R. J., Fear, N. T., Hull, L., Greenberg, N., Earnshaw, M., Hotopf, M., & Wessely, S. (2007). Mental health consequences of overstretch in the UK armed forces: First phase of a cohort study. *British Medical Journal*, 335, 603.
- Rona, R. J., Jones, M., Fear, N. T., Hull, L., Hotopf, M., & Wessely, S. (2010). Alcohol misuse and functional impairment in the UK Armed Forces: A population-based study. *Drug and Alcohol Dependence*, 108(1–2), 37–42.
- Sainsbury, P., & Jenkins, J. S. (1982). The accuracy of officially reported suicide statistics for purposes of epidemiological research. *Journal of Epidemiology and Community Health*, 36(1), 43–48.
- Sareen, J., Cox, B. J., Afifi, T. O., Stein, M. B., Belik, S. L., Meadows, G., & Asmundson, G. J. G. (2007). Combat and peacekeeping operations in relation to prevalence of mental disorders and perceived need for mental health care: Findings from a large representative sample of military personnel. *Archives of General Psychiatry*, 64(7), 843–852.
- Sareen, J., Houlahan, T., Cox, B. J., & Asmundson, G. J. G. (2005). Anxiety disorders associated with suicidal ideation and suicide attempts in the national comorbidity survey. *Journal of Nervous and Mental Disease*, 193(7), 450–454.
- Selby, E. A., Anestis, M. D., Bender, T. W., Ribeiro, J. D., Nock, M. K., Rudd, M. D., . . . Joiner, T. E., Jr. (2010). Overcoming the fear of lethal injury: evaluating suicidal behavior in the military through the lens of the Interpersonal-Psychological Theory of Suicide. *Clinical Psychology Review*, 30(3), 298–307. doi: 10.1016/j.cpr.2009.12.004.
- Slade, T., Johnston, A., Oakley Browne, M. A., Andrews, G., & Whiteford, H. (2009). 2007 National Survey of Mental Health and Wellbeing: Methods and key findings. *Australian and New Zealand Journal of Psychiatry*, 43(7), 594–605.
- Slade, T., Johnston, A., Teesson, M., Whiteford, H., Burgess, P., Pirkis, J., & Saw, S. (2009). *The mental health of Australians 2: Report on the 2007 National Survey of Mental Health and Wellbeing*. Canberra: Department of Health and Ageing.
- Stein, M. B., Walker, J. R., Hazen, A. L., & Forde, D. R. (1997). Full and partial posttraumatic stress disorder: Findings from a community survey. *American Journal of Psychiatry*, 154(8), 1114–1119.
- Swendsen, J., Conway, K. P., Degenhardt, L., Glantz, M., Jin, R., Merikangas, K. R., . . . Kessler, R. C. (2010). Mental disorders as risk factors for substance use, abuse and dependence: Results from the 10-year follow-up of the National Comorbidity Survey. *Addiction*, 105(6), 1117–1128.
- Teesson, M., Slade, T., & Mills, K. (2009). Comorbidity in Australia: Findings of the 2007 National Survey of Mental Health and Wellbeing. *Australian and New Zealand Journal of Psychiatry*, 43(7), 606–614.

- Thomas, J. L., Wilk, J. E., Riviere, L. A., McGurk, D., Castro, C. A., & Hoge, C. W. (2010). Prevalence of mental health problems and functional impairment among active component and national guard soldiers 3 and 12 months following combat in Iraq. *Archives of General Psychiatry*, 67(6), 614–623.
- Tien, H. C. N., Acharya, S., & Redelmeier, D. A. (2010). Preventing deaths in the Canadian military. *American Journal of Preventive Medicine*, 38(3), 331–339.
- Wang, J. L. (2005). Work stress as a risk factor for major depressive episode(s). *Psychological Medicine*, 35(6), 865–871.
- Wang, P. S., Patrick, A., Avorn, J., Azocar, F., Ludman, E., McCulloch, J., . . . Kessler, R. (2006). The costs and benefits of enhanced depression care to employers. *Archives of General Psychiatry*, 63(12), 1345–1353.
- Weiner, J., Richmond, T. S., Conigliaro, J., & Wiebe, D. J. (2011). Military veteran mortality following a survived suicide attempt. *BMC Public Health*, 11, 374.
- Wilk, J. E., Bliese, P. D., Kim, P. Y., Thomas, J. L., McGurk, D., & Hoge, C. W. (2010). Relationship of combat experiences to alcohol misuse among soldiers returning from the Iraq war. *Drug and Alcohol Dependence*, 108, 115–121.
- Yamane, C. G. K., & Butler, J. L. (2009). Suicide burden in the US Air Force: 1990–2004. *Military Medicine*, 174(10), 1019–1023.