

Military and Veteran Mental Health Annual Literature Scan: 2014

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This document presents an annual literature scan for the year 2014 in the field of military and veteran posttraumatic mental health. It was produced for the Australian Government, Department of Veterans' Affairs (DVA), by Phoenix Australia: Centre for Posttraumatic Mental Health).

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Glossary of terms

Term	Definition
BDI-II	Beck Depression Inventory II, a well validated measure of depression severity
CAPS	Clinician Administered PTSD scale, a structured clinical interview that corresponds with DSM criteria for PTSD
CBT	Cognitive Behavioural Therapy
CPT	Cognitive Processing Therapy
CPTSD	Complex posttraumatic stress disorder
DAR-5	Dimensions of Anger Reactions scale 5, a brief measure of problematic anger
DSM-5	The Diagnostic and Statistical Manual of Mental Disorders (DSM) 5th edition, produced by the American Psychiatric Association (APA) – released May 2013
DSM-IV	The Diagnostic and Statistical Manual of Mental Disorders (DSM) 4th edition, produced by the American Psychiatric Association (APA)
DVA	The Australian Department of Veterans' Affairs
ICD-10	International Classification for Diseases 10 th Edition. Produced by the World Health Organisation
ICD-11	International Classification for Diseases 11 th Edition, to be released 2017. Produced by the World Health Organisation
LGBT	Used to denote a diverse group of people who identify as lesbian, gay, bi-sexual or transgender
MDD	Major Depressive Disorder
mHealth	Mobile phone based health technology
MST	Military Sexual Trauma
NG	National Guard: the military reserve units controlled by each state of the United States
NHMRC	National Health and Medical Research Council
NSSI	Non-suicidal self-injury
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom

PCL	The Posttraumatic Stress Disorder Checklist, a self-report scale for assessing presence and severity of symptoms of PTSD
PTSD	Posttraumatic stress disorder
US	United States
VIO-SCAN	Violence Screening and Assessment of Needs, a brief measure for identifying veterans at risk of violent behaviour
VTC	Video conferencing



Executive summary

This annual summary of the military and veteran mental health and traumatic stress literature for the year 2014 was produced by Phoenix Australia: Centre for Posttraumatic Mental Health for the Australian Government, Department of Veterans' Affairs (DVA). This executive summary provides an overview of the literature scan for each topic of review. The topics of focus in the literature scan for 2014, chosen in consultation with DVA were:

- DSM-5 changes to PTSD criteria
- ICD-11 changes to PTSD criteria
- Anger in veterans
- Social isolation and mental health
- Online technology and veteran mental health
- Case coordination and mental health outcomes
- Suicide in military and veteran populations
- Military sexual trauma

Overall summary

The 2014 literature shows an ongoing interest in the impact of the changes to the diagnosis of Posttraumatic Stress Disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM) and International Classification of Diseases (ICD) classification systems. There was an emerging trend in the 2014 literature of research focussing on gender and on minority groups within the military including Lesbian, Gay, Bisexual and Transgender (LGBT) serving members and veterans. It should be noted that a significant amount of the 2014 literature has originated in the US and therefore caution needs to be taken in terms of generalising to the Australian setting. This is due to significant differences in the size, structure and culture of both the military and the veteran mental health services of Australia and the US. Of note, a large study is currently underway in Australia (The Transition and Wellbeing Research Programme:

<http://www.dva.gov.au/health-and-wellbeing/research-and-development/social-research/transition-wellbeing-research>) which should address some of the issues raised within an Australian military and veteran cohort.

DSM-5 changes to PTSD criteria (Pages 9 to 12)

- In May, 2013 the Diagnostic and Statistical Manual of Mental Disorders 5th edition (DSM-5) was released, with major revisions to the diagnosis of Posttraumatic Stress Disorder (PTSD).



- The change from DSM-IV criteria to DSM-5 criteria does not seem likely to impact significantly on the overall prevalence rates of PTSD. This finding has been replicated internationally across veteran, military and civilian samples in 2014.
- Whilst prevalence rates of PTSD under DSM-5 have been found to be similar to those yielded using DSM-IV, there has been some evidence from a US military sample that different groups of people with a different symptom presentations are captured by DSM-IV and DSM-5.
- Debate has continued with regard to the underlying symptom structure of PTSD. The 2014 literature provides some support for the four factor model utilised in DSM-5, but has also supported a five factor model.
- Attention has been drawn to the high number of possible symptom combinations for diagnosis and the levels of comorbidity when using DSM-5 criteria for PTSD, though this concern is not markedly changed from DSM-IV.

ICD-11 changes to PTSD criteria (Pages 12 to 16)

- The 11th version of the International Classification for Diseases is now due for publication in 2017. Proposed changes to the diagnosis of PTSD include narrowing the symptom requirements to those considered to be the core elements of PTSD, with just three symptoms clusters (re-experiencing, active avoidance, and an excessive sense of current threat), and only one symptom required from each cluster. The aim of this narrower focus is to increase clinical utility and reduce overlap with other disorders.
- An additional proposed change within ICD-11 is the inclusion of a separate diagnosis of Complex PTSD (CPTSD), which is outlined as consisting of the three core elements of PTSD, in addition to enduring disturbances in affect, self- concept, and interpersonal relationships.
- Two multi-national studies in the 2014 literature suggested that overall prevalence rates of PTSD will not change significantly with the introduction of the proposed ICD-11 criteria, and one study in an Australian civilian population has suggested that there will be a significant reduction in people meeting PTSD criteria.
- Two studies (one assessing both Kosovar civilian war survivors and British veterans and one assessing Australian civilians) found evidence that the ICD-11 criteria would reduce the level of overlap with other diagnoses (particularly depression).
- An alternative two factor model of PTSD using the ICD-11 criteria has been found to be a similar, if not superior fit to the three factor model utilised in ICD-11 in an Australian civilian population.
- Concern has been raised about the potential impact of the scientific and clinical community using increasingly diverging classification systems (DSM-5 and ICD-11).

Experts in the field have identified that there may be significant implications for international research, clinical practice, service funding and provision.

- Two studies in 2014 (One across US civilian and veteran samples and one in a Danish civilian sample) also assessed the postulates and diagnostic structure of CPTSD, with conflicting results. Research into the proposed category of CPTSD is in its early stages and further research is required to understand the validity and utility of this separate diagnosis.

Anger in veterans (Pages 16 to 18)

- The 2014 literature included the confirmation of the reliability and validity of the Dimensions of Anger Reactions scale 5 (DAR-5), a brief measure of problematic anger, in both US civilian and Australian veteran populations.
- Anger was also identified as a risk factor for problems with violence in US veterans and included in a five item screening tool called the 'Violence Screening and Assessment of Needs (VIO-SCAN). This screening tool appears to provide a brief method for identifying veterans at higher risk of violent behaviour.
- Two 2014 studies focussed on anger in female US active serving members and US veterans, finding that problematic anger is experienced by a similar proportion of females as males and that the association between anger and PTSD is similarly robust in females as it is in males. The cognitive and behavioural profile of anger may also be similar across females and males.
- One study of Turkish veterans in the 2014 literature also identified that dispositional forgiveness (including forgiveness of self, others and situations) may play an important role in the relationship between anger and PTSD in returned combat veterans.

Social isolation and mental health (Pages 18 to 21)

- In general, the 2014 literature supported the notion that social support is a protective factor against negative mental health outcomes, including PTSD, in veterans.
- However, the importance of how veterans interact with their social support system was also highlighted in two studies with US veterans. One study found that a diagnosis of PTSD may in fact reduce the 'buffering influence' of social support on emotional distress in veterans through reducing an individual's ability to seek and engage in support from their network and another found that withholding personal information from close others increased risk of emotional distress.
- The 2014 literature also highlighted the issue of timing in social support, suggesting that greater unit support during deployment and greater social support post-deployment were important in reducing PTSD severity.

- Two populations were identified who may be at significant risk of the deleterious effects of social isolation; those who identify as lesbian, gay, bisexual or transgender (LGBT) and those who are homeless.

Online technology and veteran mental health (Pages 21 to 24)

- Mobile phone technology was explored as a potential aid to mental health service delivery for veterans in the 2014 literature. The vast majority of US veterans were found to have access to compatible devices and to show an interest in using mobile phone applications for mental health support, however only 10% reported using existing smartphone applications.
- In particular, homeless veterans were identified as a particular group who may benefit from mobile phone based health technology in a pilot study in the US.
- The internet was also identified as an increasingly common mode of healthcare delivery. Preliminary support was found for an online self-management workshop for posttraumatic stress symptoms in the US.
- There was also support found for the use of telemedicine to deliver mental health treatments, as an alternative to face-to-face delivery of Cognitive Behavioural Therapy (CBT) and Cognitive Processing Therapy (CPT) for US veterans. The outcomes of telemedicine delivered interventions were found to be equivalent to face to face delivered interventions.
- A further study found that patient familiarity and confidence with telehealth technology did not impact on outcomes of a telehealth intervention in US veterans.

Case coordination and mental health outcomes (Pages 24 to 27)

- Case coordination has been defined as a person centred, holistic support, care and treatment approach, where the case coordinator is responsible for undertaking assessments, developing multi-sectorial action plans, coordinating services and being the single point of contact for the client.
- The 2014 literature provided commentary and review of implementation issues for case coordination in mental health. Two papers provided service case studies of implementation of case coordination models in US veteran groups, providing some preliminary data in support of this approach.
- The impact of a case coordination approach on mental health outcomes and service utilisation had some support from 2014 studies in US veteran and general populations, however a large 2014 international meta-analysis did not find a positive effect of case coordination for reducing hospital admissions in people with mental health conditions.

Suicide in military and veteran populations (Pages 27 to 32)

- A large amount of literature was published in the area of suicide and suicidal behaviour in military and veteran populations in 2014, focussing on a large number of risk factors and correlates.
- A large US study found that PTSD alone did not contribute to suicide risk, but that comorbid major depressive disorder mediated the increased risk of suicide in people diagnosed with PTSD.
- Non-suicidal self-injury (NSSI) was found to be significantly associated with suicidal ideation, suicide planning and suicide attempts in US college student veterans, with NSSI tending to emerge prior to a first suicide attempt. It is suggested that NSSI may serve as a 'stepping stone' between suicidal ideation and attempt.
- Some evidence was found that sleep disturbance may be a risk factor for suicide and suicidal ideation in US veterans, but the 2014 evidence around this was equivocal, with evidence also emerging from Canada which suggested no link between sleep problems and suicidal ideation in active serving members and veterans.
- Two studies in 2014 from the US supported media campaigns as an effective and well received method of increasing help seeking and reducing suicide related emergency service call outs.
- A 2014 narrative review identified LGBT veterans as a group who may be particularly at risk of suicidal ideation and behaviour and highlighted that there is a paucity of research in this area. One new study in 2014 also provided data on this, suggesting that LGB US veterans have higher odds of lifetime suicidal ideation and attempts than heterosexual veterans.

Military sexual trauma (Pages 32 to 35)

- A US large study identified that military sexual trauma (MST) impacts up to 30% of female and five percent of male veterans. Importantly this equates to similar actual numbers of males and females experiencing MST.
- The underreporting of MST was identified as an ongoing issue in research and service delivery in this area
- Several vulnerability factors for MST in US active serving and veteran populations were identified in the 2014 literature, including childhood trauma, low levels of maternal care, younger age and minority ethnic status.
- MST and lifetime sexual violence were found to be related to worse mental health outcomes in several 2014 US studies. These outcomes included increased PTSD, depression, anxiety, eating disorders and alcohol use disorders.

Introduction

This annual scan of the military and veteran mental health and traumatic stress literature was produced by Phoenix Australia - Centre for Posttraumatic Mental Health for the Australian Government, Department of Veterans' Affairs (DVA). The aim is to provide an overview of literature pertaining to key topics of interest identified by DVA in consultation with Phoenix Australia. The scan is a narrative review of literature published in 2014 alone (any relevant literature published prior to, or after 2014 is not included in this report), which is deemed to be of quality and interest to DVA. The literature included in this scan has met broad inclusion criteria based on regular standards of academic review, but a systematic evaluation of all published research during this time period has not been made. Where there are discrepancies in the literature, these will be discussed, but the reader is cautioned against assuming that a single paper is sufficient to provide conclusive information. It is recommended that the reader source the original papers if they are interested in particular findings.

Background

In preparation for the 2014 annual literature scan, Phoenix Australia consulted with DVA to identify the key topics on which to focus the review. These were topics which DVA and Phoenix Australia identified to be areas of recent development in the literature and those with current relevance to the work of DVA. These eight topics were identified as: (1) DSM-5 changes to posttraumatic stress disorder (PTSD) diagnostic criteria; (2) ICD-11 changes to PTSD diagnostic criteria; (3) Anger in Veterans, (4) Social Isolation and Mental Health, (5) Online Technology and Veteran Mental Health, (6) Case-coordination and Mental Health Outcomes, (7) Suicide in Military and Veteran Populations, and (8) Military Sexual Trauma.

Methodology

The methodology used in this 2014 literature scan included having a defined literature search strategy and *a priori* inclusion/exclusion criteria. The search strategy included the following databases; PubMed, PsycINFO, Web of Science, Medline, Embase. The search terms used for each topic are outlined below in Table 1.

Table 1. Search terms by topic

Topic area	Search terms
DSM-5 changes to PTSD criteria	DSM-5 AND PTSD
ICD-11 changes to PTSD criteria	ICD-11 AND PTSD
Anger in veterans	Anger AND veteran* OR military
Social isolation and mental health	Social isolation OR Social support OR social withdraw* AND mental health OR wellbeing OR quality of life AND Military OR veteran*
Online technology and veteran mental health	Online OR e-health OR online technology OR e-delivery OR telemedicine OR telepsychiatry AND mental health OR access to care OR quality of life OR wellbeing AND Military OR veteran*
Case- coordination and mental health outcomes	Care OR case AND Coordination OR Management AND mental health OR Psychiatric AND wellbeing OR quality of life OR outcome OR effectiveness OR efficacy
Suicide in military and veteran populations	Suicide OR suicidality (abstract) AND Veteran* OR Military (title)
Military sexual trauma	Military AND sexual trauma AND Military OR veteran*

Inclusion and exclusion criteria for papers

Abstracts yielded in the initial search were screened using the inclusion and exclusion criteria presented in Table 2. This included a prioritisation of review papers in line with NHMRC guidelines for evidence review. That is, systematic reviews and meta-analyses were prioritised for inclusion over general literature reviews. Priority for inclusion was given to papers which were published in impactful and prominent journals such as *British Journal of Psychiatry*, *Journal of the American Medical Association*, *Archives of General Psychiatry* (now called *JAMA Psychiatry*), *American Journal of Psychology*, and *Lancet*. In addition, literature relating themes considered to be of particular interest to DVA was also prioritised for inclusion. Two assessors provided quality assurance checks for the selection of papers. The total number of abstracts derived from the literature search contrasted with the number of papers selected for inclusion is seen in Table 3. It is noted that online first articles that were available from 2014, published, or to be published in hard copy in 2015, were included. This ensured that the most up to date literature was included.

Table 2. Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Literature published in 2014	Qualitative studies without empirical data
Studies reporting empirical data and findings	Single case studies
Studies published in high quality, impactful journals	Grey literature (e.g., reports, newsletters, conference proceedings)
Relevant review papers (e.g., systematic reviews, meta-analyses)	Studies with no relevance to veteran and military populations
Exceptional commentary pieces	Studies published in languages other than English
Papers drawn from other populations where findings are relevant to a veteran/military population	

Table 3. Number of abstracts yielded from search and papers selected for annual literature scan

Topic area	Abstracts yielded	Papers included
DSM-5 changes to PTSD criteria	48	9
ICD-11 changes to PTSD criteria	15	7
Anger in veterans	19	8
Social isolation and mental health	52	10
Online technology and veteran mental health	54	7
Case- coordination and mental health outcomes	29	9
Suicide in military and veteran populations	87	20
Military sexual trauma	51	11
Total	355	81

Literature scan

1. DSM-5 changes to PTSD diagnostic criteria

Overview of changes to PTSD diagnosis

In May 2013, the Diagnostic and Statistical Manual of Mental Disorders (DSM) 5th edition¹ was released with major revisions to the diagnosis of posttraumatic stress disorder (PTSD). Such changes included PTSD being moved from the 'Anxiety Disorders' category into a new category called 'Trauma and Stressor-Related Disorders', the increase of the original 17 diagnostic symptoms to 20 and alterations to the criterion of what constitutes a traumatic event (referred to as Criterion A). In addition, the number of symptom clusters increased from three to four (*B: re-experiencing, C: active avoidance, D: negative alterations in cognitions and mood, and E: arousal and reactivity*). These changes are discussed in detail in the 2012 and 2013 annual literature scans and therefore will not be outlined in further depth here*.

Impact on prevalence rates

The 2014 literature included four significant studies that suggest that changes to the diagnostic criteria for PTSD presented in the DSM-5 will not result in significant changes to the overall prevalence rates of PTSD in military or civilian populations. This included a study of Iraq and Afghanistan-era US veterans (n=414) of whom 38% met DSM-IV criteria at clinical interview and 37% met the DSM-5 criteria as retrospectively assessed with the readministering of four additional interview prompts². In another important study, Hoge et al.³ assessed Iraq and Afghanistan US infantry soldiers (n=1822) of whom 12% and 13% screened positive for PTSD according to DSM-5 and DSM-IV-TR diagnostic criteria using self-report scales. Another significant study was a large multi-national study involving civilians from 13 countries exposed to at least one lifetime traumatic event (n=23,936)⁴. Structured clinical interviews found that 3.3% of this sample met the DSM-IV criteria for a diagnosis of PTSD. Retrospective assessment found 3.0% of the sample met the DSM-5 criteria for PTSD. It should be noted that the additional four symptoms of PTSD presented in the DSM-5 were not assessed and this incomplete operationalization of the DSM-5 diagnostic criteria for PTSD may have resulted in an underestimation of prevalence⁴. O'Donnell et al.⁵ also assessed prevalence rates of PTSD in a civilian population. Survivors of a traumatic injury (n=510) were assessed using structured clinical interview (with additional DSM-5 questions). The current

* For reference, the 2012 and 2013 scans can be found here: <http://phoenixaustralia.org/wp-content/uploads/2015/03/ACPMH-2012-MMH-Literature-Review.pdf> and here: <http://phoenixaustralia.org/wp-content/uploads/2015/03/ACPMH-2013-MMH-Literature-Review.pdf>.

prevalence of PTSD under DSM-5 scoring was not significantly different from DSM-IV (6.7% vs 5.9%).

In concert, the findings of these studies provide evidence that changes to the DSM-5 diagnostic criteria for PTSD, will have minimal impact on overall PTSD prevalence rates.

Implications of DSM-5 changes to diagnostic criteria

Whilst prevalence rates identified by the DSM-5 and DSM-IV diagnostic criteria remain similar, the findings published to date suggest that different groups of people with differing PTSD symptom profiles are identified by the two versions of diagnostic criteria. It is thought that the DSM-5 and DSM-IV diagnostic criteria for PTSD are each assessing different types of PTSD presentations. This influences the way symptoms are experienced at the individual level, but has little impact on the broader prevalence rates across populations^{2,4,5}. For example, the Hoge et al. study found that, of those who screened positive for PTSD according to DSM-IV diagnostic criteria, 30% did not meet the DSM-5 criteria for PTSD, and that 27% of the sample only met the DSM-5 criteria for PTSD³. The authors noted the underlying discordance between those who met DSM-IV and DSM-5 diagnostic criteria had implications for clinical assessment and treatment, with those no longer meeting the criteria for PTSD according to DSM-5 possibly meeting the criteria for adjustment disorder, which is recommended in DSM-5 for sub-threshold PTSD. Hoge et al. also suggest that the adjustment disorder diagnosis carries greater stigma than PTSD in US military³. The impact of these changes to the administration of veterans' benefits and access to care also needs to be considered for the group no longer considered to meet the diagnostic criteria for PTSD. McFarlane provided a commentary on the consequences of the discordance between people identified with PTSD according to either DSM-IV and DSM-5 criteria⁶. In the Hoge et al. study, failure to satisfy DSM-5 criteria for PTSD was attributed largely to criterion C changes, and McFarlane argued that the DSM-5 focus on avoidance symptoms is at odds with the disruption PTSD brings to people's ability to reflect and report on these types of symptoms. McFarlane proposed a transition period between the legal use of DSM-IV and DSM-5 so that the potential effects of the changes can be examined and those deserving of support and treatment are not denied their legal right to this⁶.

The structure of PTSD

The 2014 literature has continued to focus on adequately capturing the underlying symptom structure of PTSD. Gentes et al.² found that the best fit to their US veteran data was found with a five factor model of PTSD (including re-experiencing, active avoidance, emotional numbing, dysphoric arousal, and anxious arousal), although modest support was also found for the four factor model of PTSD presented in DSM-5. However, low factor loadings were found for the symptoms of 'psychogenic amnesia' (D1) and 'reckless or self-destructive behaviour' (E2 – a new symptom added into DSM-5). This caused the

authors to question the adequacy of the 'fit' between the symptoms of psychogenic amnesia and reckless or self-destructive behaviour and the core features of PTSD. Another study published in 2014 provided support for the temporal stability of the DSM-5 four factor model as measured by the Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5)⁷. The sample comprised US Iraq/Afghanistan veterans (n=507) undertaking an online intervention targeting problem drinking and combat-related stress. The PCL-5 was administered at baseline, 8-weeks post intervention and 3 months follow up, and factor analysis found the four factor model of PTSD to be stable over time. This was the first study published to date to demonstrate the temporal stability of the four factor model of PTSD as measured by the PCL-5, and suggests longitudinal studies could use this measure, and would be measuring the same construct over time.

Also of interest, Carmassi et al.⁸ found the E2 criterion (reckless or self-destructive behaviour) to be the only item endorsed statistically significantly more often by male than female respondents. This study involving civilian earthquake survivors in Italy (n=512) is the first to examine gender differences in symptom endorsement of the DSM-5 diagnostic criteria for PTSD. The gender difference was to such an extent that reporting 'reckless or self-destructive behaviour' was crucial to 31.2% of male diagnosis of PTSD and to only 3.9% of female diagnosis of PTSD. These mixed findings in relation to the new E2 criterion warrant further examination of the symptom clustering and core features of PTSD. The potential for this item to be crucial to male diagnosis of PTSD using the DSM-5 criteria is highly relevant to the military and veteran context, and better understanding how this hyper arousal symptom sits alongside other commonly observed mental health issues affecting serving and veteran populations such as anger and suicide, is warranted.

Heterogeneity and comorbidity

Several papers published in 2014 further examined heterogeneity, in particular the consequences of the large number of symptom combinations possible with the DSM-5 diagnostic criteria for PTSD with comorbid diagnoses⁹⁻¹². Young, Craig and Brandon¹² found the number of symptom combinations in full poly-trauma to be over one quintillion. Using mathematical models, they considered PTSD symptoms in combination with the most commonly occurring comorbid conditions (Major Depressive Disorder, chronic pain, mild neurocognitive disorder (due to traumatic brain injury), alcohol use and pre-morbid personality disorder). Another study using mathematical models with two large US civilian datasets found those who met the DSM-5 criteria for both PTSD and MDD shared up to three-fifths of symptoms¹¹, highlighting that the reality of within-disorder heterogeneity with DSM-5 diagnosis that extends to clinical case presentation¹¹. Lockwood and Forbes¹⁰ point out that the literature to date support that high rates of comorbidity are maintained when using the DSM-5 diagnostic criteria for PTSD despite explicitly requiring avoidance symptoms in addition to numbing/negative alterations in cognitions

and mood symptoms, and that this is perhaps the result of adding the new depression-laden symptoms to criterion D¹⁰. Gallagher and Brown⁹ reported the findings of a study involving US civilians with a current or lifetime diagnosis of PTSD (n=253) that found a high degree of comorbidity between emotional disorders. The authors note that despite the separation of PTSD from anxiety disorders in DSM-5, the vast majority of people with PTSD will present with one or more emotional disorders. There is agreement that such issues of heterogeneity and comorbidity are remarkably unchanged across DSM-IV and DSM-5 diagnostic criteria for PTSD^{3,10,11}. The overlap between conditions is part of the challenge to researchers and clinicians working with diagnostic systems, and highlights the need for transdiagnostic approaches, in which treatments target a range of psychological outcomes, not just single disorders. In response to these issues, Young, Craig and Brandon¹² recommended prioritising symptoms in disorders as primary (e.g. unique markers), secondary (e.g. core or essential) and tertiary (e.g. common, cross diagnostic), which may prove useful to clinicians and researchers continuing to navigate the ongoing issue of PTSD symptom heterogeneity and comorbidity with other emotional disorders.

2. ICD-11 changes to PTSD criteria

Proposed changes

The 11th version of the International Classification for Diseases (ICD-11), a diagnostic tool used worldwide to classify diseases and disorders, is now due for completion in 2017 (<http://www.who.int/classifications/icd/revision>). The working party for the 11th edition has proposed a number of changes to the diagnostic criteria and classification of PTSD¹³.

Several changes to disorders associated with stress have been proposed for ICD-11. As seen in changes made in the DSM-5, the working party has proposed grouping PTSD and related disorders separately from anxiety disorders in the category of 'disorders specifically associated with stress'¹³. However, in an area of divergence from DSM-5, the ICD-11 has focussed on clinical utility by narrowing symptom requirements for PTSD to those considered to be the core elements of PTSD. The aim is to reduce symptom overlap with other disorders and capture PTSD as a distinct disorder¹³. The proposed criteria comprise just three clusters with only two symptoms in each cluster: cluster 1: re-experiencing the traumatic event (flashbacks and nightmares); cluster 2: avoidance of reminders likely to produce re-experiencing (avoidance of thoughts and things); cluster 3: excessive sense of current threat (hypervigilance and startle)¹⁴.

In addition, the inclusion of complex PTSD (CPTSD) as a separate disorder has been proposed (The DSM-5 working party, in comparison, concluded there was insufficient evidence to support the inclusion of complex PTSD). CPTSD is defined by the working



group as an extensive reaction typically arising from severe and prolonged stressors, such as childhood abuse or torture¹³. The working party for ICD-11 has proposed that complex PTSD consists of the above mentioned three core elements of PTSD, in addition to enduring disturbances in affect, self-concept and interpersonal relationships¹⁴. To be diagnosed with complex PTSD, an individual must meet the full criteria for ICD-11 PTSD, as well as evidencing at least one symptom from each of the three complex PTSD symptom clusters¹⁵. If the person meets the additional criteria for complex PTSD then this will be the only diagnosis as it is more encompassing, and includes all the features of PTSD¹³. Overlap between the ICD-11 conceptualisation of complex PTSD and DSM-5 PTSD Criterion D ('Negative alterations in cognitions and mood') and Criterion E ('Alterations in arousal and reactivity') has raised questions whether complex PTSD may simply reflect a greater severity of PTSD as opposed to a distinct diagnosis¹⁵.

Impact on prevalence rates and comorbidity

Morina et al.¹⁶, retrospectively examined the impact of the ICD-11 changes on the prevalence of PTSD, as well as comorbid depression and anxiety across two samples. The first involved Kosovar civilian war survivors (n=560) who were assessed using a self-report measure and the second, British war veterans (n=142) who took part in a structured clinical interview. When compared to DSM-IV diagnostic criteria for PTSD, 87.5% of civilian war survivors and 91.5% of war veterans had an unchanged diagnostic status under the ICD-11 criteria. According to the DSM-IV assessments, 34.8% and 40.8% of both samples respectively met the criteria for PTSD, which was not significantly different to those who met the ICD-11 criteria (30.2% and 45.1% respectively). This is suggestive of little change to the overall prevalence between these two diagnostic systems. There were differences within the samples in terms of symptom endorsement, with significantly fewer people meeting the ICD-11 criteria for the re-experiencing criteria, and significantly more meeting the ICD-11 criteria for avoidance, while there were no differences between sets of criteria for hyper arousal symptoms. Rates of comorbidity were also found to be lower amongst those meeting only the ICD-11 diagnosis of PTSD. Morina et al. concluded that the ICD-11 may prove useful in reducing comorbidity with mood disorders, and that the symptoms selected for ICD-11 are those that do appear to distinguish PTSD most clearly from depression.

Stein et al.'s⁴ large multi-national study involving civilians from 13 countries exposed to at least one lifetime traumatic event (n=23,936) corroborated Morina et al.'s finding that the proposed ICD-11 criteria would not significantly affect overall prevalence rates of PTSD. Using structured clinical interview to assess for PTSD they found prevalence rates of 4.4% using ICD-10 criteria and 3.2% using ICD-11 criteria.

In contrast, O'Donnell et al.'s study with Australian civilian injury patients (n=510)⁵, utilised structured clinical interview and found significant differences in prevalence rates between the old and new proposed ICD classification systems. The current prevalence of PTSD under ICD-11 criteria was significantly lower than ICD-10 criteria (3.3% vs 9.0%). It was also notable that the proposed ICD-11 criteria yielded significantly lower prevalence rates of PTSD than the DSM-5 criteria. In terms of comorbidity with depression (an issue that ICD-11 aims to address), there was no reduction from ICD-10 to ICD-11 (both yielded 56% levels of comorbidity). Those diagnosed with PTSD using DSM-5 had 11% higher comorbidity with depression in comparison to those diagnosed using ICD-11, though this difference did not reach significance (67% vs 56%). O'Donnell et al.'s findings suggest that the proposed ICD-11 would go some way to capturing a narrower PTSD symptom profile and to reducing comorbidity, but suggest that this will have an impact on the number of people qualifying for the diagnosis.

The structure of PTSD

In an online first article published in 2014, Forbes et al.¹⁷ examined the underlying symptom structure of PTSD using ICD-11 in an Australian civilian injury population. Interestingly, a two factor model, in which two symptoms were required from a combination of the re-experiencing and avoidance clusters, and one was required from the hyperarousal symptom cluster, produced a similar fit to the three factor model used in the ICD-11 criteria. The two factor model increased the prevalence rate and identified individuals with a similar level of disability.

The impact of differences between DSM-5 and ICD-11 PTSD diagnostic criteria

The potential for a divergence between diagnostic systems to significantly impact prevalence rates and the clinical composition of those identified with PTSD has been noted by experts in the field^{4-6,15}. It is important for researchers, clinicians and service providers to consider the potential implications of this divergence.

Of importance is not just the potential change to overall prevalence rates, but to also the type of PTSD presentation being assessed by the different systems. O'Donnell et al.⁵ found that the majority of individuals with PTSD were identified by one but not the other revised system - only 42% met the criteria of both the ICD-11 and DSM-5 algorithm. Similarly, Stein et al.'s⁴ study found that 30% of those who met criteria for an ICD-11 diagnosis of PTSD failed to meet criteria for a DSM-5 diagnosis of PTSD. These findings indicate that as a result of their diverging emphasis, these classification systems may in fact be capturing a different PTSD phenotype.

This apparent divergence in patients with PTSD identified by ICD-11 and DSM-5 is a key finding. A review by Miller et al.¹⁵ noted that the existence of two diagnoses with the same name but different symptoms that apply to different groups of people has the

potential to introduce significant confusion to researchers, clinicians, patients and policy makers alike.

O'Donnell et al.⁵ outline that there are both potential scientific and clinical consequences of having diagnostic systems that are not parallel. From a scientific perspective, attempts to understand the mechanisms underpinning PTSD may be hampered by differing diagnostic constructs. This is especially important for international research given that many countries around the world employ the ICD, and research outcomes that use this system may be based on different study populations than those using DSM-based formula. From a clinical perspective, there are important implications for compensation and service delivery. By using one system or another, it appears that service providers and funders would be missing a significant group of people who would meet criteria under the other system. Also, clinical interventions that may have been validated under one system may not be equally valid for the clinical manifestation of PTSD diagnosed under the alternate system. This leaves questions regarding evidence based treatment options and may have particular implications in an Australian context, in which clinicians on the ground tend to use ICD, whereas academic research has typically utilised DSM.

It is important therefore that work aimed at refining and reconciling the diagnostic criteria for PTSD continues, with the aim of achieving an empirically based unitary construct that accurately represents the disorder.

A new diagnosis of Complex PTSD

The proposed addition of a separate diagnosis of Complex PTSD (CPTSD) has also been the subject of analysis in the 2014 literature, with two important studies assessing the postulates and diagnostic structure of CPTSD.

Wolf et al.¹⁸ assessed trauma exposure and proposed ICD- 11 PTSD and CPTSD symptoms in a representative US civilian community sample (n= 2695) and a US veteran sample (n= 323). The prevalence of CPTSD in the community and veteran samples was 0.6% and 13% respectively. A high degree of overlap was found, with a quarter of the community sample and half of the veteran sample who met criteria for PTSD also meeting criteria for CPTSD. Of particular note, fundamental assumptions of the ICD-11 proposal regarding CPTSD were not supported. CPTSD was not associated with greater trauma exposure, nor with exposure to physical or sexual assault particularly. Across both samples, the best fitting structural model did not distinguish trauma exposed individuals on the basis of distinct symptoms, but rather suggested that groups differed from one another in terms of their level of severity. The authors suggest that it may be more appropriate to simply conceptualise CPTSD symptoms as associated features of PTSD that are most often seen in individuals with a severe form of PTSD, rather than as a distinct disorder.

Elkit, Hyland and Shevlin¹⁹ also explored the validity of the distinction between the proposed ICD-11 PTSD and CPTSD diagnoses across three Danish samples; bereaved parents (n=607), survivors of a sexual assault (n=350), and survivors of a physical assault (n=214). Using latent class analysis of symptom profiles, they identified three discrete groups; a group with an ICD-11 PTSD diagnosis, a group with a CPTSD diagnosis and a group who were low on all symptoms. The CPTSD group were also found to have the highest levels of psychopathology and impairment. In contrast to the findings of Wolf et al., these findings are in line with the proposal of the ICD-11 to classify two distinct diagnoses (PTSD and CPTSD) based on symptom presentation rather than trauma history.

Research into the proposed category of CPTSD is in its early stages and further research is required to understand the validity and utility of this diagnosis across different populations as well as the service and treatment implications of this.

3. Anger in veterans

Anger is an important element of veterans' mental health and wellbeing. The following section outlines the 2014 literature in relation to; the measurement of anger, anger and gender, and anger and forgiveness. These emerged as prominent areas of interest in the 2014 literature.

Measurement of anger in veterans

Following potentially traumatic events, anger plays a key role in the development and maintenance of posttraumatic mental health disorders, such as PTSD, and their responsiveness to treatment²⁰. This association is particularly evident amongst combat veterans²⁰. The 2014 literature has shown that anger is a prominent concern for veterans themselves and has a negative impact on treatment seeking^{21,22}. The capacity to screen for anger as part of routine mental health assessments following potentially traumatic events, and to monitor anger over the course of clinical treatment is therefore imperative. Despite this, the measurement of anger in multicomponent, self-report batteries and clinical assessments has been hampered by the length of the tools available. Over two iterations, the Dimensions of Anger Reactions (DAR) scale²³, and the shortened DAR-5 version²⁴ (5 items across 5 response options) were developed in response to these issues. The DAR was initially validated against the leading measure of anger (the State Trait Anger Expression Inventory - STAXI) with combat veterans in 2004²³, and again in 2012²⁵. The DAR-5 version of the scale was developed when it was found that omitting two items did not influence the measure's sensitivity to detect clinical change, and reductions in the number of response options improved psychometric strength.

The psychometric properties of the DAR-5 were evaluated across two samples in 2014. The first study found the DAR-5 to be a reliable and valid screening measure for

common anger reactions amongst a large sample of US college students (n=486)²⁰. The second study validated the use of the DAR-5 in clinical settings, with trauma-affected Australian combat veterans who had a PTSD diagnosis (n=163)²⁶. Both studies confirmed the utility of the DAR-5 as a brief measure of problematic anger across general and trauma affected populations and suggest the utility of including the DAR-5 in routine mental health assessments with trauma affected populations. Both studies found the DAR-5 demonstrated high internal reliability, strong convergent, concurrent and discriminant validity as a measure of anger. Further support was found for the cut-point score of 12 to identify problematic anger. These findings support the effectiveness of the DAR-5 as a screening measure for problematic anger for inclusion in longitudinal and cross sectional studies, and as a measure of anger in PTSD treatment outcome batteries.

One further study considered anger as part of a screening tool for problems with violence developed for military veterans²⁷. In a large sample of Iraq and Afghanistan veterans in the US who were surveyed (n=1,090) or took part in in-depth assessments (n=197 dyads of veterans and collateral informants), anger associated with PTSD was identified as one of five risk factors for problems with violence amongst veterans. The other risk factors included lacking money for basic needs, combat experience, alcohol misuse and history of violence and arrests. Together these risk factors comprised the five item screening tool called the 'Violence Screening and Assessment of Needs (VIO-SCAN). Although further evaluations are required, the screening tool appears to provide a rapid, systematic method for identifying veterans at higher risk of violent behaviour²⁷.

Emerging trends regarding anger and gender in military and veteran populations

The 2014 literature scan noted an increasing number of papers published regarding female veterans' experiences. In relation to anger, two studies published in 2014 highlight that problematic anger is just as relevant to the female veteran experience as it is to male veterans, and that care needs to be taken to assess for and treat anger, irrespective of gender. Worthen et al.²⁸ found that anger problems were common and experienced by a similar proportion of male (53.0%) and female (51.3%) service members in a representative cohort of US Reserve and National Guard service personnel (n=1293; male n=1036; female n=257). Anger was also positively associated with PTSD symptom severity. A non-significant gender difference was noted, with the association between anger and PTSD stronger among females than males. The study had a low number of PTSD cases, and the role of gender differences in the co-occurrence of PTSD and anger needs to be examined further. The findings do, however, highlight that anger is an important issue for female veterans²⁸.

The study by Castillo et al.²⁹ assessed female US veterans with PTSD (n=254) who were seen at an outpatient PTSD clinic and further explored the relationship between

anger and PTSD. Cluster analysis of a personality measure identified externalising, internalising and simple PTSD groups. The female veterans with PTSD in the externalising group were high in aggression, alcohol use and antisocial personality disorder; and those in the internalising group were high in depression and anxiety symptoms. The externalising group reported higher behavioural anger (assault and verbal hostility) than the other two groups, and both the externalising and the internalising groups reported higher cognitive anger (resentment and suspicion) than the simple PTSD group. Of all the types of anger measured, cognitive anger recorded the greatest means for each of the three groups. In line with emerging trends regarding anger, PTSD and gender, this study highlights that female veterans with PTSD may equally fit an externalising profile with attendant antisocial, substance and aggression problems, and further, that high levels of cognitive anger such as resentment and suspicion may be present across all profiles in this population of veteran women. This has implications for prevention and treatment programs targeting veteran women.

When considered together, these papers illustrate that anger is common among female serving personnel and veterans, and has a bearing on the clinical features of PTSD and other psychiatric diagnoses.

Anger and forgiveness

An interesting study published in 2014 examined the relationship between dispositional forgiveness (including a tendency for self-forgiveness, forgiveness of others and forgiveness of situations), anger, depression and PTSD among a sample of Turkish Armed forces combat veterans injured during compulsory service at some point over 1984 to 2010 (n=247)³⁰. Using path analysis, anger and negative affect were found to fully mediate the relationship between the combat veterans dispositional forgiveness and both PTSD and PTSD with comorbid depression. The association between dispositional forgiveness and anger was negative, and thus, veterans who reported a high level of dispositional forgiveness had lower levels of anger, which in turn were associated with both PTSD and PTSD with comorbid depression. Understanding the role anger plays in PTSD and comorbid depression is clinically important for treatment, and the findings from this paper suggest that the concept of forgiveness may also be useful to explore in assessment and treatment.

4. Social isolation and veteran mental health

Social isolation: Impact on mental health

A review of the 2014 literature showed that there is continuing interest in the relationship between social support and various veteran mental health outcomes.

An interesting study examining the relationship between social support, psychological distress and psychiatric diagnosis in US veterans (n=1825) found that for those with no disorder or a non-PTSD diagnosis, social support appeared to have a buffering effect on psychological distress³¹. However, interestingly, only a minimal buffering effect of social support against psychological distress was found for those with a PTSD diagnosis. Distress was found to be alleviated by only five percent for each higher social support quartile for those with a PTSD diagnosis, compared to nearly 25% reductions in distress for the no diagnosis and non PTSD diagnosis groups. The authors posit that the buffering influence of social support may be compromised for those with a PTSD diagnosis due to core symptoms of the diagnosis (avoidance, emotional numbing, and detachment), which may impede an individual's ability to seek and engage in support from their network³¹.

In a study of US OIF/OEF veterans (n=536) post-deployment it was found that social support in general, as well as emotional hiding (a facet of social support defined to involve withholding personal information from close others), was significantly associated with the development of PTSD³². Specifically, it was found that for every one unit increase in reported social support there was an eight percent decrease in odds for screening positive for PTSD. More emotional hiding was associated with a significantly greater risk of screening positive for PTSD, and when holding social support constant, emotional hiding from the immediate family was still associated with a 31% increase in odds of screening positive for PTSD. These two studies have somewhat contrasting results regarding the role of social support in PTSD, however both highlight that the way in which someone engages with their support system is of importance.

In addition to the role social support plays in PTSD, the 2014 literature also focussed on its association with other veteran mental health outcomes. Cigrang et al.³³ found that, in US Air Force security forces assigned to a one year, high threat mission in Iraq (n= 164), overall social support from family, friends and significant others during the post-deployment period differed across those classified as resilient (in terms of PTSD, depression, and alcohol use) and those classified as deteriorating. That is, those who demonstrated resilience reported more social support than those showing severe deterioration. In fact, the ability to talk about problems with family reduced the likelihood of experiencing severe deterioration at post-deployment by more than half, from 37.5% to 15.9%.

Elbogen et al.³⁴ also found that more social support is associated with less aggressive and violent behaviour in US veterans, and that social support is a particularly strong protective factor against violence in veterans if these veterans are otherwise considered to be high-risk for violent/aggressive behaviour (high risk vs. low risk was determined by number of other risk factors present).

In a cross sectional study of 3154 Canadian veterans it was also found that the odds of the veterans experiencing disability, including physical and mental health problems or needing assistance with activities of daily living, were increased in those who reported low social support³⁵. Social support was lowest in the group that reported the highest degree of disability, and this group also reported the weakest feelings of community belonging. Due to the cross sectional nature of this study, causality cannot be assumed. Longitudinal research would help to further understand that role that social support plays in disability.

Taken together, these findings suggest that there is a substantial association between social isolation and mental health outcomes, suggesting that increasing social support and protecting veterans from social isolation should be a focus of care and interventions for this population, as it may help mitigate potential adverse outcomes after military service, and/or may prevent the further deterioration of mental health.

Timing of social support

The impact of social support on mental health and other post-service outcomes is well documented and supported, but only recently is this research taking into account the timing of the support. Specifically, research is starting to address whether social support before, during or after deployment or service is most potent for longer term outcomes. A study with US veterans found that around 20% of veterans report that social support is a concern post-deployment³⁶, indicating that the period post-deployment may be an especially critical time.

A longitudinal study conducted with US army (n=835) and National Guard soldiers (n=173) found that the timing of unit social support plays a significant role in predicting post-deployment PTSD severity³⁷. Specifically, there was no significant relationship between unit support before deployment and post-deployment PTSD severity. However, greater unit support during deployment was significantly associated with lower PTSD severity after deployment; this association was only significant among active duty soldiers. Greater post-deployment social support was also significantly associated with lower post-deployment PTSD severity. In addition, another US study also found that post-deployment social support predicted better overall mental health and less posttraumatic stress symptom severity, alcohol, and drug use³⁸.

Overall, these findings suggest that during and post-deployment are times when social support is particularly critical in how military personnel adjust to their experiences long-term, and may be a window of opportunity for services to decrease risk of social isolation.

Populations at specific risk

Another emerging theme in the 2014 literature relating to the relationship between social isolation and mental health outcomes in the veteran population regards specific sub-groups who may be at increased risk. A narrative literature review by Matarazzo et al.³⁹ found that social isolation and victimisation are particularly relevant to consider in lesbian, gay, bi-sexual, and transgender (LGBT) military personnel when looking at suicide risk. Specifically, the review found that across studies looking at social support in LGBT veteran populations, as well as LGBT community populations, those who reported lower social support were at increased risk for suicide, and those who reported more social support and social cohesion within their service units were much less likely to engage in self-directed aggressive behaviour³⁹. However, this review only identified two studies that looked at LGBT veterans specifically. Further research is therefore required before any inferences can be drawn about the role of social support among LGBT veterans in particular.

Focusing on another important, and also under-researched sub-group of veterans, Van den Berk-Clark et al.⁴⁰ found that social support is especially critical for homeless US veterans. The study found that receiving more social support increased the trust of homeless veterans in service providers, resulting in those with more support to attend more of their appointments. This may indicate that decreasing social isolation in this vulnerable group may increase their likelihood of utilizing services, which may in turn aid them in transitioning back into non-itinerant life.

5. Online technology and mental health

Only a few studies were identified in the 2014 literature which evaluated online or technology-based interventions and aids for veterans. The papers included in this review focus on the usefulness and perceptions of various delivery formats and resources that may be used as adjuncts or alternatives to traditional care. This research has predominantly emerged from the US.

Mobile phones

Access to mobile phones is extremely common, and this provides an interesting avenue for providing support to veterans, both as stand-alone applications or as adjunctive aids to more traditional therapy approaches. Veterans referred for outpatient PTSD treatment in the US were asked about their individual access, utilisation and interest in mobile-based healthcare programs (henceforth referred to as mHealth). The study found that the vast majority (76%) of these veterans had access to mHealth capable devices (such as smartphones or tablets), and age was a significant predictor of this. Specifically, younger veterans were significantly more likely to own such a device than older veterans. However, despite this pervasive access, less than 10% actually reported using

already available and existing mHealth programs. Despite this small percentage of current users, more than half of the veterans asked indicated that they would be interested in using mHealth applications for problems such as anger management, sleep hygiene or management of anxiety symptoms⁴¹. This indicates that mHealth applications may have the potential to increase access to care, and therefore should continue to be developed and trialled with veterans, especially considering the current younger generations of veterans who almost exclusively have access to, and make persistent use of, mobile phones and tablets. It also suggests that attention needs to be paid to the uptake of these applications amongst interested veterans. Attention could also be paid to increasing access to these interventions for older veteran groups, ensuring that developments in technology can also benefit this demographic.

In addition to this, the 2014 literature highlighted that homeless veterans are a specific group who may benefit from mobile phone based health technology. A recent evaluation of the access to information technologies among homeless veterans across various sites in the US found that a great majority (89%) of homeless veterans have access to mobile phones, and similarly many use the internet (76%). Further, out of those with a mobile phone, 71% used this for text messaging. Ninety three percent of the homeless veterans reported being interested in receiving text or call reminders for upcoming healthcare appointments, and 88% said they would want to receive an outreach call or text to schedule an appointment if they had not been seen by a healthcare provider in over a year. Many homeless veterans also reported already using information technologies for information related to healthcare, jobs or housing⁴². While there are obvious barriers to using information technologies in healthcare provision to homeless veterans, such as uncharged batteries (reported by 35% of the study participants), number changes (45%), or cost (16%), further investigation and trialling of mobile technologies among homeless veterans is warranted.

Websites

Another resource that is becoming increasingly common in the delivery of healthcare and service provision to veterans is internet based interventions. Websites can be used to provide self-guided interventions, workshops, psycho-education and resources, as well as linking individuals with face to face services. One study in 2014 found that there was some success of an online self-management Post-traumatic stress workshop for student OEF/OIF veterans in the US (n=11)⁴³. The workshop was developed for Deployment.org, a website specifically designed in the US for serving and ex-serving military personnel, and the workshop itself included eight online multimedia sessions. The sessions focussed on normalising the experience of symptoms and training users in the self-management of intrusive memories, avoidance and hyper-arousal symptoms. This included teaching strategies such as graded exposure, cognitive re-framing, and relaxation. Of the 11 participants, five demonstrated statistically significant reductions in

symptoms of PTSD from baseline to post-intervention. Although this provides an interesting demonstration of the potential uses of the internet for providing services to veterans, investigations with more rigorous methodologies are first required. Particularly, this study excluded veterans who reported significant distress at intrusive memories related to their military service, limiting the generalisability of these results to veterans with higher levels of distress.

Online or phone-based interventions compared to normal treatment

Increasingly, technology-based interventions are offered as alternatives to traditional care, and research is evaluating their efficacy compared to standard face-to-face treatment. A randomised controlled trial (RCT) was conducted comparing 12 sessions of in-person with video-teleconferencing (VTC) Cognitive Processing Therapy treatment offered to 125 rural US veterans with PTSD⁴⁴. The results showed significant decreases in symptoms of PTSD post-treatment in both groups, and these reductions were maintained at 3 and 6 months follow-up. Overall, VTC was non-inferior to in-person treatment on clinical and process outcomes. Further, participants in both groups reported high levels of satisfaction with the treatment and good therapeutic alliance. Treatment compliance was also high, with between 75.4 and 78.1% of participants completing at least 10 sessions in the VTC and in-person groups, respectively.

A similar study with rural OEF/OIF veterans in the US with PTSD also found a trend supporting the equivalence of CBT telemedicine with in-person therapy⁴⁵. Specifically, among 18 veterans with diagnosed PTSD, 10 weekly sessions of face-to-face or telemedicine were offered; 13 completed the sessions, and a clinically significant decrease in PTSD scores was found for 69% of participants, and there was no significant difference between the two treatment modalities in this change. Greater satisfaction with the treatment was reported by the telemedicine group, but the paper did not report whether the differences in satisfaction ratings were statistically significant (mean satisfaction ratings of 98.1% compared to 92.1%). In addition, given the extremely small sample size, further replication of these findings is required to evaluate the effectiveness of telemedicine CBT.

A common concern in the delivery of telehealth is that limited confidence or familiarity with using this mode of communication may affect uptake and outcomes. One 2014 study specifically examined the moderating effect of familiarity with telehealth on treatment response⁴⁶. Fifty nine US combat veterans completed 8 sessions of Behavioural Activation and Therapeutic Exposure, a transdiagnostic exposure based psychotherapy aimed at treating comorbid symptoms of PTSD and depression. The treatment was delivered by masters level therapists via home based telehealth technologies, including Skype or use of an analogue videophone. Symptoms severity for both depression and PTSD decreased as a result of treatment. Further, familiarity with

and confidence in the technology were found to be unrelated to symptom change. This suggests that once veterans use the telehealth device, their perceptions of telehealth are unrelated to outcomes for mental health treatment. This speaks to the potential usefulness of telehealth options for veteran populations in general, regardless of an individual's pre use confidence and familiarity with the technology involved. Perception barriers to initial uptake of the technology however still need to be considered and addressed.

Overall, information technologies such as mobile phones, the internet and online or phone-based interventions are a valuable resource for veteran services to explore and expand, as they allow access to a wide range of veterans, and may be especially valuable for those otherwise difficult to reach (e.g. homeless veterans). An additional benefit for this may be that an analysis showed that coordinated telehealth for US veterans resulted in a 4% decrease in total annual healthcare cost within a year, compared to a 48% increase for US veterans who continued with usual care⁴⁷.

6. Case coordination and mental health outcomes

In the Australian literature, an integrated, coordinated, multi-disciplinary approach to the treatment of mental health disorders is known as care coordination or case coordination, with preference for the term case coordination. This approach is outlined in the Australian Department of Health's *Co-ordinated Care and Flexible Funding for People with Severe, Persistent Mental Illness and Complex Care Needs* program, now called the *Partners in Recovery* initiative, funded in 2012 as part of the A\$2.2 billion investment over five years in the National Mental Health Reform package. A significant characteristic of the National Mental Health Reform is the recognition that supporting people with severe or complex mental health difficulties requires collaboration across a range of sectors other than health services to include housing, financial support, education and employment. Brophy et al.⁴⁸ conducted a narrative review of the literature regarding best practice in the area of case coordination, and how this applies to the *Partners in Recovery* initiative. Brophy et al. defined case coordination to be a person centred, holistic support, care and treatment approach, where the case coordinator is responsible for undertaking assessments, developing multi-sectorial action plans, coordinating services and being the single point of contact for the client.

Implementation of case coordination

Key findings of the Brophy et al.⁴⁸ review reflected the importance of having case coordinators who are well prepared for the role, can demonstrate competent practice and achieve better systemic responses that are focussed on the needs of the client⁴⁸. It was noted that focussing on these aspects provided the best opportunity to overcome

barriers to effective care and treatment experienced by individuals with persistent mental health and complex care needs across what are complex service delivery systems.

Overseas, collaborative care and coordinated care are terms that have been used to define an integrated approach to the treatment of mental health disorders in primary care settings where case managers, psychiatrists, and medical practitioners work together to manage mental disorders using a similar approach to the management of chronic disease⁴⁹. Two papers were published in 2014 that presented service case studies on this topic. The first, by Gurewich et al.⁵⁰ regarded the coordination of medical and substance use disorder services at community health centres in the US. The authors found that integrating certain staff (in this situation the behavioural health staff) within the primary health care team was particularly critical to support care, and transitions between different aspects of care⁵⁰. A case study by Eghaneyan et al.⁴⁹ examined the interdisciplinary relationships and approaches that supported the implementation of a collaborative care program to treat anxiety and depression in a community based primary health clinic in the US. The study found the implementation of the collaborative care program was influenced in this setting by; organisational change, communication, processes and outcomes of the program, and barriers to implementation. Similar to the narrative review by Brophy et al.⁴⁸ regarding csre coordination in Australia, the Eghaneyan et al.⁴⁹ case study found that adequate training, acceptance and support from key personnel, communication barriers, tools for systematic follow-up and measurement and organisational stability all had significant bearing on the success of the collaborative care model implementation.

Two studies considered implementation of case coordination with US veterans. Zulman et al.⁵¹ described the process underpinning the redesign and implementation of services for high-need, high-cost patients with VA healthcare services in the US. Results found high-need, high-care patients accounted for over half of VA facility patient costs, and that most (94%) had three or more chronic conditions and that 60% had a mental health diagnosis. The results revealed a need for intensive case management, case coordination, transitions support, social support and additional services. In response to this, as part of the research, care processes were developed to meet these needs, and included direct access to team members (including after hours), chronic disease management protocols, case management, and rapid interventions in response to health changes or acute service use. Zulman et al.⁵¹ reported that uptake and retention in the program had been good, with two thirds of invited participants enrolling in the program, and 87% remaining with the program 9 months later. This model has now been adopted as a national VA intensive management demonstration project. Mallen et al.⁵² presented a template of how one Midwestern Veteran Affairs Medical Centre provided case coordination to high-risk OEF/OIF veterans returning from combat and reintegrating to civilian life after one or more deployments. The 'Seamless Transition Committee' is used

to coordinate care in this model, and comprises staff from all relevant disciplines and departments involved with the care, support and treatment of high-risk veterans. Through meeting to case manage and coordinate care, the veterans are expediently referred to appropriate services spanning multiple service areas.

In summary, it is apparent from these studies examining the implementation of case coordination in predominantly community based primary health care settings, that certain factors are critical to the success of the approach. These include role clarity for the position of case coordinator and training competencies, effective communication as part of the interdisciplinary relationships inherent to the case coordination process, integrating key staff within teams, and organisational support for the approach. Users also consistently report appreciating the person centred, client centred approach, having one person as the primary point of contact, and higher levels of satisfaction with the service.

Outcomes of case coordination

There were a limited number of papers published in 2014 in relation to the outcomes of a case coordination approach. One of the most rigorous studies to examine the evidence base for case coordination⁵³, utilised a meta-analytic approach. This study included 36 RCTs and 14 companion reports (total patients n=7494) where case coordination was the intervention applied with frequent health service users (this included both physical health and mental health services). The meta-analysis found significantly fewer patients in the intervention group who received coordinated care were admitted to hospital than in the control group. However, subgroup analysis found this pattern held for chronic medical conditions only, and not for those with mental illnesses. Tricco et al.⁵³ concluded that quality improvement strategies for case coordination reduced hospital admissions for those with chronic conditions other than mental illness, and noted that novel strategies may be required for patients with mental health conditions.

In contrast, Salkever, Gibbons and Ran⁵⁴ reported the findings of a two-year randomised trial of a comprehensive treatment and employment intervention for US adults (n=2,238) with severe and persistent mental disorders. The intervention comprised a nurse case coordinator with responsibilities to coordinate the care team's delivery of medication management, individual placement and support, supported employment and other behavioural health or related services. The study found significant treatment group reductions across four outcome measures; hospital stays and days, ER visits for mental health problems, and psychiatric crisis visits. Salkever, Gibbons and Ran⁵⁴ estimated that this intervention would create annual hospital treatment cost savings in excess of approximately US\$900-1,400 per inpatient.

In the Mallen et al.⁵² study described earlier, administrative data was used to compare service utilisation rates for high risk US OEF/OIF veterans (n=146) in the six months

prior to the first Seamless Transition Committee (STC) meeting, and the six months after this meeting. Visits to mental health clinics increased significantly, and there was a significant decline in psychiatric hospitalisation rates. Staff survey (n=32) found the STC approach to case coordination to be popular, and the perception that it improved veterans standard of care (84.4%) and saved clinicians time in formulating or implementing an appropriate treatment plan (65.6%). In summary, Mallen et al. concluded that the level of care and leadership provided through the case coordination approach increased the likelihood that veterans would return from deployment and receive the services required to meet their complex psychological and social issues in a timely manner.

Another term commonly used in the literature regarding case coordination in the US was community-based case management. This refers to a case coordination approach which is delivered through community health settings, rather than hospital settings. Joo and Huber et al.⁵⁵ performed an integrative review that included 18 studies regarding community-based case management and its outcomes from 2000 – 2013. Of these 18 studies, six (33%) related to mental health disorders, and the remaining 10 (56%) to chronic illness and two (11%) to cancer. The review found community-based case management resulted in positive outcomes for clients, including fewer readmissions to hospital, improved cost effectiveness and clinical outcomes, and patient satisfaction. Joo and Huber⁵⁵ concluded that there is an evidence base supporting the effectiveness of community-based case management that calls for the use of this approach with major case coordination⁵⁵.

7. Suicide in military and veteran populations

A large amount of literature was published in the area of suicide and suicidal behaviour in military and veteran populations in 2014. This literature focussed on a wide range of risk factors and correlates of suicidal behaviour following military service, including; involvement in interpersonal violence⁵⁶, minority status⁵⁷, beliefs of burdensomeness and hopelessness⁵⁸, worse physical health⁵⁹ and history of prior traumatic brain injury⁶⁰. Factors such as comprehensibility (having 'made sense' of a stressor)⁶¹, and more social support⁶² were associated with lower odds of mental health problems and suicidal ideation and attempts. Spiritual health was also explored as an important factor to consider in the mental health context of veterans, such that veterans who reported suicidal ideation more often rated their spiritual wellbeing as bad/unsatisfactory⁶³. Given the range of areas and variables explored in the 2014 literature, for the purposes of this narrative review, three of the most common themes were identified and are explored in greater depth: non-suicidal and self-injuring behaviour, sleep, and the effectiveness of media prevention campaigns. A brief update is given on the relationship between

psychiatric morbidity and suicide, and suicide among at-risk sub-populations is discussed.

PTSD, comorbid disorders and suicide

A cross-sectional study on more than five million Veteran's Health Administration (VHA) users in the US found that 0.6% had died by suicide, and PTSD was associated with increased suicide risk. However, after adjusting for comorbid psychiatric disorders, PTSD was associated with decreased suicide risk, with major depressive disorder having the largest impact on the relationship between suicide and PTSD⁶⁴. Although this study was unable to assess directionality of risk given the study design, the findings of this large-sample evaluation underline the importance of assessing for a range of psychiatric symptoms among veterans when evaluating risk for suicide.

Non-suicidal and self-injuring behaviour and its relationship to suicide in veterans

Non-suicidal self-injury (NSSI) is an important risk factor for future suicidal thoughts and behaviours and traumatic stress symptoms may play an important role in the development and maintenance of NSSI, as NSSI may be a way to cope with traumatic experiences⁶⁵.

In a study of student veterans in the US⁶⁶ 14% reported lifetime NSSI, and 3% reported NSSI in the past year. No significant differences were found in the likelihood of NSSI by veteran status or history of deployment, but different types of deployment were associated with different likelihoods of NSSI. Specifically, student veterans who had deployed to a combat mission were significantly less likely to report NSSI (12.9%) compared to students who had not deployed to a combat mission (18.2%), but those who had been deployed to a combat support mission were significantly more likely to report NSSI (24.4%) compared to those who had not deployed to a combat support mission (10.3%). Further, student veterans who reported more NSSI also reported exposure to significantly more trauma during their lifetime. NSSI was also significantly associated with suicidal ideation, suicide planning and suicide attempts.

Using the same sample, a second investigation was conducted to identify the trajectories of NSSI and suicide⁶⁷. It was found to be more common for suicidal ideation to emerge before NSSI (67%). NSSI emerged before the first suicide attempt for the majority (91%), compared to only 9% who reported the first suicide attempt to precede NSSI. The authors concluded that NSSI may serve as a "stepping stone" from suicidal ideation to attempt. This makes NSSI a very relevant behaviour to explore further in research, and also gives clinicians a salient risk factor to screen for when assessing risk of suicide in veteran groups.

It should be noted that the samples in both studies were US student veterans enrolled in college classes, the veterans were younger than the average veteran (mean=36.67,

SD=10.59), and in the US it is possible to get governmental financial support for university studies after serving in the military. This may have been an additional motive/reason for serving, and it is not possible to determine how this may have impacted their military experience. Despite these limitations, this research provides a valuable evaluation of NSSI in a veteran population. Future research will need to include more representative veteran samples, and a longitudinal, rather than cross-sectional, design.

Sleep and its relationship with suicide

Sleep disturbance is a common symptom reported by people experiencing mental health difficulties, such as depression, PTSD and anxiety. Sleep duration, latency (time taken to fall asleep) and quality can have a significant impact on an individual's physical and mental well-being, and research in the past has suggested that insomnia may be directly related to suicidal ideation in military personnel⁶⁸ as well as completed suicide⁶⁹.

In a 2014 study evaluating the relationship between sleep and suicide risk, it was found that sleep disturbance, along with mental health conditions and suicidal ideation, was significantly greater in veterans who had completed suicide compared with controls in a sample of US veterans⁷⁰. A major drawback to these findings is that sleep disturbance in the suicide cases included any mentioned difficulty with sleep, nightmares or sleep apnoea, limiting the inferences that can be drawn from the findings.

In another study, data was extracted from medical charts of US veterans referred from primary care, who had previously completed sleep-related assessments⁷¹. Inadequate sleep quality was significantly associated with suicidal ideation, but sleep latency and habitual sleep duration were not. A limitation of these findings is that the study sample only included veterans who met criteria for hazardous drinking, and these findings may therefore not generalize to other veterans. The measure of sleep quality also relied on the answer to a single-item question asking about sleep quality, and answers were dichotomized as either "good" or "bad". Further research is required to substantiate these findings.

In contrast, another 2014 study of Canadian Forces members and veterans found that while many reported problems with sleep, these problems did not significantly predict suicidal ideation⁷². Specifically, 86.9% reported having had problems falling or staying asleep in the past month, and a third reported being bothered by nightmares that were related to military traumatic events. However, neither sleep disturbance nor nightmares significantly predicted suicidal ideation. A major limitation of these findings was that sleep disturbance and nightmares were assessed using two single items from the PTSD-Checklist Military version (PCL-M). While stand-alone items from these measures may be useful in describing the prevalence of specific symptoms in these samples, it is not an

adequate measure of a complex construct such as sleep, and is likely to explain the insignificant result.

Overall, there is some early evidence emerging that sleep difficulties, including worse sleep quality, greater sleep latency and more nightmares, may have a direct and meaningful association with suicidal ideation and behaviour. However, more research with more rigorous methodologies using validated sleep measures is required to further explore these findings, and to substantiate some of the preliminary evidence to date.

The usefulness of media campaigns to prevent suicide in veterans

Two studies from the 2014 literature outlined the evaluation of media campaigns within the community in the US to prevent suicides among military personnel.

In an evaluation of a media campaign designed by the US Department of Veterans Affairs, it was found that there was a statistically significant increase in calls to suicide prevention lifelines after the roll-out of a suicide prevention campaign in some US cities⁷³. The campaign involved placards placed around the community, with messages to call the lifelines if in “emotional crisis” tailored to military personnel (e.g. depicting an American soldier in uniform with an American flag), and the placards were up for an average 12 weeks across various US cities. Further to the increase in number of calls made to the lifelines after the campaign, there was a decrease in number of rescues made in the first half after the campaign, but a steady increase in the number of rescues, meaning the dispatch and/or coordination of local emergency services, made towards the end of the campaign and immediately following the campaign implementation.

A further study used telephone interviews to evaluate the perception of media campaigns among US veteran households⁷⁴ with 33% of veterans reported having seen a suicide prevention message in the past month, and 48% reported that they’d be very likely to make use of a suicide prevention hotline if the need arose. Those who reported having seen a prevention media message in the past month were significantly more likely to say they would be very likely to use a suicide prevention hotline. In addition, those who knew someone who had used a suicide prevention hotline in the past also reported they’d be more likely to use one themselves. Males were less likely to report a high intent to use suicide hotlines in the future compared to females. This is in line with previous research, and underlines the need for suicide prevention campaigns tailored to male veterans as they may be less likely to seek psychological aid when needed.

In the future, such media campaigns may prove to be a valuable additive to other suicide prevention campaigns, but more research is required to evaluate the most effective type and medium of such campaigns.

At-risk subpopulations

Recent research has focussed on sub-groups of veterans who may present with a unique risk or set of risk factors for suicide and suicidal ideation. A group who may require special consideration in the assessment and prevention of suicide among veterans is those who identify as Lesbian, Gay, Bisexual, or Transgender (LGBT).

LGBT

The mental health outcomes of veterans and military personnel who identify as LGBT are beginning to be evaluated, as there are unique factors that may put this group at increased risk for post-service mental health problems. Two papers were identified in the 2014 literature that directly evaluated the suicide risk among LGBT veterans and military personnel; one of these papers is a review of past research in this area.

Only two past papers were identified in the narrative literature review looking at suicide rates among LGBT veterans specifically, speaking to the paucity of research on this vulnerable population to date³⁹. These studies were conducted in US veteran populations. Across research studies on suicide in LGBT military and community groups, the review found that LGB individuals have an approximate threefold greater risk of suicidal ideation and attempts compared to individuals who identify as heterosexual and who report never having engaged in same-sex sexual activity. The review identifies bisexual individuals as being at particular risk for suicide. The review also notes that there is no research to date that compares prevalence of suicide risk among transgender individuals to the general population, highlighting the urgent need for such research to be conducted. More broadly the review also looked at protective factors against suicide in the LGBT community in general, and found that good social support, less victimisation, and better mental health are buffers. Specifically, they found that worse social support and more mental health problems explained the relationship between LGB identity and suicide risk.

Another paper, which was not included in the review above due to its recent publication, also evaluated the prevalence of suicidal ideation and attempts in LGB US veterans compared to heterosexual US veterans⁷⁵. Specifically, it was found that LGB veterans did not significantly differ from heterosexual veterans in the prevalence of suicidal ideation or attempts in the past 12 months. However, LGB veterans had higher odds of lifetime suicidal ideation (47.0%) than heterosexual veterans (22.1%). Lifetime suicide attempts were also higher in LGB veterans compared to heterosexual veterans, and although this difference did not reach statistical significance (22.6% vs. 7.6%, respectively) it is a considerable difference that warrants additional investigation.

Although qualitative research was purposefully excluded in this review, a brief mention of a mixed-methods study is included here to further highlight the need of assessing LGBT

identity among veterans⁷⁶. It was found that less than one third of LGBT veterans and VA service providers viewed the US VA system as welcoming to LGBT veterans, and half of VA service providers indicated that they do not assess for sexual identity/orientation. Further, only 25% of all the VA service providers in this sample (N=202), altered their treatment plans even when they knew of the patient's sexual minority status.

Further evaluation is needed of the prevalence rates of suicidal ideation, attempts and completed suicides among LGBT veterans, particularly transgender veterans as there is a paucity of evidence in this area.

8. Military sexual trauma

In the US, Military sexual trauma (MST) impacts up to 30% of female veterans and five percent of male veterans⁷⁷. A modest number of papers regarding MST were identified in the 2014 literature and all of these related to research conducted in the US. This review focuses on the prevalence of MST, including differences by gender, age and demographics and underreporting issues. The impact of MST on the health, mental health and wellbeing reported by veterans is then examined, and an emerging trend regarding pre-existing vulnerabilities to encountering MST is presented.

Prevalence

MST has been defined by the US Department of Veterans Affairs as 'sexual harassment that is threatening in character, or physical assault of a sexual nature that occurred while the victim was in the military, regardless of geographic location of the trauma, gender of the victim or the relationship to the perpetrator'⁷⁷. In an important paper in the 2014 literature, Klingensmith et al. reported current estimates of the prevalence of MST drawn from the National Health and Resilience in Veterans Study. This study comprised a contemporary, nationally representative sample of 1,484 US veterans (surveyed online over September-October 2013). Overall, 7.6% of veterans reported MST. Markedly higher rates were reported by female veterans in comparison to those reported by male veterans (32.4% vs 4.8%). Younger veterans aged 18-29 years also reported much higher rates of MST than older veterans aged 60+ years (22.8% vs 4.5%)⁷⁷.

It is generally observed that female veterans tend to report less combat exposure than male veterans, but greater exposure to other stressors of war, including MST^{77,78}.

Female veterans are the fastest growing segment of the US veteran population. Approximately 200,000 of the 2.6 million OEF/OIF and Operation New Dawn (OND) veterans are women⁷⁹. Many are seeking care in both the Veteran Administration and the civilian sector⁷⁹.



Due to the fact that men report MST at significantly lower percentage rates than women, they are not often the focus of research in this area, and much less is known about the experience and impact of MST on men⁸⁰. A narrative review published on this topic by Morris et al⁸⁰ further interpreted prevalence rates in respect to gender. For example, from a large sample of veterans accessing VA Medical Centres (n=100,095), 2.3% reported MST. When prevalence was divided by gender, 21.9% of female veterans and 1.1% of male veterans endorsed MST. In real world numbers, this equated to 53,295 women and a comparable 46,800 men. Hence, Morris et al.⁸⁰ surmised that there are approximately equal numbers of men and women that screen positive for MST.

The issue of underreporting of MST

Underreporting is an issue that affects prevalence estimates of sexual assault in all populations. In the military context there may be additional barriers experienced by veterans that influence prevention, reporting and seeking treatment for issues associated with MST that exacerbate factors related to underreporting. For example, Rossiter et al.⁷⁹ cited US Department of Defense figures that stated 3,347 cases of sexual assault were reported in 2012, but estimated that as many as 26,000 cases went unreported in that year. This type of discrepancy between what is reported, and what is experienced by veterans must be considered in every appraisal of the prevalence of MST in this population.

A qualitative study by Burns et al.⁸¹ explored some of the systemic factors that influence the occurrence of MST, as well as reporting and treatment seeking behaviours of female veterans in a series of interviews (n=22) with US servicewomen deployed overseas between 2002 and 2011. The interviews probed the servicewomen's experience and perception of MST, including reporting issues and related services. Burns et al.⁸¹ found several factors contributed to MST, including; deployment dynamics, military culture, and lack of consequences for the perpetrators. Issues around reporting, specifically the underreporting of MST were attributed to perceived negative reactions to making a report, blame from peers and supervisors, and associated stigma. There were ongoing concerns about the fidelity of confidentiality. Interestingly, unit cohesion was seen as both a facilitator and a barrier to reporting, suggesting that this aspect of military culture could be wisely targeted by prevention programs. Issues around accessing services and support were similar to those surrounding reporting, with confidentiality concerns and stigma again cited. The qualitative analysis found support for strengthening consequences for perpetrators as a way to address MST. Burns et al. called for the barriers around reporting and seeking services relating to confidentiality, stigma and blaming to be considered by policymakers to improve MST prevention and intervention services⁸¹.

Pre-existing vulnerability

A small number of papers were published in the literature in 2014 supporting a link between childhood sexual abuse, assault and maternal care and later experiences of MST. For example, Cobb et al.⁸² found high rates of childhood trauma (59.7%) and MST (sexual assault = 14.7%, sexual harassment = 34.8%) co-occurred in the US Women Veterans Cohort Study, a sample of female veterans who served in Iraq and Afghanistan over 2008 to 2011 (n=365). Subsequent analysis found active duty status, childhood trauma, combat exposure and MST were independently associated with increased severity of military related PTSD.

Wilson et al.⁸³ found rates of MST to be higher among US Iraq and Afghanistan combat veterans (n=197) who reported childhood sexual abuse and low levels of maternal care (43%) compared to those who reported childhood sexual abuse and high levels of maternal care (11%). The authors suggested that maternal care may be protective, with high levels of maternal care future proofing veterans to further victimisation when in service⁸³.

Koo et al.⁸⁴ also noted in a narrative review that for US female veterans, a history of MST was significantly associated with younger age, minority ethnicity, higher education levels, middle income level, high utilisation of VHA in the past year, service connection, fair/poor health status, no Medicare coverage or health insurance, and a mental health clinic visit.

In terms of interpersonal violence, Tinney⁸⁵ and Gerber et al.⁸⁶ noted the commonality of this experience for female veterans. Tinney presented findings for the US Centers for Disease Control and Prevention's 2010 National Intimate Partner and Sexual Violence Survey that compared between military (n=1,408 active duty women and n=1,428 wives of active duty men) and civilian women (n=9,000). Interpersonal violence (IPV) was measured in this study as actual or threatened physical violence, or unwanted sex from an intimate partner. Decreased rates of IPV were found among active duty women compared to civilian women. However, higher rates of lifetime IPV were found among women who had served in the military compared with those who had not served in the military (33% vs 25%). Gerber et al. surmised that IPV is a common experience of female veterans, particularly those who access US VA health services. The need to consider this in planning services and providing access to evidence based treatment was acknowledged⁸⁶.

Impact

A narrative review by Koo et al.⁸⁴ examined mental health correlates of MST. In one sample of OEF/OIF/OND veterans seeking US VA care, women reporting MST were four times more likely to have a PTSD diagnosis, and men three times more likely than those without MST histories. MST was also associated with higher rates of comorbid

mental health diagnoses among this sample of veterans. For example, the female veterans with PTSD and MST were more likely to have comorbid depression (75% of women were diagnosed with PTSD and depression), anxiety (42%), and eating disorders (4%) than their male counterparts, while men with PTSD and MST were more likely than their female counterparts to have alcohol use disorder (27% of men).

Cobb et al.⁸² surveyed US female veterans (n=365) assessing for combat exposure, military sexual trauma, military-related posttraumatic stress symptomatology (PTSS) and demographic, life history, and other psychopathology variables. They found that active duty status, childhood trauma, combat exposure, and MST were independently associated with increased severity of military-related PTSS. Moreover, a significant interaction emerged between MST and combat exposure in predicting military-related PTSS, suggesting that the relationship between combat exposure and PTSS was altered by MST status. Specifically, under conditions of high combat exposure, female veterans with MST had significantly higher PTSS compared to female veterans without MST.

Also of interest in understanding the mental health outcomes of sexual violence in military cohorts is a finding by Walsh et al.⁸⁷. Walsh et al. conducted telephone interviews with US Reserve and National Guard soldiers (n=1030 reserve, 23% female, and 973 national guard, 15% female). They assessed lifetime and deployment related sexual violence, PTSD and depression in order to examine whether exposure to lifetime sexual violence was associated with increased burden of psychopathology. Lifetime sexual violence prevalence was 37% and 28% among Reserve and National Guard women, and 4% among both Reserve and National Guard men. Recent deployment-related sexual violence ranged from 1 to 3% for women and was 0% for men. Those who had experienced lifetime sexual violence had 3.5 times greater odds of probable lifetime PTSD, 2.5 times greater odds of probable past-year PTSD, and 1.5 times greater odds of reporting probable lifetime depression, relative to those without a history of sexual violence. Due to the low reported prevalence of deployment related sexual violence in this cohort, these results represent any past lifetime sexual violence and therefore the particular impact of sexual violence on deployment or in the military environment cannot be surmised. Regardless of this, these results highlight that a lifetime history of sexual violence may have a significant impact on mental health outcomes in military personnel.

The 2014 literature points towards high levels of exposure to MST, particularly for female current and ex-serving personnel, and MST and lifetime sexual violence as having important implications in mental health outcomes. This highlights the need for prevention efforts to protect military personnel and veterans from exposure to MST and for interventions to mitigate any potential detrimental effects. It should be noted that all of the 2014 literature relating to MST reported here emerged from the US, and therefore caution should be taken when generalising to an Australian context.

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