

# SECTION 3

## EXPLORING OCCUPATIONAL MENTAL HEALTH ISSUES

**Contents**

3.1	Overview of occupational mental health issues	150
3.2	Help seeking, stigma and barriers to care	158
3.3	Impact of multiple deployments and trauma	168
	References	186

### 3.1 Overview of occupational mental health issues

The ADF Mental Health Prevalence and Wellbeing Study was designed to explore the range of predictive factors and outcomes for health and wellbeing that affect mental health in a military environment. This section of the report seeks to better understand some of the specific factors, through an investigation of the potential barriers to care and stigma in the ADF environment (section 3.2) and the significant risks associated with deployment and trauma exposure (section 3.3).

#### 3.1.1 A military occupational mental health approach

Mental health and wellbeing in a military environment is unique, as military service is an occupation where personnel are selected, trained and prepared to face adverse, stressful and potentially traumatising situations. Meeting the demands these situations entail requires an approach that focuses on both strengthening resilience and enabling recovery. Defence not only has a duty of care to its members but also needs to ensure that any impairment does not compromise the operational capacity of the ADF (McFarlane & Bryant, 2007). The ADF is therefore developing an occupational approach to managing mental health and wellbeing.

A military occupational mental health and wellbeing framework is being developed by the five-nation Technical Cooperation Program panel on psychological and operational effectiveness, with Australia as the lead in this key collaborative area.

The framework provides a blueprint for developing interventions and research programs to meet the demands of military service. In order to meet the aims of strengthening resilience and enabling recovery in this model, command, the individual and the health care system must share responsibility. This joint approach allows the development of interventions in four key areas.

- **Foundation strengths.** Personnel need to have the foundation strengths to meet the challenges of military service. Interventions to ensure this include effective selection strategies, comprehensive training to develop confidence in occupational skills and knowledge, a command climate that builds cohesive and effective leader behaviours, a culture that reduces stigma and breaks down barriers to care, and training to build resilience and strengthen coping skills.
- **Risk reduction.** Effective interventions need to be in place to identify risks, monitor impact and facilitate mitigation strategies. These interventions range from use of trained peers who are literate in mental health and can identify and assist 'mates' requiring assistance through to comprehensive e-health surveillance systems.
- **Early intervention.** Supporting personnel exposed to high risk requires access to early intervention strategies for the individual, command and health care personnel. These include ensuring that personnel are trained in mental health first aid; that mental health screening programs are available that both identify individuals for referral and also identify issues and trends to command; that command has the support to conduct ceremonies and activities that promote mental health and wellbeing; and that evidence-based psycho-education is available.
- **Treatment and recovery.** Some individuals will suffer injuries; for these individuals, evidence-based treatment and rehabilitation programs that focus on the individual returning to work are essential and, where this is not possible, individuals should be supported through the transition process. Systems must be in place that fully

engage command, family and support networks in the care of the individual. Systems also need to be easily accessible and structured to encourage personnel to seek care.

One of the strengths of the Mental Health Prevalence and Wellbeing Study was its ability to explore occupational issues that contribute to the interventions in this model. The study focused on factors predictive of mental disorders and issues, as well as on wellbeing and health outcomes. The factors in the study covered a range of issues that were identified as priorities for Defence and as emerging issues from the international military literature.

**Table 3.1:** *Summary of occupational issues explored in the ADF Mental Health Prevalence and Wellbeing Study*

Goal 3: Occupational issues – Explore the impact of occupational stressors on the mental health and wellbeing of the ADF population	
Predictive factors	Wellbeing outcomes
Deployment history	Help seeking
Trauma exposure	Resilience
Level of social support	Physical health
Bullying	Mild traumatic brain injury
Recognition of service	Sleep and anger
Stigma and barriers to care	Family relationships
Dietary supplements	Support networks
Caffeine and tobacco use	Quality of life

From a management perspective, it is important that individuals have a range of core or foundation strengths. These include having the resilience and coping skills to deal with the challenges of an environment with significant occupational stress (Plat, Frings-Dresen, & Sluiter, 2011; van Wyk & Pillay-Van Wyk, 2010), which may relate to workload and relationships with supervisors. The ability to manage interpersonal conflict in the work environment and to form effective relationships with work colleagues is critical to general morale and cohesion and underscores the importance of developing effective leadership (Bartone, Ursano, Wright, & Ingraham, 1989).

During the course of an ADF member's career, a variety of significant exposures need to be documented. The risks associated with both warlike and non-warlike deployments to an individual's physical and psychological health are widely recognised (Hoge, 2010; McFarlane, 2010b; Sareen et al., 2007; Sareen et al., 2010). The exposure to trauma experienced by personnel on deployment is well documented and regularly assessed through ADF mental health screening processes.

Preventive medicine has been developed as an essential part of the responsibilities and activities of Defence medical practitioners. Practitioners assess the specific toxicological, infectious and other physical risks to the health of ADF members. An issue of particular importance in the environment of the wars in Afghanistan and Iraq is the exposure to improvised explosive devices. Considerable concern has been expressed in the literature about the prevalence of and potential for mild traumatic brain injury

(Iverson, Langlois, McCrea, & Kelly, 2009; Polusny et al., 2011). The systematic collection of information about the frequency of such exposures and their health consequences in ADF members has only just begun. These risks need to be assessed in the setting of the broader physical health of ADF members who have been deployed.

There is a longstanding history of concern about the physical health of veterans and their risk of post-deployment syndromes, whose aetiology is poorly understood (Gray, Gackstetter, Kang, Graham, & Scott, 2004; McFarlane, Ellis, Barton, Browne, & Van Hooff, 2008; H. V. Thomas, Stimpson, Weightman, Dunstan, & Lewis, 2006; Wessely, 2001). Monitoring the patterns of health behaviour and documenting possible exposures of importance is critical to an effective health approach in the ADF environment.

In the non-deployed environment, training schedules and the sex and age characteristics of the ADF population mean that there is a particular risk of motor vehicle accidents and interpersonal violence (Bryant et al., 2010; Creamer, McFarlane, & Burgess, 2005). Given the potential adverse health consequences of such exposure, profiling these risks in the ADF environment creates an opportunity for primary and secondary prevention. There are also occupational issues in a hierarchical system – such as bullying and harassment in the workplace – that have the potential to sap morale and present a major reputational risk for the ADF.

The psychological wellbeing of ADF members also needs to be considered in the context of their family and social relationships (Riviere & Merrill, 2011). ADF service involves the repeated dislocation of individuals from their social networks because of the need to be moved to different bases. The prolonged separations during deployment and military exercises create specific and unusual strains on domestic relationships. It is important for Defence to have an accurate appraisal of the consequences of such separations for the social support networks and family relationships of ADF members. A complex two-way relationship exists between mental health and social support. An effective social network that nurtures an individual's identity is critical to wellbeing. Equally, when an individual becomes depressed or develops a post-traumatic stress disorder or another anxiety disorder, those disorders can disrupt the individual's ability to use their social networks to ensure their wellbeing.

The known stresses in the ADF environment present opportunities to promote healthy behaviours and manage minor health concerns. Sleep disturbance and increased difficulties with anger modulation are well recognised in the post-deployment environment (Elbogen, Wagner, Fuller, Calhoun, & Kinneer, 2010; Seelig et al., 2010). At present, there is little visibility in the ADF about the prevalence and difficulties that they present to the general quality of life of those who have been deployed. A better understanding of these behaviours provides opportunities to develop programs and interventions that might enhance the wellbeing of ADF members, particularly given the potential for the self-reinforcing escalation of those problems.

The creation of programs that extend beyond the classical health consultation model is also important to address stigma and barriers to care. These complex health behaviours need to be well documented and understood if the systems of care developed in an occupational health environment are to be effective. Therefore, it is important to assess these issues systematically and document their association with particular disorders.

Finally, a series of behaviours that contribute to health outcomes can be modified and monitored in the ADF environment. These include the use of tobacco, caffeine and dietary supplements. While these are acceptable behaviours in the broader community, major public health interventions have focused on decreasing tobacco use, for example. The effectiveness of such strategies in the ADF environment has not been systematically examined. One example is the use of dietary supplements in a population that prizes physical fitness and is often on strenuous training regimes. The potential for hazardous use of such supplements requires careful examination.

### 3.1.2 Help seeking, stigma and barriers to care

Given the prevalence of mental disorders in the ADF, we must ask why so few military personnel receive care. Increasingly in military environments, strategies such as psycho-educational programs and post-deployment screening have been put in place to overcome barriers to care. However, certain cultural and attitudinal issues in the military intensify the reluctance to seek assistance (Gould et al., 2010).

Research indicates that two main factors contribute to the low uptake of mental health care: the fear of stigma and perceived barriers to care.

Stigma has been defined by Corrigan and Penn (1999) as negative and incorrect attitudes resulting from the acceptance and internalisation of 'prejudice or negative stereotyping' (p. 765). Greene-Shortridge, Britt and Castro (2007) further categorise stigma as public stigma, defined as the generalised negative societal attitude towards people with mental health issues, and self-stigma, in which attitudes are internalised and believed by the individual. Both forms of stigma can lead to low self-confidence and a sense of shame because the individual experiences symptoms that are perceived to be negatively viewed by peers, unit leadership and the general public (Harman & Lee, 2010).

Barriers to care are the organisational and procedural or administrative aspects of access to mental health care that may preclude or reduce access to mental health treatment and support. Barriers may include issues associated with confidentiality, anonymity and confidence in mental health service providers, and are influenced to varying degrees by the internalised stigma regarding access to care and the consequences of asking for help.

Stigma and barriers to care have been identified in a large number of studies. In a study of Royal Navy personnel, Langston et al. (2010, p. 13) noted the following inhibiting beliefs: that stress symptoms would not be taken seriously, that the person displaying stress would be perceived as weak, that the person would be suspected of malingering, and that it was against the cultural practice of not talking about problems. These views were widely reflected in the other studies that investigated personnel access to mental health care.

Major stigma issues in the reviewed literature (Britt et al., 2008; Gould et al., 2010; Greene-Shortridge et al., 2007; Hoge et al., 2004; Kim, Thomas, Wilk, Castro, & Hoge, 2010; Langston et al., 2010; Visco, 2009) include:

- embarrassment
- fear that accessing help would harm their career
- fear that members in their fighting units would treat them differently or have less confidence in them

- fear that the leaders of their fighting unit would treat them differently
- fear that unit leaders would blame them for the problem
- fear that they would be seen as weak.

The major barriers to care that were identified in these studies include:

- not knowing where to access help
- inability to schedule an appointment to access mental health services
- lack of transportation
- difficulty in getting time off work for an appointment
- costs of accessing mental health services
- concerns about confidentiality
- lack of confidence in mental health care professionals
- unwillingness to talk to civilian mental health providers because of a perceived lack of empathy regarding the deployment experience.

The types of practitioners that were accessed by personnel in these studies included mental health professionals, medical doctors, chaplains and clergy members, in either a military or civilian environment (Hoge et al., 2004; Visco, 2009). In general, consultation and treatment from general practitioners was found to be less stigmatised.

### 3.1.2.1 Factors contributing to stigma and barriers to care

One important cultural impediment addressed in all studies is the 'macho culture' of the military, which, during training, emphasises resilience, strength, toughness and self-sufficiency. Behaviours such as admitting psychological symptoms and expressing the need for care or assistance are traditionally not widely encouraged or accepted (Garcia, Finley, Lorber, & Jakupcak, 2011; Harman & Lee, 2010; Langston et al., 2010). The degree to which these attitudes are internalised will influence the extent that personnel feel able to access support for mental health issues (Maguen & Litz, 2006; Schnurr, Friedman, Sengupta, Jankowski, & Holmes, 2000; Wright et al., 2009). This is particularly pertinent in light of recent research suggesting a greater reported experience and expectation of stigma in those with significant mental and emotional stress who become aware of their need for help (Britt et al., 2008; Corrigan & Matthews, 2003; Gould et al., 2010; Greene-Shorridge et al., 2007; Hoge et al., 2004; Kim et al., 2010; Langston et al., 2010; Visco, 2009).

In the military environment, the consequences of accessing care need to be considered. Personnel who are suspected of suffering from a mental disorder may immediately be prevented from carrying weapons or piloting aircraft. The type of restrictions applied often identifies them as a 'head case'. Thus, the impact of administrative restrictions on individuals with mental disorders may serve as a further barrier to care to other personnel with similar problems.

The literature also reports that the type of symptoms or disorder experienced by a person affects whether or not they access care. Iversen et al. (2010) examined help seeking among UK service personnel. While 80% of service personnel sought some help to deal with their symptoms, most made use of informal sources of support, such as their spouse and friends, rather than seeking professional help. Only 23% of people with alcohol problems sought professional help, while those with depression

and post-traumatic stress disorder did so at higher rates. That difference highlights the same general reluctance to seek care by those with alcohol-related disorders in the civilian population.

Stigma and barriers to care have been identified in civilian workplaces as well (Fikretoglu, Guay, Pedlar, & Brunet, 2008; Wang, 2006). Wang (2006), for example, has shown that 80% to 96% of those employees who might benefit from care do not seek it because their workplace has failed to recognise their treatment needs. This barrier is in addition to the issues of accessibility and acceptability.

Section 3.2 explores patterns of help seeking, stigma and barriers to care identified by ADF members both with and without mental disorders. These issues were explored within each of the Services as well, to determine whether different issues emerged according to rank and sex.

### **3.1.3 Impact of multiple deployments and trauma exposure on reported psychological distress**

There has been an ongoing interest in the impact of repeated deployments as a result of the operational tempo in the Middle East Area of Operations (MEAO). Particularly in the United States, there have been concerns about the number and duration of deployments of personnel and the impact this may have on the development of mental disorders. However, it remains unclear whether the adverse effects of multiple deployments are consequences of the duration of time in the combat zone, the number of deployments that a soldier has experienced, or the amount of traumatic stress the individual has been exposed to.

A study of 5,547 regular troops from the United Kingdom in 2003 found that individuals who had been deployed for 13 months or longer over a three-year period had a significantly greater risk (odds ratio (OR) = 1.5) of developing post-traumatic stress disorder (Rona et al., 2007). Similar trends were found for general psychiatric distress, severe alcohol problems and multiple physical symptoms. They found that the duration of deployment rather than the number of deployments was the critical factor. Other studies that have examined this question have focused on single deployments only and therefore do not clarify this issue (Ballone et al., 2000; Castro & Adler, 1999; Pierce, 1997; Ritzler, Campbell, & Valentine, 1999).

A more recent study examined the association between the number of deployments to Iraq and mental health outcomes in US forces (Reger, Gahm, Swanson, & Duma, 2009). Results of the study showed a significant association between the number of deployments and mental health outcomes, which included depression, post-traumatic stress disorder and alcohol usage. Soldiers with two deployments (OR=1.6,  $p=0.001$ ) were more likely to report post-traumatic stress disorder than soldiers with one deployment. However, the study did not examine the relationship between combat exposures and multiple deployments.

Another study of US troops deployed to Afghanistan and Iraq (Hoge, Auchterlonie, & Milliken, 2006), rather than examining the impact of multiple deployments, investigated the relationship between the intensity of combat exposure and psychiatric morbidity. They found that the intensity of the combat experience was directly related to the mental health outcomes following deployment.

The US study contrasted with a study of UK troops deployed to Iraq (Iversen et al., 2009). The latter study reported no adverse health effects, namely post-traumatic stress disorder and general psychological distress, in deploying regular forces. In the study, the deployments to Iraq were compared with other deployments; however, combat exposures and other traumas that the non-MEAO veterans had experienced were not taken into account.

A further issue to consider is the typical longitudinal trajectory of symptoms and the role this might play in the development of psychopathology following deployment. Delayed onset of post-traumatic stress disorder is a well-documented phenomenon (McFarlane, 2010a). As a consequence, it is important to follow populations over time before prematurely making conclusions about the absence of an effect of deployment on health. For example, in a follow-up study of active and National Guard soldiers in the US following combat in Iraq (J. L. Thomas et al., 2010), rates of post-traumatic stress disorder, depression, alcohol misuse and aggressive behaviour remained stable for the active service soldiers, but the duration of the disorders increased by all forms of case definition from three to 12 months in the National Guard soldiers. This indicates that there may be some quite different trends in subgroups of serving personnel. However, those individuals with significant symptomatology are also at risk of being discharged, which means that these types of longitudinal studies focusing on active service components will miss the most affected individuals.

It is also important to establish longitudinal relationships for a range of disorders. For example, Marx et al. (2009) found that when the neuropsychological changes from deployment were followed up, it was only post-traumatic stress disorder that was associated with significant longer-term neuropsychological deficits. The same effect was not apparent for individuals with depression. Also, alcohol usage and deployment-related head injury were not related significantly to neuropsychological outcomes.

While there is a substantial literature demonstrating the relationship between the severity of exposure to traumatic stress and the risk of developing post-traumatic stress disorder (McFarlane, 2010a, 2010b), this relationship has not been examined in relation to multiple traumatisation. It remains a fundamentally important question whether multiple trauma exposures progressively sensitise an individual and increase the risk of subsequent psychiatric disorders. The only major literature on this question has examined the effects of childhood abuse and neglect on the risks of adult psychopathology. This relationship is well accepted (Houston, Shevlin, Adamson, & Murphy, 2011; Zinzow et al., 2011).

One of the most significant studies examining this question involved a longitudinal follow-up study of a community sample of children. It highlighted the prevalence of traumatic events in the community and found that a history of multiple traumas increased the risks of psychopathology (Copeland, Keeler, Angold, & Costello, 2007). Furthermore, it has been shown that subsequent trauma exposures significantly affect the remission of post-traumatic stress disorder (Perkonig et al., 2005). Hence, the lifetime history of traumatic events is a critical issue in determining the outcome and probability of post-traumatic stress disorder and a range of other psychological disorders (Storr, Ialongo, Anthony, & Breslau, 2007).

While the current study did not examine the underlying mechanisms of psychological disorder, there is a substantial body of literature about the mechanisms of sensitisation and kindling which are core underlying principles to understanding the mechanisms and consequences of the progressive recruitment of symptomatology. A related construct, for example, is that of allostatic load (McFarlane, 2009).

Section 3.3 examines the impact of multiple deployments on the continuous measures of psychopathology used in this study, covering post-traumatic stress disorder symptoms, psychological distress, alcohol use and abuse, and depression. The relationship between these symptoms and the number of deployments experienced by ADF members is examined. Second, the number of traumatic stresses is examined in the participants of the survey who had not been deployed to the MEAO.

## 3.2 Help seeking, stigma and barriers to care

- Almost one in five ADF members in the sample reported seeking help in the past 12 months for a stress-related, emotional, mental health or family problem.
- Other ranks and non-commissioned officers were significantly more likely to seek help than officers.
- Personnel who had been deployed were significantly more likely to seek help.
- The highest rated barrier to care was concern that seeking help would reduce deployability.
- Few ADF personnel reported not knowing where to get help or difficulty in getting time off work.

A fundamental component of the ADF mental health strategy has been the development and implementation of mental health literacy programs. The focus of these programs has been to inform personnel when, where and how to seek care. This section provides insight into the effectiveness of these programs by exploring patterns of help seeking, stigma and barriers to care. The data presented are self-reported data from a weighted sample of ADF personnel who had not been deployed to the MEAO (N=30,848) or the Health and Wellbeing Survey sample (see Annex B for details). Associated demographic predictors, including sex, rank and Service status, are described. Finally, a summary is provided of how these rates compare to national and international literature.

Help seeking was assessed in the sample using the question: 'Have you sought help for a stress, emotional, mental health or family problem in the last 12 months?'

Stigma and barriers to care were explored by asking the sample to rate on a five-point scale (strongly disagree, disagree, uncertain, agree, strongly agree) how much each of the concerns listed below might affect their decision to seek help. The response categories of 'strongly agree' and 'agree' were then combined to produce the prevalence rates for each of the six types of stigma and barriers to care.

Three types of stigma were covered in this study:

- It would harm my career or career prospects.
- People would treat me differently.
- I would be seen as weak.

Three types of barriers to care were covered in this study:

- I wouldn't know where to get help.
- I would have difficulty getting time off work.
- It would stop me from being deployed.

### 3.2.1 Prevalence of help seeking in the health and wellbeing sample

Table 3.2 summarises help seeking in currently serving ADF members for the demographic predictors of sex, rank and Service status for personnel who had not been deployed to the MEAO.

**Table 3.2:** *Estimated percentage of the non-MEAO sample who had sought help for a stress-related, emotional, mental health or family problem in the previous 12 months*

		Number (N=30,848)	%	95% CI
<b>Total sought help in past 12 months</b>		5,522	17.9	17.3–18.5
<b>Males</b>		4,190	16.0	15.4–16.7
	Navy	1,019	16.2	14.9–17.5
	Army	2,183	15.9	15.0–16.9
	Air Force	988	16.0	14.9–17.0
<b>Females</b>		1,332	28.5	27.0–29.9
	Navy	403	26.9	24.1–29.7
	Army	508	27.7	25.4–30.0
	Air Force	420	31.2	28.7–33.7
<b>Navy</b>		1,422	18.3	17.1–19.5
<b>Army</b>		2,692	17.3	16.4–18.2
<b>Air Force</b>		1,408	18.7	17.7–19.7
<b>Officers</b>		1,126	16.0	15.2–16.9
<b>Non-commissioned officers</b>		2,042	18.3	17.4–19.1
<b>Other ranks</b>		2,354	18.6	17.5–19.8
<b>Deployed</b>	Never	3,277	17.9	17.1–18.7
	Ever	2,246	17.9	17.0–18.8
<b>K10 caseness</b>	Very high	707	56.3	52.2–60.5
	High	1,174	35.9	33.5–38.3
	Moderate	1,607	20.8	19.5–22.1
	Low	1,948	10.7	10.1–11.4

A total of 17.9% of ADF members reported seeking help for a stress, emotional or mental health problem in the previous 12 months, with females being significantly more likely to seek help ( $p=0.02$ ).

In relation to rank, the overall proportion of personnel who sought help ranged from 16.0% to 18.6%. There was a significant effect of rank on help seeking; non-commissioned officers were 14% more likely to have sought help than officers (OR 1.14, 95% CI 1.04–1.3), and other ranks were 12% more likely to have sought help than officers (OR 1.12, 95% CI 1.01–1.25).

Deployment history was also a significant predictor of help seeking. Those who had been deployed were 10% more likely to have sought help than those who had never been deployed (OR=1.10, 95% CI 1.00–1.22,  $p=0.0497$ ).

There were no significant differences in the help-seeking behaviour of men across the three Services. When compared to Air Force females, females in the Army were 23% less likely to have sought help (OR 0.77, 95% CI 0.65–0.92) and Navy females were 35% less likely (OR 0.65, 95% CI 0.53–0.80).

To assess the impact of psychological distress on help-seeking behaviour, the proportion of ADF personnel who were very high, high, moderate and low scorers on the Kessler Psychological Distress Scale (K10 – which measures psychological distress) and who sought help were examined. There was a significant difference between the help-seeking behaviour of ADF personnel with different K10 caseness ( $p < 0.001$ ). Those with very high K10 scores were 10 times more likely to have sought help over the past 12 months than those with low K10 scores (OR=10.53, 95% CI 9.878–12.61). Likewise, those with high K10 scores were four times more likely to have sought help than those with low K10 scores (OR=4.67, 95% CI 4.12–5.29). Finally, ADF personnel who scored in the moderate range were twice as likely to have sought help as those in the low range (OR=2.16, 95% CI 1.95–2.40). Discussion of results and suggested avenues for further research into the study findings are provided in section 3.2.3.

### 3.2.2 Prevalence of stigma and barriers to care in the health and wellbeing sample

Tables 3.3–3.6 and figures 3.1–3.4 report the perceived stigma and barriers to care in currently serving ADF members who had not been deployed to the MEAO, categorised by sex, rank, Service and deployment history. To simplify interpretation, the response options of 'strongly agree' and 'agree' have been collapsed together in all tables and figures, and the prevalence rates were based on this combined percentage.

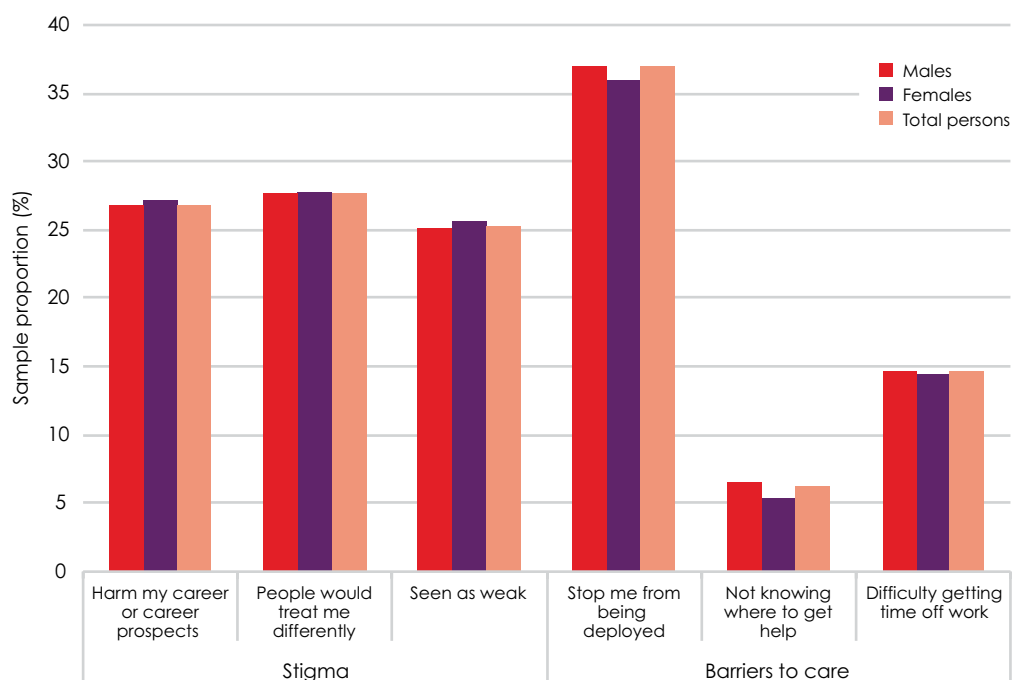
#### 3.2.2.1 Sex

Table 3.3 and Figure 3.1 report the prevalence of stigma and barriers to seeking care for each of the three ranking groups: officers, non-commissioned officers and other ranks.

**Table 3.3:** *Estimated prevalence of reported stigma and barriers to care in the non-MEAO subpopulation, by type and sex*

	Males (N=26,169)			Females (N=4,679)			Persons (N=30,848)		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Not knowing where to get help	1,689	6.5	(6.0, 6.9)	255	5.4	(4.7, 6.2)	1,943	6.3	(5.9, 6.7)
Difficulty getting time off work	3,853	14.7	(14.0, 15.4)	676	14.5	(13.3, 15.6)	4,529	14.7	(14.1, 15.3)
Harm my career or career prospects	7,032	26.9	(26.1, 27.7)	1,274	27.2	(25.8, 28.7)	8,306	26.9	(26.2, 27.7)
People would treat me differently	7,213	27.6	(26.7, 28.4)	1,299	27.8	(26.3, 29.3)	8,513	27.6	(26.9, 28.3)
Seen as weak	6,593	25.2	(24.4, 26.0)	1,198	25.6	(24.2, 27.0)	7,791	25.3	(24.5, 26.0)
Stop me from being deployed	9,691	37.0	(36.1, 37.9)	1,684	36.0	(34.4, 37.6)	11,376	36.9	(36.1, 37.7)

**Figure 3.1:** Proportion of combined 'agree' and 'strongly agree' responses to stigma and barriers to care, by type and sex



As can be seen in both Table 3.3 and Figure 3.1, the highest rated barrier to ADF personnel seeking help for a stress, emotional or mental health problem was the concern that help seeking would reduce their opportunity to deploy. A total of 36.9% of ADF personnel (36.0% of females and 37.0% of males) agreed that this was a concern.

The highest rated perceived stigma was fear that seeking help would result in people treating them differently (27.6%, CI 95% 26.9, 28.3). This was followed closely by concerns that help seeking would harm their career or career prospects (26.9%, CI 95% 26.2, 27.7) and fear that they would be seen as weak (25.5%, CI 95% 24.5, 26.0).

Awareness of where to seek help was widespread, and most people indicated that they thought they could get time off work to seek help. Only 6.3% of ADF personnel reported not knowing where to get help as a barrier to seeking help, and only 14.7% reported that they would have difficulty getting time off work.

The only significant difference for sex in relation to stigma and barriers to care was that females were 21% more likely than males to know where to get help (OR 0.79, 95% CI 0.67–0.94).

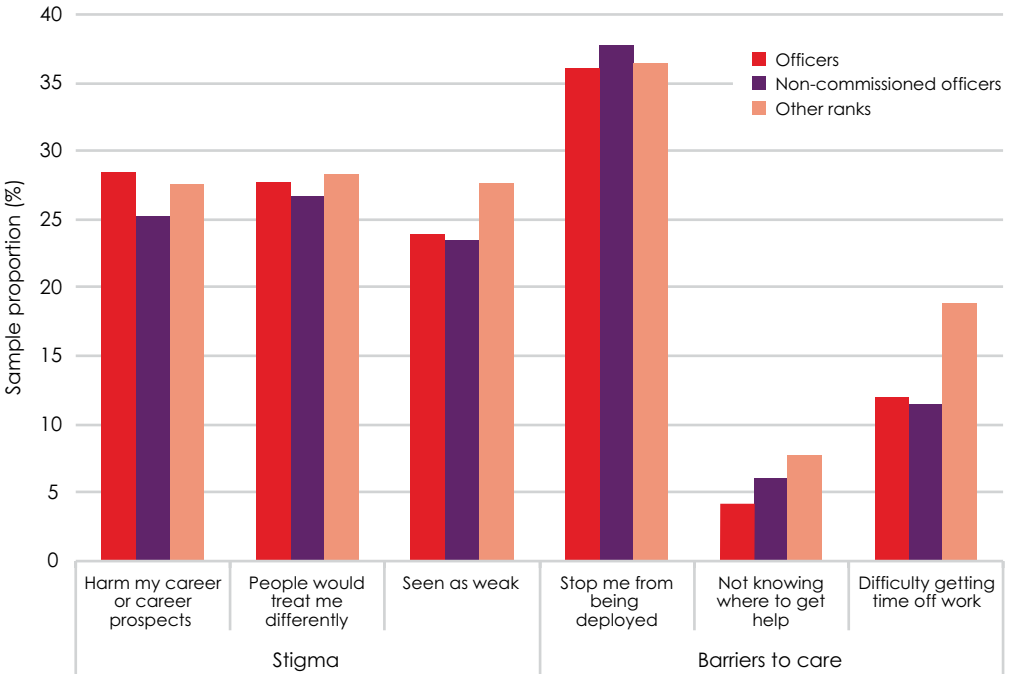
3.2.2.2 Rank

Table 3.4 and Figure 3.2 report the prevalence of stigma and barriers to seeking care for each of the three ranking groups: officers, non-commissioned officers and other ranks.

**Table 3.4:** Prevalence of reported stigma and barriers to care in the ADF, by type and rank

Wellbeing outcomes	Officers N=7,017			Non-commissioned officers N=11,188			Other ranks N=12,643		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Not knowing where to get help	295	4.2	(3.7, 4.7)	677	6.1	(5.5, 6.6)	971	7.7	(6.8, 8.5)
Difficulty getting time off work	844	12.0	(11.2, 12.8)	1,292	11.5	(10.8, 12.3)	2,393	18.9	(17.7,20.2)
Harm my career or career prospects	1,992	28.4	(27.3, 29.5)	2,832	25.3	(24.4, 26.3)	3,482	27.5	(26.1, 29.0)
People would treat me differently	1,945	27.7	(26.6, 28.8)	2,982	26.7	(25.7, 27.6)	3,585	28.4	(26.9, 29.8)
Seen as weak	1,683	24.0	(22.9, 25.0)	2,624	23.5	(22.5, 24.4)	3,485	27.6	(26.1, 29.0)
Stop me from being deployed	2,539	36.2	(35.0, 37.4)	4,227	37.8	(36.7, 38.8)	4,610	36.5	(34.9, 38.0)

**Figure 3.2:** Proportion of combined 'agree' and 'strongly agree' responses to stigma and barriers to care, by rank



Although the primary barrier to care for all ranks was concern about not being able to deploy, this was not significantly different across the rank groups. Generally, other ranks were significantly more likely to report barriers to care while officers, significantly, were more likely to report stigma.

In terms of barriers, other ranks were 85% more likely not to know where to get help compared to officers (OR 1.85, 95% CI 1.55–2.20) and 29% less likely than non-commissioned officers (OR 1.29, 95% CI 1.10–1.51). Non-commissioned officers were also 43% less likely than officers not to know where to seek care (OR 1.43, 95% CI 1.23–1.68).

Other ranks were 45% more like to agree that they would have difficulty getting time off work than officers (OR 1.45, 95% CI 1.29–1.62) and 65% more likely than non-commissioned officers (OR 1.65, 95% CI 1.47–1.85). However, non-commissioned officers were 12% less likely than officers to agree that they would have difficulty (OR 0.88, 95% CI 0.79–0.98).

In terms of stigma, officers were 83% more likely to agree that seeking help would harm their career compared to other ranks (OR 0.83, 0.75–0.91) and 77% more likely than non-commissioned officers (OR 0.77, 95% CI 0.71–0.83). Similarly, officers were 88% more likely than other ranks to agree that they would be treated differently (OR 0.88, 95% CI 0.80–0.97) and 86% more likely than non-commissioned officers (OR 0.86, 95% CI 0.79–0.93).

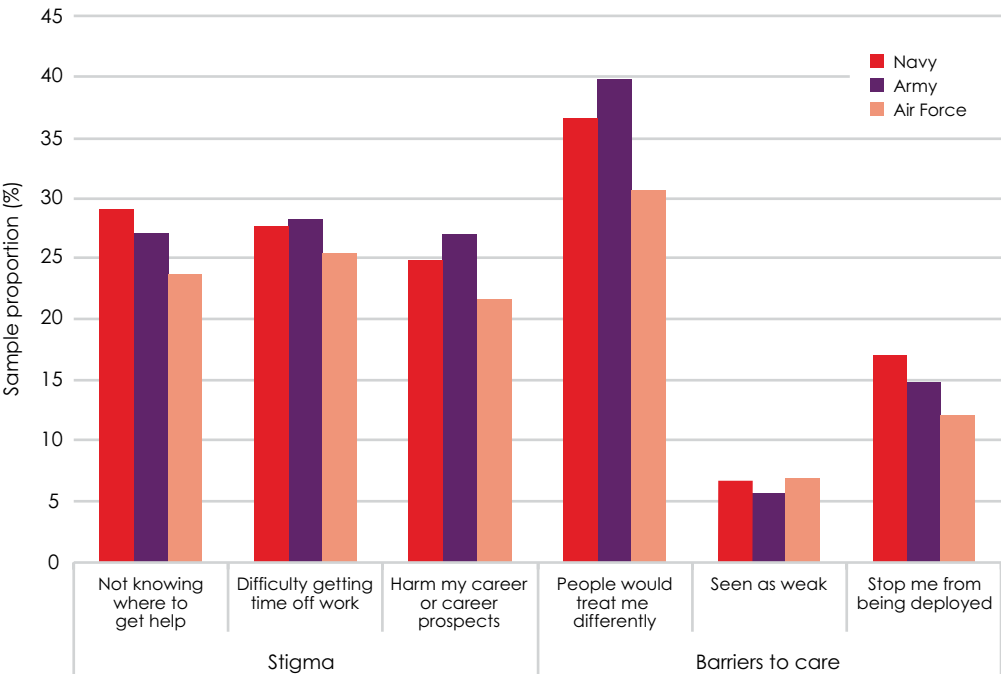
### 3.2.2.3 Service

Table 3.5 and Figure 3.3 summarise the prevalence of stigma and barriers to seeking care for each of the single Services: Navy, Army and Air Force.

**Table 3.5:** *Prevalence of reported stigma and barriers to care in the ADF, by type and Service*

	Navy (N=7,784)			Army (N=15,526)			Air Force (N=7,538)		
	N	%	95% CI	N	%	95% CI	N	%	95% CI
Not knowing where to get help	528	6.8	(5.9, 7.6)	889	5.7	(5.1, 6.3)	526	7.0	(6.3, 7.7)
Difficulty getting time off work	1,320	17.0	(15.7, 18.2)	2,299	14.8	(13.9, 15.8)	910	12.1	(11.2, 12.9)
Harm my career or career prospects	2,273	29.2	(27.7, 30.7)	4,239	27.3	(26.2, 28.4)	1,793	23.8	(22.7, 24.9)
People would treat me differently	2,168	27.9	(26.4, 29.3)	4,413	28.4	(27.3, 29.6)	1,931	25.6	(24.5, 26.7)
Seen as weak	1,938	24.9	(23.5, 26.3)	4,215	27.1	(26.0, 28.3)	1,638	21.7	(20.7, 22.8)
Stop me from being deployed	2,859	36.7	(35.2, 38.3)	6,202	39.9	(38.7, 41.2)	2,315	30.7	(29.5, 31.9)

**Figure 3.3:** Proportion of combined 'agree' and 'strongly agree' responses to stigma and barriers to care, by type and Service



Air Force personnel, in general, were the least likely to report stigma and barriers to care. This pattern was consistent for both males and females.

Army personnel were 29% less likely than those in the Air Force to know where to get help (OR 0.71, 95% CI 0.60–0.84).

Personnel in the Army were 21% more likely than those in the Air Force to agree that they would have difficulty getting time off work (OR 1.21, 95% CI 1.07–1.37), while those in the Navy were 32% more likely than those in the Air Force (OR 1.32, 95% CI 1.17–1.50).

Those in the Army were 16% more likely than those in the Air Force to agree that seeking help would harm their career or career prospects (OR 1.16, 95% CI 1.06–1.27). Those in the Navy were 21% more likely to agree than those in the Air Force (OR 1.21, 95% CI 1.09–1.34).

Those in the Army were 14% more likely than those in the Air Force to agree that people would treat them differently (OR 1.14, 95% CI 1.04–1.24).

Those in the Army were 30% more likely than those in the Air Force to agree that they would be seen as weak (OR 1.30, 95% CI 1.19–1.43). Those in the Army were 23% more likely than those in the Navy to agree that they would be seen as weak (OR 1.23, 95% CI 1.11–1.36).

Those in the Army were 40% more likely than those in the Air Force to agree that seeking support would stop them from being deployed (OR 1.40, 95% CI 1.29–1.52). Those in the Navy were 21% more likely than those in the Air Force to agree that it would stop them from being deployed (OR 1.21, 95% CI 1.10–1.27). Those in the Army were 16% more likely than those in the Navy to agree that it would stop them from being deployed (OR 1.16, 95% CI 1.06–1.27).

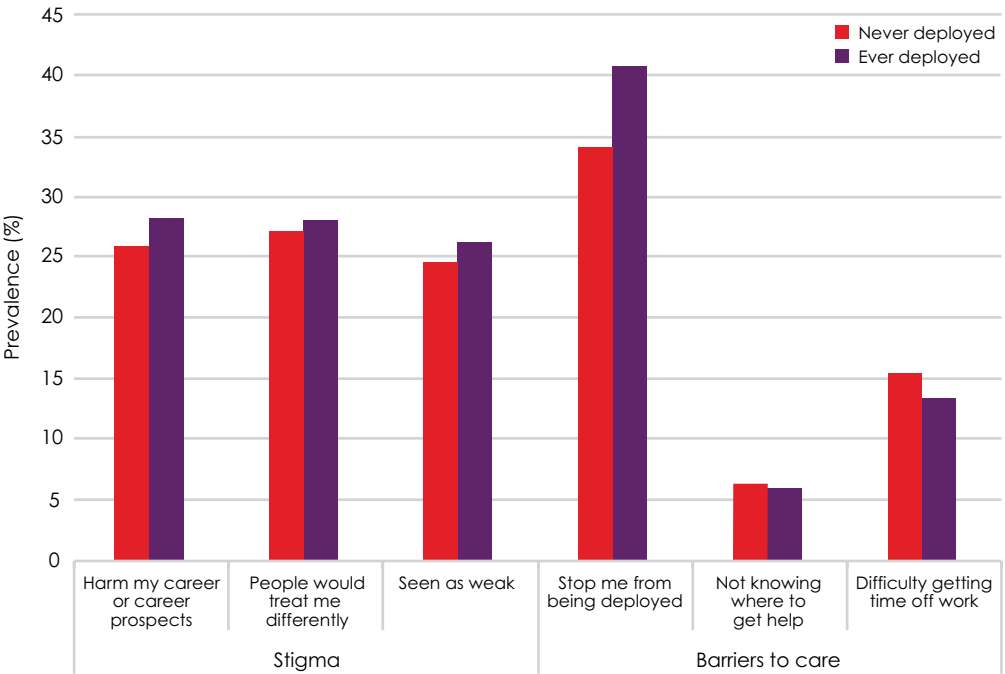
### 3.2.2.4 Deployment history

Table 3.6 and Figure 3.4 compare the stigma and barriers to care in ADF members who had been on an operational deployment (deployed) and those who had not (never deployed).

**Table 3.6:** Prevalence of reported stigma and barriers to care in the ADF, by type and deployment history

	Never deployed (N=16,966)			Deployed (N=12,899)		
	N	%	95% CI	N	%	95% CI
Not knowing where to get help	1,187	6.5	(5.9, 7.0)	757	6.0	(5.4, 6.6)
Difficulty getting time off work	2,836	15.5	(14.7, 16.3)	1,693	13.5	(12.6, 14.4)
Harm my career or career prospects	4,752	26.0	(25.0, 26.9)	3,553	28.3	(27.2, 29.5)
People would treat me differently	4,993	27.3	(26.3, 28.2)	3,520	28.1	(27.0, 29.2)
Seen as weak	4,497	24.6	(23.6, 25.5)	3,294	26.3	(25.2, 27.4)
Stop me from being deployed	6,252	34.1	(33.1, 35.2)	5,124	40.9	(39.7, 42.1)

**Figure 3.4:** Prevalence of reported stigma and barriers to care in the ADF, by type and deployment history



Those who had been deployed were 15% more likely to indicate that seeking help would harm their career prospects than those who had never been deployed (OR 1.15, 95% CI 1.05–1.25).

Those who had been deployed were 25% more likely to agree that it would stop them from being deployed than those who had never been deployed (OR 1.25, 95% CI 1.16–1.35).

Those who had been deployed were 12% more likely to agree that they would be seen as weak than those who had never been deployed (OR 1.12, 95% CI 1.02–1.22).

### 3.2.3 Discussion

Almost one in five ADF members in the sample (17.9%) reported that they had sought help for a stress-related, emotional, mental health or family problem in the last 12 months. Female personnel were more likely to have sought help than males, and non-commissioned officers and the other ranks were significantly more likely to have sought help than officers. Deployment history was also a significant predictor of help seeking. Those who had been deployed were 10% more likely to have sought help than those who had never been deployed. In relation to Service differences, there was no difference for males, but Air Force females were more likely to have sought help than their Army and Navy counterparts.

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

The highest rated barrier to personnel seeking help for a stress-related, emotional, mental health or family problem was concern that seeking help would reduce their deployability. The highest rated perceived stigmas were that people would treat them differently and that seeking care would harm their careers.

These perceptions have implications for the ADF, and consideration is required as to what administrative steps and processes could assist in uncoupling the rationale that equates mental health concerns with negative and perceived punitive results for social and personal status within the unit or group and career opportunities. From an organisational perspective, the risks should be counterbalanced between deploying individuals and having them attend work with mental disorders that are undiagnosed and untreated versus ensuring that treatment is received while the individual continues in their role. Deployment is an important part of military service; the fact that it is also the most common barrier preventing ADF personnel from seeking care is a matter that requires careful consideration. The challenge is to develop a system where an individual can seek care but there is no effect on the capability of a unit if a less-than-ready person is deployed.

On a more positive note, the responses suggest that people have adequate information about where to access help and that difficulty getting time off work in order to access services is not a common concern. This indicates that information on resources is easily accessible to most ADF members.

An interesting finding is the similar proportions of females and males who are concerned with being seen as 'weak'. This finding contradicts previous research, which has traditionally focused on issues of hyper-masculinity among military males. The findings in this section suggest that military expectations regarding resilience, strength, toughness and so on are internalised by females as well as males, and that both fear 'loss of face' by being seen as weak.

Air Force personnel were, in general, the least likely to report stigma and barriers to care. This pattern was consistent for both males and females. The only concern that was more prevalent among Air Force personnel was not knowing where to get help. This implies a need for a greater focus on de-stigmatisation of mental problems in both the Army and the Navy.

### 3.2.3.1 Comparison with international militaries

The help-seeking behaviours, as well as stigma and barriers to care, identified in the ADF show a similar pattern to those reported in other military samples. International research suggests that, although a significant proportion of personnel report mental disorders following deployment, a relatively small percentage of these personnel access mental health support and intervention (Gould et al., 2010; Hoge et al., 2004; Kim et al., 2010).

In their study of Army and Marine veterans returning from combat deployments in Iraq and Afghanistan, Hoge et al. (2004) found that, while the percentage of personnel with mental health issues following deployment ranged from 17.1% to 19.5%, only 23–40% of that sample had sought help for their symptoms in the 12 months post-deployment. Similarly, Kim et al. (2010) found, in a study of active duty and National Guard personnel returning from deployments to Iraq, that although 33–45% of personnel reported mental health issues in the three months post-deployment, only 13–17% of that population accessed any form of mental health care within that time. Similarly, of those reporting mental health issues in the 12 months post-deployment, only 13–27% of the sample accessed care.

### 3.2.4 Proposed further analyses

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

- identifying the barriers to care that exist within medical and psychological services relating to assessment and appropriate referral
- identifying and contrasting the characteristics of those individuals who are able to access care and those who identify barriers
- examining the relationship between stigma and barriers to care in those with and without disorders.

### 3.3 Impact of multiple deployments and trauma

This section examines the impact of multiple deployments on the continuous measures of psychopathology used in this study, covering post-traumatic stress disorder symptoms, psychological distress, and alcohol use and abuse. The relationship between these symptoms and the number of deployments experienced by the ADF population is examined. Second, the number of traumatic stresses is examined in the participants of the survey who had not been deployed to the MEAO or the Health and Wellbeing Survey sample.

Self-reported post-traumatic stress was assessed using the Posttraumatic Stress Disorder Checklist (PCL) (Weathers, Litz, Herman, Huska, & Keane, 1993). The 17 questions of the PCL are scored from 1 to 5 and are summed to give a total score of between 17 and 85. PCL scores are categorised into four risk levels: low (17–29), moderate (30–39), high (40–49) and very high (50–85), which provide an indication of the risk of post-traumatic stress disorder.

General psychological distress was assessed using the Kessler Psychological Distress Scale (K10), a short 10-item screening questionnaire for psychological distress that was developed in the context of the US national co-morbidity study (Kessler et al., 2002). The 10 questions of the K10 are scored from 1 to 5 and are summed to give a total score of between 10 and 50. The categories of low (10–15), moderate (16–21), high (22–29) and very high (30–50) that are used in this report are derived from the cut-offs of the K10 that were used in the Australian national Mental Health and Wellbeing Survey (Slade, Johnston, Oakley Browne, Andrews, & Whiteford, 2009).

Alcohol consumption and problem drinking were examined using the Alcohol Use Disorders Identification Test (AUDIT) (Saunders, Aasland, Babor, de la Fuente, & Grant, 1993), a brief self-report screening instrument developed by the World Health Organization. This instrument consists of 10 questions that examine the quantity and frequency of alcohol consumption (questions 1 to 3), possible symptoms of dependence (questions 4 to 6), and the reactions or problems related to alcohol (questions 7 to 10). The AUDIT is an instrument that is widely used in epidemiological and clinical practice for defining at-risk patterns of drinking. Babor et al. (2001), in describing the significance of the different zones of risk, suggest that scores of 0–7 (Zone I) represent those who would benefit from alcohol education; scores of 8–15 (Zone II), those who are likely to require simple advice; scores of 16–19 (Zone III), those for whom counselling and continued monitoring is required; and scores of 20–40 (Zone IV), those who require diagnostic evaluation and treatment.

The total numbers of major operations that ADF members had been deployed on was obtained from the self-report questionnaire. These operations were defined according to the following criteria: warlike, peacekeeping, peace-monitoring or humanitarian support. The lifetime number of deployments was categorised as follows: 0, 1, 2, 3, 4, 5, 6 or more.

Lifetime exposure to trauma was examined as part of the post-traumatic stress module of the Composite International Diagnostic Interview. The events examined were combat (military or organised non-military group); being a peacekeeper in a war zone or place of ongoing terror; being an unarmed civilian in a place of war, revolution, military coup or invasion; living as a civilian in a place of ongoing terror for political, ethnic, religious or other reasons; being a refugee; being kidnapped or held captive;

being exposed to a toxic chemical that could cause serious harm; being in a life-threatening automobile accident; being in any other life-threatening accident; being in a major natural disaster; being in a man-made disaster; having a life-threatening illness; being beaten by a parent or guardian as a child; being beaten by a spouse or romantic partner; being badly beaten by anyone else; being mugged, held up, or threatened with a weapon; being raped; being sexually assaulted; being stalked; having someone close to you die; having a child with a life-threatening illness or injury; witnessing serious physical fights at home as a child; having someone close experience a traumatic event; witnessing someone badly injured or killed or unexpectedly seeing a dead body; accidentally injuring or killing someone; purposefully injuring, torturing or killing someone; seeing atrocities or carnage such as mutilated bodies or mass killings; experiencing any other traumatic event; and experiencing any other event that the participant did not want to talk about. The number of total lifetime events experienced by each individual was initially categorised in the same way as deployments. In addition, the number of traumatic events was treated as a continuous variable (see figures 3.5–3.9).

### 3.3.1 Number of deployments

The tables in this section summarise the impact of multiple deployments on self-reported psychological distress (K10), self-reported post-traumatic stress (PCL) and self-reported alcohol abuse and dependence (AUDIT).

#### 3.3.1.1 Psychological distress (K10)

**Table 3.7:** Odds ratio (CI) for levels of psychological distress for number of deployments compared to deployment status

No. of deployments	At least 'very high'	At least 'high'	At least 'moderate'
6+ versus 0	0.76 (0.59, 1.00)	0.71 (0.62, 0.82)	0.59 (0.54, 0.65)
5 versus 0	0.56 (0.38, 0.84)	0.59 (0.49, 0.72)	0.65 (0.57, 0.74)
4 versus 0	0.55 (0.39, 0.76)	0.64 (0.54, 0.75)	0.70 (0.63, 0.78)
3 versus 0	0.82 (0.66, 1.03)	0.71 (0.62, 0.81)	0.65 (0.59, 0.71)
2 versus 0	0.48 (0.39, 0.61)	0.64 (0.57, 0.72)	0.62 (0.57, 0.66)
1 versus 0	0.79 (0.65, 0.96)	0.77 (0.69, 0.86)	0.69 (0.64, 0.74)
p-value	p<0.001	p<0.001	p<0.001

The data in Table 3.7 indicate that there is a significant effect, with more distress being associated with a lower number of deployments.

In particular, if psychological distress is considered to be at least moderate compared to low, it can be concluded that individuals with at least one deployment are less likely to have very high, high or moderate psychological distress compared to those who have never been deployed.

In other words, the probability of obtaining a low psychological distress score appears to be greater for those who have been deployed than for those who have never been deployed. This indicates that, for the various level of psychological distress as measured by the K10, more deployments are associated with lower scores.

For example, the probability of having a score of at least moderate was 31% (OR 0.69, 95% CI 0.64, 0.74) less likely than a K10 score of low after one deployment compared to those who had never been deployed. With six or more deployments, compared to those that have never been deployed, the probability of scoring at least moderate on the K10 was 41% (OR 0.59, 95% CI 0.54, 0.65) less likely than a K10 score of low. This can be more easily seen in the predicted probabilities presented in Table 3.8 and Figure 3.5.

**Table 3.8:** Predicted probabilities for each level of K10 for each deployment category

	0	1	2	3	4	5	6+
Very high	4.3%	3.4%	2.1%	3.5%	2.4%	2.4%	3.3%
High	10.8%	8.6%	8.0%	7.6%	7.7%	7.0%	7.9%
Moderate	25.9%	20.2%	19.7%	19.7%	22.5%	21.7%	18.0%
Low	59.1%	67.8%	70.2%	69.1%	67.4%	68.9%	70.9%

**Figure 3.5:** Stacked area plot of the probability of K10 caseness for each level of deployment

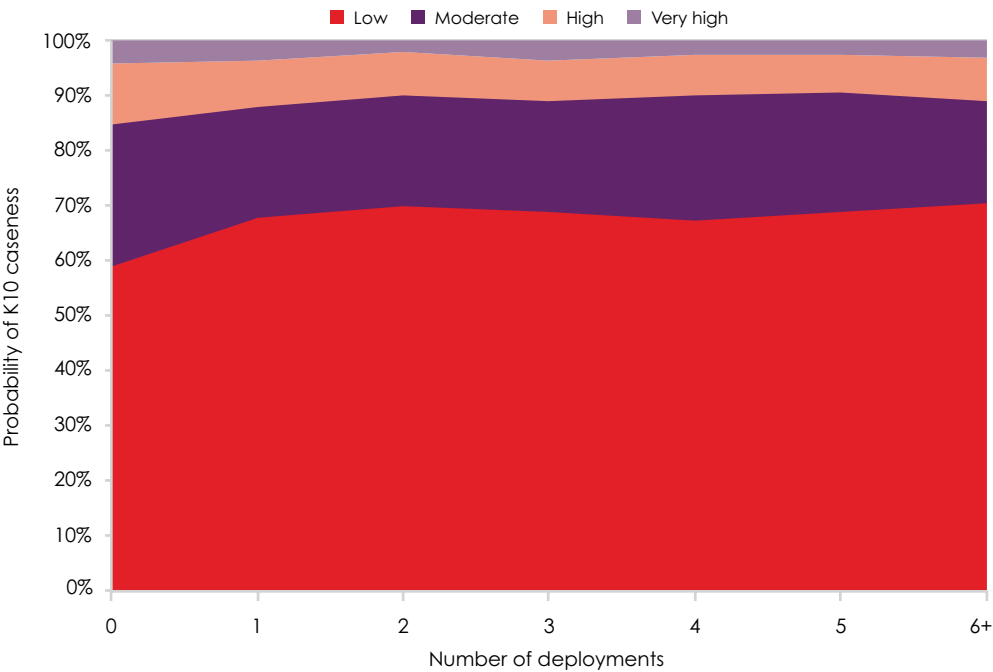


Figure 3.5 reflects Table 3.8 schematically. The increase in the low K10 bands is highlighted. This suggests that there is a degree of resilience that emerges in the groups who have had multiple deployments. However, the data do not indicate whether this is an associated or causal relationship. Importantly, individuals who develop psychological symptoms on deployment will be screened and identified using the ADF mental health screening process, which includes an immediate Return to Australia Psychological Screen (RtAPS) and a three- to six-month Post-operational Psychological Screen (POPS). Furthermore, individuals with significant symptomatology will be referred for treatment and, due to the medical employment classification system, may not

be redeployed until they are no longer symptomatic. Therefore, these results may demonstrate a healthy worker effect in the ADF for those categories and individuals who are deployed on multiple occasions.

### 3.3.1.2 Post-traumatic stress (PCL)

**Table 3.9:** Odds ratio (CI) for levels of post-traumatic stress for number of deployments compared to deployment status

Deployment	At least 'very high'	At least 'high'	At least 'moderate'
6+ versus 0	1.13 (0.9, 1.4)	1.09 (0.93, 1.27)	1.21 (1.09, 1.35)
5 versus 0	1.46 (1.10, 1.95)	1.17 (0.95, 1.44)	1.21 (1.05, 1.40)
4 versus 0	0.95 (0.72, 1.3)	1.01 (0.84, 1.21)	1.20 (1.07, 1.35)
3 versus 0	1.41 (1.14, 1.74)	1.15 (0.99, 1.33)	1.18 (1.06, 1.32)
2 versus 0	0.91 (0.75, 1.30)	0.92 (0.81, 1.05)	1.03 (0.94, 1.13)
1 versus 0	0.96 (0.79, 1.17)	0.99 (0.87, 1.13)	0.99 (0.91, 1.09)
p-value	p=0.001	p=0.15	p<0.001

It can be concluded from Table 3.9 that there is a significant difference between the numbers of deployments if a cut point of very high PCL ( $p=0.001$ ) or if a cut point of at least moderate ( $p<0.001$ ) is used.

If a cut point of at least moderate is considered, the results suggest that those deployed at least three times are between 18% and 21% more likely to have at least a moderate PCL score compared to those who have never been deployed. These data contrast to the K10 data. In general, there appears to be a weak but statistically significant effect of three or more deployments. An odds ratio of 1.18 (95% CI 1.06–1.31) is observed in individuals having at least a moderate score. This effect is also apparent in the very high band with an odds ratio of 1.41 (CI=1.14–1.74). Table 3.10 and Figure 3.6 show the predicted probabilities for each cut point of PCL against number of deployments.

**Table 3.10:** Predicted probabilities for each level of PCL for each deployment category

PCL	0	1	2	3	4	5	6+
Very high	2.8%	2.7%	2.5%	3.9%	2.6%	4.0%	3.1%
High	3.7%	3.7%	3.5%	3.5%	3.9%	3.5%	3.8%
Moderate	8.0%	8.0%	8.9%	9.4%	10.4%	9.6%	10.1%
Low	85.5%	85.6%	85.1%	83.3%	83.1%	83.0%	83.0%

**Figure 3.6:** Stacked area plot of the probability of PCL caseness for each level of deployment

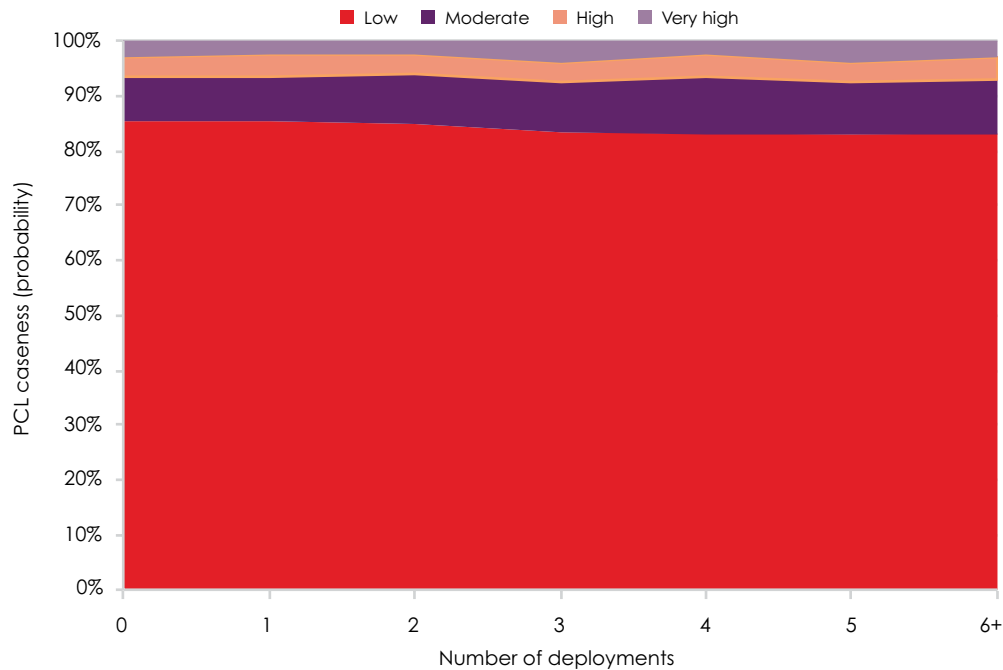


Figure 3.6 represents these findings schematically. Although there is a slight decline in the proportion of people with low PCL scores (and therefore an increase in the other bands), this effect seems minor. This result emphasises that the effects of multiple deployments, while statistically significant, do not have a major impact on the severity of post-traumatic symptoms. The majority of individuals are able to go on multiple deployments without developing major symptoms of post-traumatic stress disorder. Approximately 83% of individuals who safely deploy more than six times do so without significant adverse effects, according to the PCL.

In contrast to the K10, which is a global measure of psychological morbidity, the PCL does not demonstrate any resilience effect. To the contrary, there is a small but statistically significant effect suggesting progressive sensitisation. Again, these data do not take account of the fact that a number of individuals who develop significant symptoms after deployment are not redeployed. Hence, these data suggest that the screening process maintains a healthy workforce to be deployed but does not necessarily indicate a lack of significant impact of deployment.

### 3.3.1.3 Alcohol use and abuse (AUDIT)

**Table 3.11:** Odds ratio (CI) for levels of alcohol use and abuse for number of deployments compared to deployment status

Deployment	At least Zone IV	At least Zone III	At least Zone II
6+ versus 0	0.83 (0.54, 1.27)	0.84 (0.65, 1.09)	0.83 (0.75, 0.92)
5 versus 0	0.35 (0.16, 0.77)	0.58 (0.40, 0.85)	1.00 (0.87, 1.14)
4 versus 0	0.85 (0.50, 1.45)	0.83 (0.62, 1.12)	0.94 (0.84, 1.06)
3 versus 0	0.92 (0.60, 1.41)	0.81 (0.62, 1.05)	0.97 (0.88, 1.07)
2 versus 0	0.90 (0.64, 1.27)	0.92 (0.75, 1.13)	0.96 (0.88, 1.04)
1 versus 0	0.93 (0.65, 1.33)	1.05 (0.85, 1.30)	0.93 (0.85, 1.01)
p-value	p=0.3	p=0.05	p=0.03

**Table 3.12:** Predicted probabilities for each level of AUDIT for each deployment category

AUDIT	0	1	2	3	4	5	6+
Zone IV	1.5%	1.4%	1.3%	1.4%	1.3%	0.5%	1.2%
Zone III	2.4%	2.7%	2.3%	1.8%	2.0%	1.8%	2.1%
Zone II	23.1%	21.5%	22.6%	23.3%	22.6%	24.7%	20.2%
Zone I	73.0%	74.5%	73.9%	73.6%	74.1%	73.0%	76.5%

If a cut point of Zone IV is used, there is no effect due to deployment ( $p=0.3$ ). This demonstrates that there is no statistically significant effect of multiple deployments on individuals who develop significant alcohol problems. There was a marginally statistically significant effect ( $P=0.05$ ) for individuals scoring in at least Zone III on the AUDIT. This effect is possibly due to those individuals with at least a Zone III score being less likely (42%) to exhibit alcohol problems with five deployments compared to those with no previous deployments (OR 0.58, 95% CI 0.40, 0.85). If a cut point of at least Zone II is used, the effect is similar, with some evidence that those with more than six deployments are less likely (17%) to exhibit alcohol problems than those with no deployments (OR 0.83, 95% CI 0.75–0.92).

**Figure 3.7:** Stacked area plot of the probability of AUDIT caseness for each level of deployment

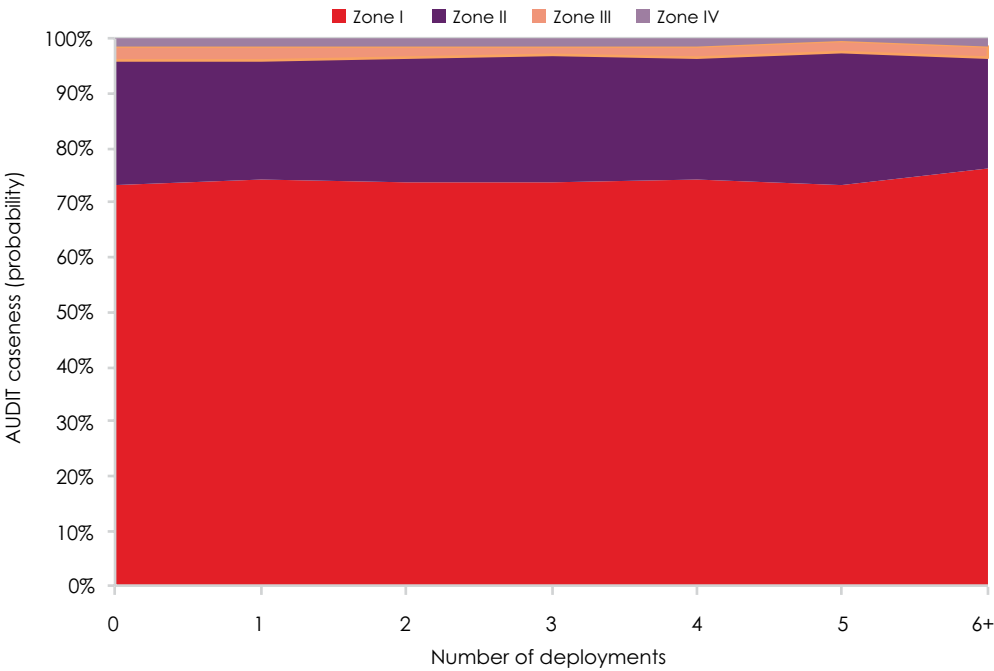


Figure 3.7 represents this data schematically. There is no significant impact demonstrated at multiple deployments on alcohol consumption patterns in the ADF. In particular, recent deployments to the Middle East have been associated with periods of abstinence. Hence, while there is typically considered to be an association between deployment and increased alcohol consumption, the lack of availability of alcohol on deployments suggests that this factor may need to be considered in explaining these data.

**3.3.2 Number of traumatic events**

The tables in this section summarise the impact of traumatic events on self-reported psychological distress (K10), self-reported post-traumatic stress (PCL) and self-reported alcohol abuse and dependence (AUDIT).

### 3.3.2.1 Psychological distress (K10)

**Table 3.13:** Odds ratio (CI) for each cut point describing K10 for number of traumatic events compared to no previous traumatic events

Traumatic events	At least 'very high'	At least 'high'	At least 'moderate'
6+ versus 0	2.90 (2.24, 3.76)	2.89 (2.50, 3.34)	2.50 (2.26, 2.76)
5 versus 0	1.46 (1.01, 2.12)	1.74 (1.43, 2.11)	1.75 (1.53, 2.00)
4 versus 0	1.30 (0.92, 1.84)	1.52 (1.26, 1.84)	1.61 (1.41, 1.82)
3 versus 0	1.26 (0.90, 1.76)	1.49 (1.25, 1.79)	1.41 (1.24, 1.59)
2 versus 0	1.52 (1.08, 2.12)	1.25 (1.03, 1.50)	1.34 (1.19, 1.51)
1 versus 0	1.10 (0.77, 1.57)	1.15 (0.96, 1.38)	1.04 (0.92, 1.17)
p-value	p<0.001	p<0.001	p<0.001

The data in Table 3.13 indicate that there is a significant effect associated with the number of traumatic events at each cut point. In particular, those who experienced more than six traumatic events were 2.9 times more likely to be classified as very high on the K10 than those who had not experienced an event. This is also reflected in the other cut points, where probability of at least a moderate K10 is more likely (2.5 times) for those who had experienced six or more traumatic events compared to those who experienced no events.

In summary, these data highlight that the cumulative risk of multiple trauma exposures becomes statistically significant for the moderate or above categories once an individual has experienced two or more traumas (see Table 3.13). This effect is also apparent in the high category. For multiple deployments, this is particularly significant for six or more traumas. The probabilities are reflected in Table 3.14, which demonstrates that with zero traumas the probability of having a low score is 70.1%, contrasted with six or more, when it decreases to 48.4%.

**Table 3.14:** Predicted probabilities for each level of K10 for each trauma category

K10	0	1	2	3	4	5	6+
Very high	2.6%	2.8%	3.9%	3.2%	3.3%	3.8%	7.2%
High	4.6%	5.4%	5.0%	7.2%	7.3%	8.2%	11.2%
Moderate	22.7%	22.5%	27.6%	27.1%	30.1%	30.9%	33.2%
Low	70.1%	69.2%	63.5%	62.5%	59.3%	57.2%	48.4%

**Figure 3.8:** Stacked area plot of the probability of K10 caseness for each level of trauma

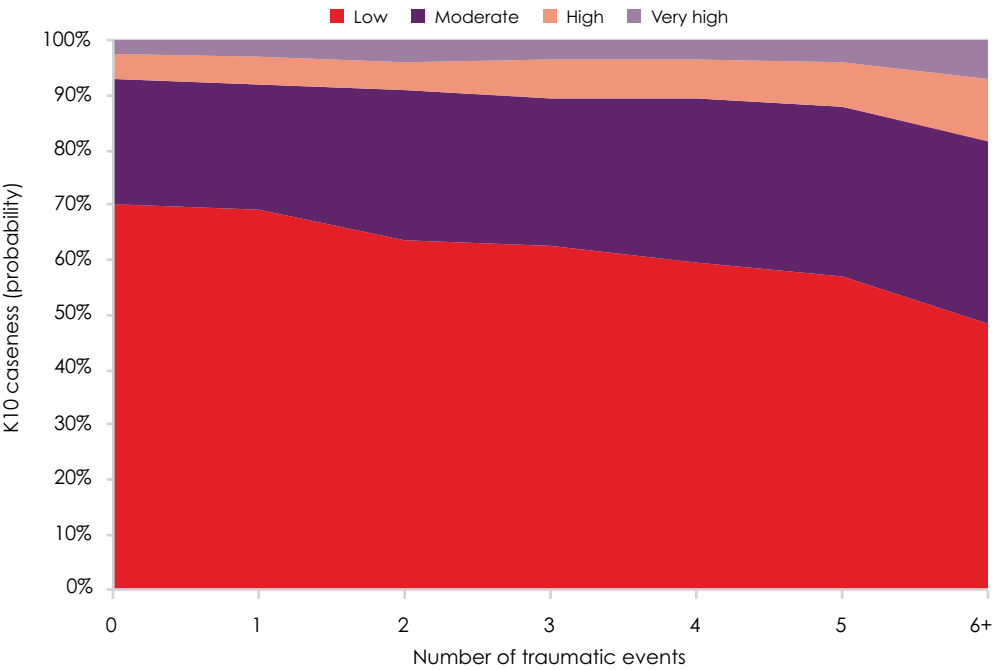


Table 3.14 and Figure 3.8 highlight the progressive accumulation of risk with the probability of at least moderate K10 increasing (and therefore the probability of low decreasing) as the number of traumatic events increases. This effect is generally apparent for all bands. This highlights that documenting and recording the number of trauma exposures is important as a determinant of general psychological distress of ADF members.

3.3.2.2 Post-traumatic stress (PCL)

**Table 3.15:** Odds ratio (CI) for each cut point describing PCL for number of traumatic events compared to no previous traumatic events

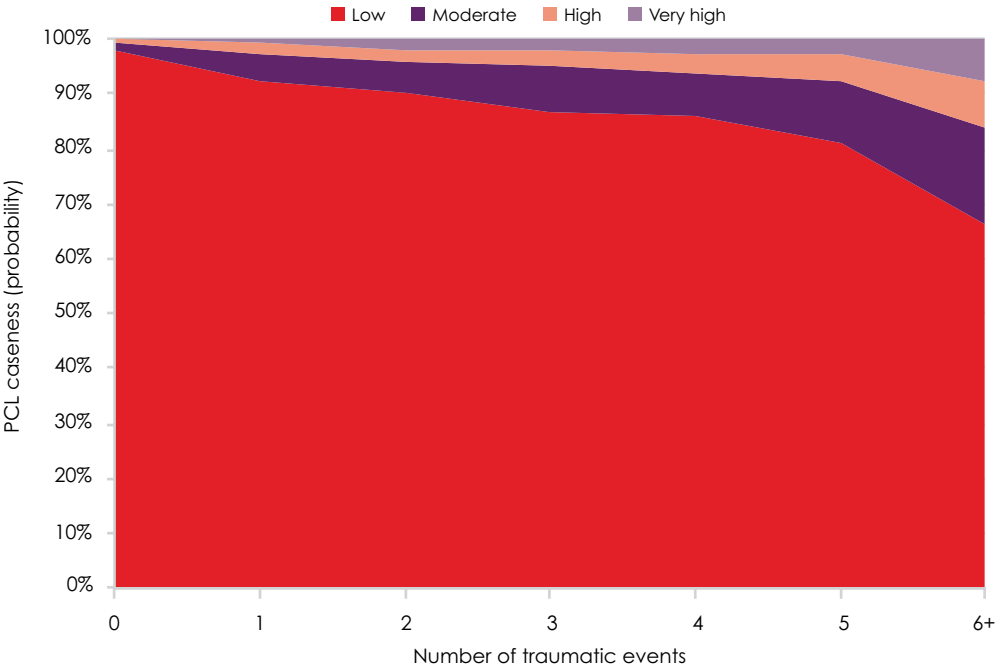
Traumatic events	At least 'very high'	At least 'high'	At least 'moderate'
6+ versus 0	52.30 (24.33, 112.42)	28.82 (18.12, 45.85)	28.33 (21.21, 37.85)
5 versus 0	18.44 (8.17, 41.6)	12.64 (7.70, 20.76)	13.04 (9.55, 17.81)
4 versus 0	18.32 (8.17, 41.07)	9.62 (5.85, 15.83)	8.84 (6.46, 12.09)
3 versus 0	13.60 (6.02, 30.74)	8.09 (4.91, 13.31)	8.45 (6.19, 11.52)
2 versus 0	10.33 (4.50, 23.71)	6.13 (3.68, 10.22)	5.86 (4.26, 8.05)
1 versus 0	4.97 (2.06, 11.95)	3.80 (2.24, 6.45)	4.50 (3.24, 6.26)
p-value	p<0.001	p<0.001	p<0.001

**Table 3.16:** Predicted probabilities for each level of PCL for each trauma category

PCL	0	1	2	3	4	5	6+
Very high	0.2%	0.8%	1.7%	2.2%	2.9%	3.0%	8.0%
High	0.5%	1.7%	2.3%	3.0%	3.1%	4.9%	8.3%
Moderate	1.1%	5.1%	5.6%	8.1%	7.7%	11.3%	17.7%
Low	98.2%	92.5%	90.4%	86.7%	86.2%	80.9%	66.1%

As can be seen in tables 3.15 and 3.16, there is a very strong impact of multiple trauma exposures on all bands of post-traumatic stress symptomatology. These probability and odds ratio tables highlight the fact that post-traumatic symptomatology should not be considered solely as though it had reached some pre-determined level of caseness. In particular, many individuals who have moderate symptomatology are clearly at risk of further elevation of symptom levels with later traumas. Furthermore, the impact of ageing and other effects can contribute to the occurrence of delayed onset post-traumatic stress disorder. Therefore, these data highlight a general risk of morbidity now and into the future for ADF members. As can be seen in these tables, the probabilities progressively increase with the number of traumas. The effect is apparent with one or more traumas – for example, for the very high category, the odds ratio is 4.97 (95% CI 2.06–11.5). The odds ratio of at least moderate symptomatology by the time an individual has six or more traumas is 28.3 (95% CI 21.21–37.85).

**Figure 3.9:** Stacked area plot of the probability of PCL caseness for each level of trauma



By the time an individual has had six or more traumas, there is approximately a 33% chance that the individual will have developed at least moderate post-traumatic stress symptomatology. Again, there is a progressive increase in post-traumatic symptomatology with the number of trauma exposures. This is clearly visible in Figure 3.9. These exposures may or may not have occurred while on deployment.

3.3.2.3 Alcohol use and abuse (AUDIT)

**Table 3.17:** Odds ratio (CI) for each cut point describing AUDIT for number of traumatic events compared to no previous traumatic events

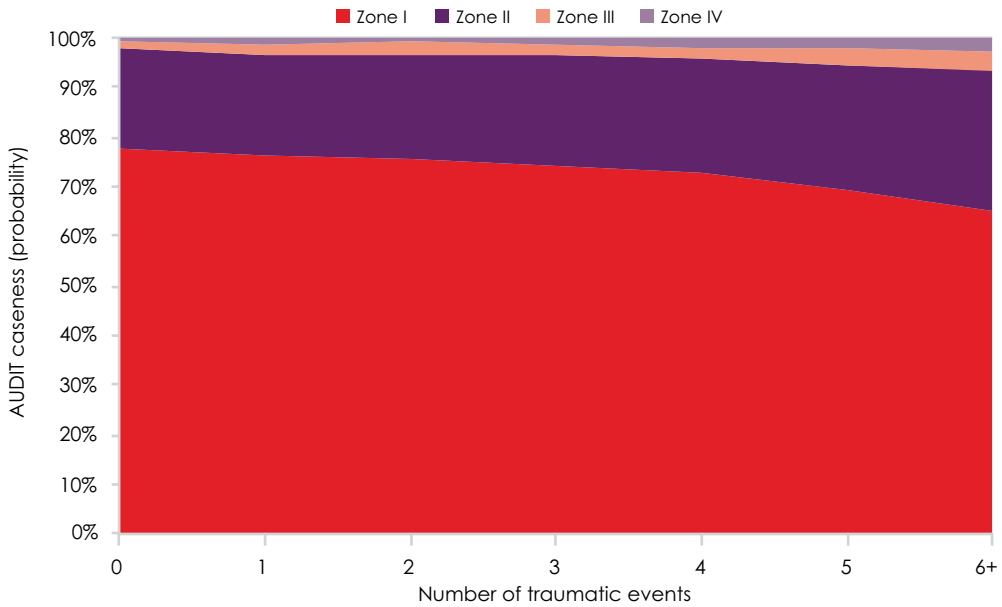
Traumatic events	At least 'Zone IV'	At least 'Zone III'	At least 'Zone II'
6+ versus 0	3.35 (2.05, 5.47)	3.03 (2.24, 4.10)	1.86 (1.66, 2.09)
5 versus 0	2.40 (1.28, 4.48)	2.57 (1.77, 3.73)	1.53 (1.31, 1.78)
4 versus 0	2.14 (1.15, 4.00)	1.78 (1.20, 2.65)	1.30 (1.12, 1.51)
3 versus 0	1.68 (0.93, 3.03)	1.46 (1.00, 2.13)	1.20 (1.04, 1.38)
2 versus 0	0.79 (0.37, 1.71)	1.60 (1.10, 2.34)	1.12 (0.97, 1.29)
1 versus 0	1.44 (0.77, 2.70)	1.42 (0.97, 2.09)	1.09 (0.95, 1.26)
p-value	p<0.001	p<0.01	p<0.01

Table 3.17 demonstrates a statistically significant increased risk of greater alcohol consumption on the AUDIT with increasing trauma exposures. Once an individual has had six or more traumas, the odds ratio of being in Zone IV is 3.35 (95% CI 2.05–5.47). This effect is generally apparent when the individual has had four or more traumas. In particular, the probability of falling into Zone III or above occurs at this level (OR 1.78, 95% CI 1.2–2.65).

**Table 3.18:** Predicted probabilities for each level of AUDIT for each trauma category

	0	1	2	3	4	5	6+
Zone IV	0.8%	1.2%	0.7%	1.4%	1.8%	2.0%	2.8%
Zone III	1.4%	2.0%	2.9%	1.9%	2.2%	3.7%	3.8%
Zone II	20.0%	20.7%	20.7%	22.3%	23.2%	24.8%	28.3%
Zone I	77.7%	76.1%	75.7%	74.4%	72.8%	69.5%	65.1%

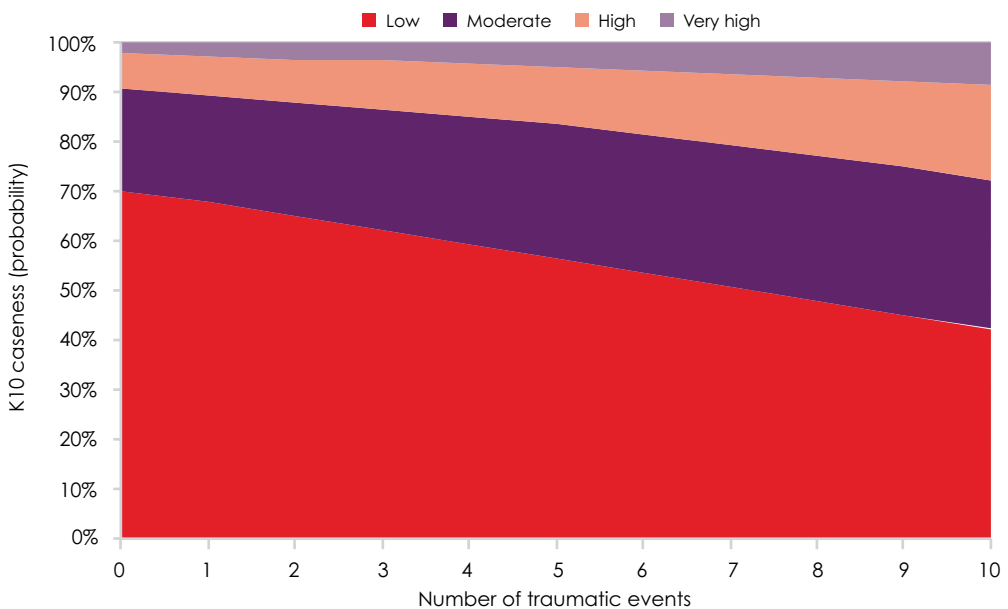
**Figure 3.10:** Stacked area plot of the probability of AUDIT caseness for each level of trauma



The relationship between the number of traumas and deployment is reflected in Table 3.18 and Figure 3.10. Although the probability of worsening alcohol health does not change greatly, there is some indication that it increases as trauma increases. One of the other issues is that there is often a two-way relationship between substance abuse and psychiatric morbidity. This may decrease the apparent trends demonstrated.

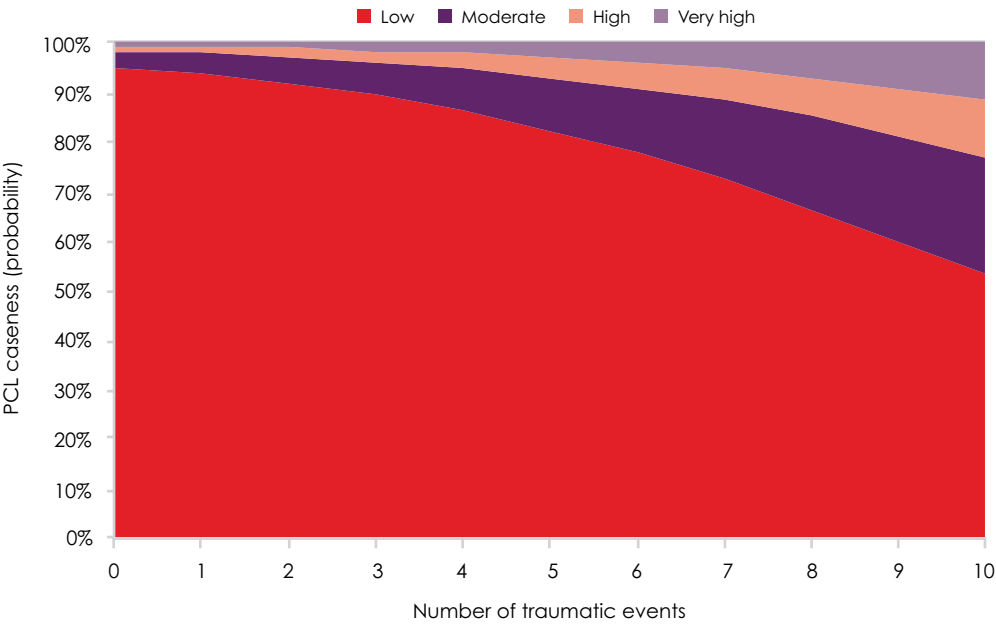
### 3.3.2.4 Psychological distress (K10)

**Figure 3.11:** Stacked area plot of the probability of K10 caseness versus trauma



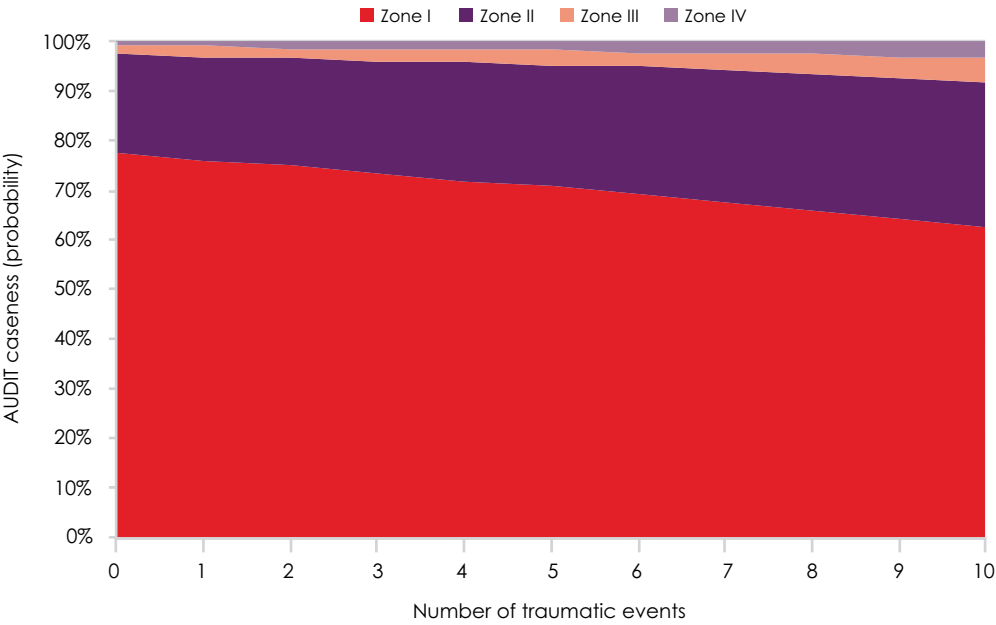
3.3.2.5 Post-traumatic stress (PCL)

Figure 3.12: Stacked area plot of the probability of PCL caseness versus trauma



3.3.2.6 Alcohol use and abuse (AUDIT)

Figure 3.13: Stacked area plot of the probability of AUDIT caseness versus trauma



### 3.3.3 Discussion

The findings in this study have important implications for mental health outcomes in the ADF. The absence of any direct association between the number of deployments that an ADF member has had in their career and mental health symptomatology, except for post-traumatic stress, is notable. Even the association identified for post-traumatic stress is a relatively weak effect. These data indicate that the number of deployments is not in itself a major risk factor for the onset of psychopathology. In other words, those members of the ADF who remain fit and healthy should be able to deal with multiple deployments without adverse effects on their health, except for a slowly increasing risk of post-traumatic stress disorder symptoms.

Cautions when interpreting the findings include that individuals who are adversely affected by deployments are unlikely to be redeployed. Therefore, the individuals who have multiple deployments are likely to be a particularly robust subsection of the ADF. In addition, those who are adversely affected may not have been captured by this study because they may have been medically discharged due to the development of a psychiatric disorder.

These results demonstrate the absence of an association between the number of deployments and psychological symptomatology, which contrasts with the results from the United States (Reger et al., 2009). The Mental Health Prevalence and Wellbeing Study did not examine duration or regularity of deployment. Rona et al. (2007) demonstrated a significant issue in the UK population, where symptoms were more likely to occur if individuals had been deployed for more than 13 months in a three-year period. One important issue not discussed in the UK study, however, was the significant rate of psychopathology in the control population that may have been related to a range of other combat-related deployments. The absence of an effect in the Iversen et al. study (2009) may have simply been due to the fact that the significance of these other deployments in contrast to that in Iraq was not adequately explored.

Another issue demonstrated in the present study is that the relatively low probability of caseness of those undergoing multiple deployments provides evidence that this is an unusually healthy group of ADF members. These results provide some evidence that the screening put in place following deployments ensures that those who undergo multiple deployments – particularly through operational mental health screening processes like RtAPS and POPs, a necessary antecedent of further deployment – are protected to a significant degree from the adverse consequences of multiple trauma exposure.

This study did not examine the number of traumas experienced by an individual during deployment. However, it remains the case that a significant number of deployed individuals are not exposed to combat or to situations of major human degradation or suffering. The deployed environment can provide protections from risks that are common in the Australian civilian environment, such as motor vehicle accidents and incidental assaults. Paradoxically, there may be some protective aspects of deployment that have not been fully articulated in those who are not deployed directly into frontline combat.

In contrast, there is a striking association between all forms of psychopathology and the number of trauma exposures that an individual has had in their life. The impact on general psychological distress as measured by the K10 shows that it is important to examine this relationship as a dimensional issue. While the number of individuals who score in the high bands progressively increases, so do those in the moderate band

where there is a lower probability of having an ICD-10 disorder. These findings of the progressive increases of symptoms provide substantial support for the emergence of sensitisation and kindling with repeated trauma exposures in this population (McFarlane, 2010a).

The emergence of this effect argues for the importance of taking a dimensional view of psychopathology in military forces. Addressing the emerging symptomatology through early intervention programs should be a significant priority.

This pattern was substantially demonstrated for post-traumatic stress disorder. Again, the recruitment of symptomatology occurred across the bands of severity. This finding highlights the issue of sub-syndromal post-traumatic stress. Furthermore, those individuals with sub-syndromal post-traumatic stress are at risk of delayed onset post-traumatic stress disorder (Andrews, Brewin, Philpott, & Stewart, 2007; Smid, Mooren, Van Der Mast, Gersons, & Kleber, 2009).

The evidence for this progressive emergence of symptoms on return to civilian life was particularly evident in the study of the US National Guard (J. L. Thomas et al., 2010). Therefore, the significance of this sub-syndromal disorder may only become an issue once an ADF member has left Defence. Such an individual would leave without any entitlement and there may be a significant delay before their symptoms become fully manifest. Subsequent trauma exposure is likely to play a significant role in the amplification of this distress (Perkonig et al., 2005). The fact that a further traumatic exposure has occurred when an individual leaves the military service does not negate the importance of prior sensitisation, which these data demonstrate are apparent while the individuals are members of the ADF.

The emergence of progressively increasing patterns of alcohol consumption with multiple trauma exposures may indicate self-medication. The gradient of increased alcohol usage is lower, suggesting that there is a delayed emergence of this pattern of self-medication (Leeies, Pagura, Sareen, & Bolton, 2010; McFarlane, 1998; McFarlane et al., 2009). The implication of these findings about the relationship between symptom development and alcohol usage is that programs that aim to restrict and minimise harmful use of alcohol need to address the issues of psychological distress and multiple traumatisation within the population.

The relationship between depressive symptoms and trauma exposures has been increasingly identified (Post, 1992, 2002; Post, Weiss, Smith, Li, & McCann, 1997). Furthermore, the significant effect of stressful and traumatic life events in the onset of depressive disorders has been shown to be substantial, despite genetic predispositions, particularly for the earlier episodes of illness (Kendler, Thornton, & Gardner, 2001). Therefore, across the spectrum of psychopathology, multiple trauma exposure is a major risk factor that should be addressed in the ADF.

The importance of the cumulative risk of multiple trauma exposures points to the limitations of pre-deployment and pre-enlistment screening to identify individuals at risk in the ADF. The optimal strategy for addressing this risk is to have active programs at a public health level to minimise the risks of violence, training accidents, and multiple deployments in combat roles over a short period of time. Furthermore, the identification of the early emergence of symptoms through health optimisation and wellbeing programs should be a major priority in the ADF environment. Solely focusing on the treatment and identification of a diagnosable disorder is likely to restrict opportunities for early intervention and prevention.

### 3.3.4 Proposed further analyses

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

- examining the relationship between the traumatic stress exposures prior to ADF service and after ADF service as relative risk factors for the emergence of symptomatology
- examining the classes of traumatic exposures that represent particular risks to ADF members
- examining the relationship between deployment and cumulative trauma exposure. In those individuals who have had multiple traumas in combat roles, the relationship between these traumas and the emergence of symptomatology requires examination
- examining the relationship between different patterns of alcohol usage, trauma exposure and symptom development
- analysing the relationship between multiple trauma exposure and ICD-10 disorder, using the lifetime history
- linking the combat exposure measured at RtAPS and POPS to the health and wellbeing dataset for deployed members.

### 3.3.5 Occupational factors in the data yet to be analysed

#### 3.3.5.1 Deployment history

Participants were asked whether they had been on an ADF operational deployment. If they had, they were asked the following details about their deployment(s):

- country deployed to
- operation name
- year(s) deployment(s) started
- number of times deployed in that year
- total number of months deployed in that year

They were also asked whether they had worked in the Middle East in a role outside the ADF.

#### 3.3.5.2 Physical health

Three items from the 45 and Up Study asked the participant to rate, in general, their eyesight, memory, and teeth and gums, on a scale from poor to excellent. A question about hearing was also asked in the same format.

The 15-item Patient Health Questionnaire (PHQ-15; Kroenke, Spitzer & Williams, 2002) was used to assess somatic symptom severity. Participants were asked how much they had been bothered by symptoms such as stomach pain, dizziness and trouble sleeping in the past four weeks.

### 3.3.5.3 Quality of life

Two items assessed quality of life. The first, from the SF-12 (Ware et al., 2002), asked participants to rate, in general, how their health is. The second, from the 45 and Up Study, asked participants to rate, in general, their quality of life. Both were rated on a five-point scale from poor to excellent.

### 3.3.5.4 Dietary supplements

Three items from the Millennium Cohort Study assessed how often the participant currently takes body building, energy and weight loss supplements on a scale from never to daily or almost daily.

### 3.3.5.5 Mild traumatic brain injury

Mild traumatic brain injury (MTBI) was assessed using a modified version of an MTBI screening measure (Pietrzak et al., 2009) that was based on a tool developed by the Defense and Veterans Brain Injury Center (Department of Veterans Affairs, 2007; Government Accountability Office, 2008). This measure asks if the participant has experienced any of a list of events that may lead to MTBI, such as blast or improvised explosive device explosion, vehicular accident, and fall. Those that endorsed any of these events were then asked how many times they experienced a list of indicators of MTBI – for example, loss of consciousness, being dazed, confused or 'seeing stars', and concussion – after such an event. Finally, participants were asked whether any of a list of symptoms got worse after any of the events and whether they had had any of these symptoms in the past week. This list comprised problems such as memory problems or lapses, irritability and headaches.

### 3.3.5.6 Trauma exposure

Traumatic exposure to 18 events was assessed. Events included direct combat, life-threatening accident and serious physical attack or assault. The original list of events was derived from the CIDI 2.1, with validated additions by McFarlane and colleagues for the Ash Wednesday Bushfire Study (McFarlane & Van Hooff, 2009). The measure was adapted for use in the LASER study. The number of times each event occurred, and the age of the participant when the event first occurred and the last time it occurred, were also assessed. Participants were also asked to nominate their worst event type.

### 3.3.5.7 Sleep

Sleep was assessed using the Sleep Impairment Index (Smith & Trinder, 2001). This four-item measure asked participants how often in the past two weeks they had had difficulty falling asleep, difficulty staying asleep or problems waking up too early. It also asked how satisfied they were with their current sleep pattern.

### 3.3.5.8 Anger

Anger was assessed using items from the Dimensions of Anger Reactions Scale (Novaco, 1975) that were also used in the LASER study. Nine items looked at frequency of anger over the past four weeks by asking participants how much of the time they felt that way about statements such as 'I found myself getting angry at people or situations' and 'My anger had a bad effect on my health'.

A further two items from the AG21-US Army Screening Measure assessed episodes of physical aggression over the past month. These items asked how often the participant got in a fight and hit a person, and threatened someone with physical violence.

### **3.3.5.9 Caffeine and tobacco use**

Tobacco use was assessed using an eight-item measure from the Millennium Cohort and King's College Studies. This measure asked about use of tobacco products in the past year, and, for those who reported smoking at least 100 cigarettes in their lifetime, further information about the age they started smoking, how many years they smoked an average of three cigarettes a day, how much they smoked per day when smoking, if they tried to quit and whether they were successful, and patterns of smoking on deployment.

Caffeine use was assessed using a single question from the Millennium Cohort Study asking about the frequency of beverages containing caffeine consumed per day.

### **3.3.5.10 Social support**

Social support was assessed using the Schuster Social Support Scale (Schuster, Kessler & Aseltine, 1990), which was modified in the LASER study. This five-item measure looks at relationships with others by asking, for example, how often a certain group of people make you feel cared for, express interest in how you are doing or criticise you. The groups of people asked about were friends, family, members of the workplace and direct supervisors.

### **3.3.5.11 Family issues**

Participants were asked how satisfied they were with their marriage/relationship, and what impact their military commitments have had on their marriage/relationship and children.

### **3.3.5.12 Occupational issues**

Five items from the LASER study assessed general occupational issues by asking the participant how strongly they agreed or disagreed with statements about whether they were adequately recognised and rewarded for their work, and whether they had experienced bullying and believed it was appropriately handled by Defence.

A single item assessed workplace morale by asking the participant their level of agreement with the statement, 'In the last month, the level of morale in my immediate workplace / work team was high'. This item was taken from the Defence Attitudes Survey.

### **3.3.5.13 Resilience**

Resilience was assessed using two questions from the Connor-Davidson Resilience Scale (Connor & Davidson, 2003). These items asked how often the participant felt they were able to adapt to change and tended to bounce back after hardship in the past 30 days.

## References

- Andrews, B., Brewin, C. R., Philpott, R., & Stewart, L. (2007). Delayed-onset posttraumatic stress disorder: A systematic review of the evidence. *American Journal of Psychiatry*, 164(9), 1319–1326.
- Babor, T., Higgins-Biddle, J.C., Saunders, J., & Monteiro, M.G. (2001). *AUDIT. The Alcohol Use Disorders Identification Test (AUDIT): Guidelines for use in primary care* (2nd ed.). Geneva: World Health Organization, Department of Mental Health and Substance Dependence.
- Ballone, E., Valentino, M., Occhiolini, L., Di Mascio, C., Cannone, D., & Schioppa, F. S. (2000). Factors influencing psychological stress levels of Italian peacekeepers in Bosnia. *Military Medicine*, 165(12), 911–915.
- Bartone, P. T., Ursano, R. J., Wright, K. M., & Ingraham, L. H. (1989). The impact of a military air disaster on the health of assistance workers. A prospective study. *Journal of Nervous and Mental Disease*, 177(6), 317–328.
- Britt, T. W., Greene-Shortridge, T. M., Brink, S., Nguyen, Q. B., Rath, J., Cox, A. L., . . . Castro, C. A. (2008). Perceived stigma and barriers to care for psychological treatment: Implications for reactions to stressors in different contexts. *Journal of Social and Clinical Psychology*, 27(4), 317–335.
- Bryant, R. A., O'Donnell, M. L., Creamer, M., McFarlane, A. C., Clark, C. R., & Silove, D. (2010). The psychiatric sequelae of traumatic injury. *American Journal of Psychiatry*, 167(3), 312–320.
- Castro, C. A., & Adler, A. B. (1999). OPTEMPO: Effects on soldier and unit readiness. *Parameters*, 29(3), 86–95.
- Connor, K. M., & Davidson, J. R. T. (2003). Development of a new resilience scale: The Connor-Davidson Resilience Scale (CD-RISC). *Depression and Anxiety*, 18, 76–82.
- Copeland, W. E., Keeler, G., Angold, A., & Costello, E. J. (2007). Traumatic events and posttraumatic stress in childhood. *Archives of General Psychiatry*, 64(5), 577–584.
- Corrigan, P. W., & Matthews, A. K. (2003). Stigma and disclosure: Implications for coming out of the closet. *Journal of Mental Health*, 12(3), 235–248.
- Corrigan, P. W., & Penn, D. L. (1999). Lessons from social psychology on discrediting psychiatric stigma. *American Psychologist*, 54(9), 765–776.
- Creamer, M., McFarlane, A. C., & Burgess, P. (2005). Psychopathology following trauma: The role of subjective experience. *Journal of Affective Disorders*, 86(2–3), 175–182.
- Department of Veterans Affairs, Veterans Health Administration (2007). *VHA Directive 2007-013: Screening and evaluation of possible traumatic brain injury in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) veterans*. Washington, DC: Department of Veterans Affairs, Veterans Health Administration.
- Elbogen, E. B., Wagner, H. R., Fuller, S. R., Calhoun, P. S., & Kinneer, P. M. (2010). Correlates of anger and hostility in Iraq and Afghanistan war veterans. *American Journal of Psychiatry*, 167(9), 1051–1058.
- Fikretoglu, D., Guay, S., Pedlar, D., & Brunet, A. (2008). Twelve month use of mental health services in a nationally representative, active military sample. *Medical Care*, 46(2), 217–223. doi: 10.1097/MLR.0b013e31815b979a.
- Garcia, H. A., Finley, E. P., Lorber, W., & Jakupcak, M. (2011). A preliminary study of the association between traditional masculine behavioral norms and PTSD symptoms in Iraq and Afghanistan veterans. *Psychology of Men and Masculinity*, 12(1), 55–63.

- Gould, M., Adler, A., Zamorski, M., Castro, C., Hanily, N., Steele, N., . . . Greenberg, N. (2010). Do stigma and other perceived barriers to mental health care differ across Armed Forces? *Journal of the Royal Society of Medicine*, 103(4), 148–156. doi: 10.1258/jrsm.2010.090426.
- Government Accountability Office (2008). *Mild traumatic brain injury screening and evaluation implemented for OEF/OIF veterans, but challenges remain*. United States Government Accountability Office Report to Congressional Requesters, Report GAO-08-276. Washington, DC: Government Accountability Office.
- Gray, G. C., Gackstetter, G. D., Kang, H. K., Graham, J. T., & Scott, K. C. (2004). After more than 10 years of Gulf War veteran medical evaluations, what have we learned? *American Journal of Preventive Medicine*, 26(5), 443–452. doi: 10.1016/j.amepre.2004.02.006.
- Greene-Shortridge, T. M., Britt, T. W., & Castro, C. A. (2007). The stigma of mental health problems in the military. *Military Medicine*, 172(2), 157–161.
- Harman, R., & Lee, D. (2010). The role of shame and self-critical thinking in the development and maintenance of current threat in post-traumatic stress disorder. *Clinical Psychology and Psychotherapy*, 17(1), 13–24. doi: 10.1002/cpp.636.
- Hoge, C. W. (2010). Public health strategies and treatment of service members and veterans with combat-related mental health problems. In A. B. Adler, P. D. Bliese & C. A. Castro (Eds.), *Deployment Psychology*, 17–34. Washington, DC: American Psychological Association.
- 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. doi: 10.1056/NEJMoa040603.
- Houston, J. E., Shevlin, M., Adamson, G., & Murphy, J. (2011). A person-centred approach to modelling population experiences of trauma and mental illness. *Social Psychiatry and Psychiatric Epidemiology*, 46(2), 149–157.
- Iversen, A. C., van Staden, L., Hughes, J. H., Browne, T., Greenberg, N., Hotopf, M., . . . Fear, N. T. (2010). Help-seeking and receipt of treatment among UK service personnel. *British Journal of Psychiatry*, 197(2), 149–155. doi: 10.1192/bjp.bp.109.075762.
- Iversen, A. C., van Staden, L., Hughes, J. H., Browne, T., Hull, L., Hall, J., . . . Fear, N. T. (2009). The prevalence of common mental disorders and PTSD in the UK military: Using data from a clinical interview-based study. *BMC Psychiatry*, 9, 68.
- Iverson, G. L., Langlois, J. A., McCrea, M. A., & Kelly, J. P. (2009). Challenges associated with post-deployment screening for mild traumatic brain injury in military personnel. *Clinical Neuropsychology*, 23(8), 1299–1314. doi: 10.1080/13854040903153902.
- Kendler, K. S., Thornton, L. M., & Gardner, C. O. (2001). Genetic risk, number of previous depressive episodes, and stressful life events in predicting onset of major depression. *American Journal of Psychiatry*, 158(4), 582–586.

- Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L., . . . Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine*, 32(6), 959–976.
- Kim, P. Y., Thomas, J. L., Wilk, J. E., Castro, C. A., & Hoge, C. W. (2010). Stigma, barriers to care, and use of mental health services among active duty and National Guard soldiers after combat. *Psychiatric Services*, 61(6), 582–588. doi: 10.1176/appi.ps.61.6.582.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2002). The PHQ-15: Validity of a new measure for evaluating the severity of somatic symptoms. *Psychosomatic Medicine*, 64(2), 258–266.
- Langston, V., Greenberg, N., Fear, N., Iversen, A., French, C., & Wessely, S. (2010). Stigma and mental health in the Royal Navy: a mixed methods paper. *Journal of Mental Health*, 19(1), 8–16. doi: 10.3109/09638230802522999.
- Leeies, M., Pagura, J., Sareen, J., & Bolton, J. M. (2010). The use of alcohol and drugs to self-medicate symptoms of posttraumatic stress disorder. *Depression and Anxiety*, 27(8), 731–736.
- Maguen, S., & Litz, B. T. (2006). Predictors of barriers to mental health treatment for Kosovo and Bosnia peacekeepers: A preliminary report. *Military Medicine*, 171(5), 454–458.
- Marx, B. P., Brailey, K., Proctor, S. P., MacDonald, H. Z., Graefe, A. C., Amoroso, P., . . . Vasterling, J. J. (2009). Association of time since deployment, combat intensity, and posttraumatic stress symptoms with neuropsychological outcomes following Iraq war deployment. *Archives of General Psychiatry*, 66(9), 996–1004.
- McFarlane, A. C. (1998). Epidemiological evidence about the relationship between PTSD and alcohol abuse: The nature of the association. *Addictive Behaviors*, 23(6), 813–825.
- McFarlane, A. C. (2009). The duration of deployment and sensitization to stress. *Psychiatric Annals*, 39(2), 81–88.
- McFarlane, A. C. (2010a). The delayed and cumulative consequences of traumatic stress: Challenges and issues in compensation settings. *Psychological Injury and Law*, 3(2), 100–110.
- McFarlane, A. C. (2010b). The long-term costs of traumatic stress: Intertwined physical and psychological consequences. *World Psychiatry*, 9(1), 3–10.
- McFarlane, A. C., Browne, D., Bryant, R. A., O'Donnell, M., Silove, D., Creamer, M., & Horsley, K. (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., Ellis, N., Barton, C., Browne, D., & Van Hooff, M. (2008). The conundrum of medically unexplained symptoms: Questions to consider. *Psychosomatics*, 49(5), 369–377.
- McFarlane, A. C., & Bryant, R. A. (2007). Post-traumatic stress disorder in occupational settings: Anticipating and managing the risk. *Occupational Medicine* 57, 404–410.
- McFarlane, A. C., & Van Hooff, M. (2009). Impact of childhood exposure to a natural disaster on adult mental health: 20 year longitudinal follow-up study. *The British Journal of Psychiatry*, 195, 142–148.
- Novaco, R. W. (1975). *Dimensions of anger reaction*. Irvine: University of California.

- Perkonig, A., Pfister, H., Stein, M. B., Höfler, M., Lieb, R., Maercker, A., & Wittchen, H. U. (2005). Longitudinal course of posttraumatic stress disorder and posttraumatic stress disorder symptoms in a community sample of adolescents and young adults. *American Journal of Psychiatry*, 162(7), 1320–1327.
- Pierce, P. F. (1997). Physical and emotional health of Gulf War veteran women. *Aviation, Space and Environmental Medicine*, 68(4), 317–321.
- Pietrzak, R. H., Goldstein, M. B., Malley, J. C., Johnson, D. C., & Southwick, S. M. (2009). Subsyndromal posttraumatic stress disorder is associated with health and psychosocial difficulties in veterans of Operations Enduring Freedom and Iraqi Freedom. *Depression and Anxiety*, 26(8), 739–744.
- Plat, M. J., Frings-Dresen, M. H., & Sluiter, J. K. (2011). A systematic review of job-specific workers' health surveillance activities for fire-fighting, ambulance, police and military personnel. *International Archives of Occupational and Environmental Health*. doi: 10.1007/s00420-011-0614-y.
- Polusny, M. A., Kehle, S. M., Nelson, N. W., Erbes, C. R., Arbisi, P. A., & Thuras, P. (2011). Longitudinal effects of mild traumatic brain injury and posttraumatic stress disorder comorbidity on postdeployment outcomes in national guard soldiers deployed to Iraq. *Archives of General Psychiatry*, 68(1), 79–89. doi: 10.1001/archgenpsychiatry.2010.172.
- Post, R. M. (1992). Transduction of psychosocial stress into the neurobiology of recurrent affective disorder. *American Journal of Psychiatry*, 149(8), 999–1010.
- Post, R. M. (2002). Do the epilepsies, pain syndromes, and affective disorders share common kindling-like mechanisms? *Epilepsy Research*, 50(1–2), 203–219.
- Post, R. M., Weiss, S. R., Smith, M., Li, H., & McCann, U. (1997). Kindling versus quenching. Implications for the evolution and treatment of posttraumatic stress disorder. *Annals of the New York Academy of Sciences*, 821, 285–295.
- Reger, M. A., Gahm, G. A., Swanson, R. D., & Duma, S. J. (2009). Association between number of deployments to Iraq and mental health screening outcomes in US Army soldiers. *Journal of Clinical Psychiatry*, 70(9), 1266–1272.
- Ritzer, D. R., Campbell, S. J., & Valentine, J. N. (1999). Human dimensions research during Operation 'Joint Guard' Bosnia. *Army Medical Department Journal*, 3, 5–16.
- Riviere, L. A., & Merrill, J. C. (2011). The impact of combat deployment on military families. In A. Adler, P. D. Bliese & C. Castro (Eds.), *Deployment psychology: Evidence-based strategies to promote mental health in the military*. Washington, DC: American Psychological Association.
- 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(7620), 603–607.
- 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., Stein, M. B., Thoresen, S., Belik, S. L., Zamorski, M., & Asmundson, G. J. (2010). Is peacekeeping peaceful? A systematic review. *Canadian Journal of Psychiatry*, 55(7), 464–472.

- Saunders, J. B., Aasland, O. G., Babor, T. F., de la Fuente, J. R., & Grant, M. (1993). Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO Collaborative Project on Early Detection of Persons with Harmful Alcohol Consumption: II. *Addiction*, 88(6), 791–804.
- Schnurr, P. P., Friedman, M. J., Sengupta, A., Jankowski, M. K., & Holmes, T. (2000). PTSD and utilization of medical treatment services among male Vietnam veterans. *Journal of Nervous and Mental Disease*, 188(8), 496–504.
- Schuster, T. L., Kessler, R. C., & Aseltine, R. H. (1990). Supportive interactions, negative interactions, and depressed mood. *American Journal of Community Psychology*, 18(3), 423–438.
- Seelig, A. D., Jacobson, I. G., Smith, B., Hooper, T. I., Boyko, E. J., Gackstetter, G. D., . . . Smith, T. C. (2010). Sleep patterns before, during, and after deployment to Iraq and Afghanistan. *Sleep*, 33(12), 1615–1622.
- 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.
- Smid, G. E., Mooren, T. T. M., Van Der Mast, R. C., Gersons, B. P. R., & Kleber, R. J. (2009). Delayed posttraumatic stress disorder: Systematic review, meta-analysis, and meta-regression analysis of prospective studies. *Journal of Clinical Psychiatry*, 70(11), 1572–1582.
- Smith, S., & Trinder, J. (2001). Detecting insomnia: Comparison of four self-report measures of sleep in a young adult population. *Journal of Sleep Research*, 10, 229–235.
- Storr, C. L., Jalongo, N. S., Anthony, J. C., & Breslau, N. (2007). Childhood antecedents of exposure to traumatic events and posttraumatic stress disorder. *American Journal of Psychiatry*, 164(1), 119–125.
- Thomas, H. V., Stimpson, N. J., Weightman, A. L., Dunstan, F., & Lewis, G. (2006). Systematic review of multi-symptom conditions in Gulf War veterans. *Psychological Medicine*, 36(6), 735–747. doi: 10.1017/S0033291705006975.
- 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.
- van Wyk, B. E., & Pillay-Van Wyk, V. (2010). Preventive staff-support interventions for health workers. *The Cochrane Database of Systematic Reviews*, Issue 3, Art. No.: CD003541 (3). Retrieved from <http://summaries.cochrane.org/CD003541/preventive-staff-support-interventions-for-health-workers>.
- Visco, R. (2009). Postdeployment, self-reporting of mental health problems, and barriers to care. *Perspectives in Psychiatric Care*, 45(4), 240–253. doi: 10.1111/j. 1744-6163. 2009.00227.x.
- Wang, J. (2006). Perceived barriers to mental health service use among individuals with mental disorders in the Canadian general population. *Medical Care*, 44(2), 192–195.
- Ware, J. E., Kosinski, M., Turner-Bowker, D. M., & Gandek, B. (2002). *How to score version 2 of the SF-12 health survey*. Lincoln, RI: QualityMetric Inc.

- Weathers, F.W., Litz, B.T., Herman, D.S., Huska, J.A., & Keane, T.M. (1993). *The PTSD Checklist (PCL): Reliability, validity, and diagnostic utility*. Paper presented at the 9th Annual Conference of the International Society for Traumatic Stress Studies, San Antonio, Texas.
- Wessely, S. (2001). Ten years on: What do we know about the Gulf War syndrome? *Clinical Medicine*, 1(1), 28–37.
- Wright, K. M., Cabrera, O. A., Bliese, P. D., Adler, A. B., Hoge, C. W., & Castro, C. A. (2009). Stigma and barriers to care in soldiers postcombat. *Psychological Services*, 6(2), 108–116.
- Zinzow, H. M., Resnick, H. S., McCauley, J. L., Amstadter, A. B., Ruggiero, K. J., & Kilpatrick, D. G. (2011). Prevalence and risk of psychiatric disorders as a function of variant rape histories: Results from a national survey of women. *Social Psychiatry and Psychiatric Epidemiology*, 1–10.