

Military and Veteran Mental Health Literature Scan: 2013–2016

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This document presents an annual literature scan for the years 2013–2016 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.

Disclaimer

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Glossary of Terms

Term	Definition
AA	Alcoholics Anonymous
AAU	Adjustment as usual
AC	Attention control
AIS	Australian Institute of Sport
ART	Accelerated Resolution Therapy
BA	Behavioural activation
CACT	Centrally assisted collaborative telecare
CAF	Canadian Armed Forces
CAPS	The Clinician-Administered PTSD Scale
CBSRT	Cognitive Behavioural Social Rhythm Therapy
CBT	Cognitive Behavioural Therapy
COPE	Concurrent Treatment of PTSD and Substance Use Disorders using Prolonged Exposure
CRAF	The common risk assessment framework
CTS	The Conflict Tactics Scale
CTS2	The Revised Conflicts Tactics Scale
DoD	The United States Department of Defense
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, 5th Edition
DV	Domestic violence
DVA	The Australian Government Department of Veterans' Affairs
EFT	Emotional Freedom Techniques
ICBT	Integrated Cognitive Behavioural Therapy
ICD-10	The International Statistical Classification of Diseases and Related Health Problems 10 th Revision
IMPROVE	Integrated Management of Pain and PTSD in Returning OEF/OIF/OND Veterans

Term	Definition
IPPI-RAT	Intimate Partner Physical Injury-Risk Assessment Tool
IPV	Intimate partner violence
LGBTQI	Lesbian, gay, bisexual, transgender, queer or questioning, and intersex
MDD	Major depressive disorder
MFSM	Military family stress model
MI	Motivational interviewing
MSMV	Military service members and veterans
NA	Narcotics Anonymous
NHMRC	National Health and Medical Research Council
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
OND	Operation New Dawn
PTSD	Posttraumatic stress disorder
RBRS	Relationship Behavior Rating Scale
RCT	Randomised controlled trial
RTM	Relational turbulence model
rTMS	Repetitive transcranial magnetic stimulation
SFSF	Strong Families Strong Forces
SSRI	Selective serotonin re-uptake inhibitor
SUD	Substance use disorder
UK	United Kingdom
US	United States
VA	The United States Department of Veteran Affairs
YRRP	Yellow Ribbon Reintegration Program

Executive Summary

This triennial 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). This executive summary provides an overview of the literature scan for each topic of review. The topics, chosen in consultation with DVA, for 2013–2016 were:

- Concurrent treatment of PTSD and comorbidities of depression, substance use, and pain.
- Veterans and intimate partner and family violence – prevalence, risk factors, and interventions.
- Innovation in transition models for the military, elite sports, and/or emergency services.
- Development in treatment conceptualisations for addiction.

Overall summary

Concurrent treatment of posttraumatic stress disorder (PTSD) and comorbidities of depression, substance use, and pain (Pages 6 to 16)

- Concurrent treatment interventions included extensions to, or modifications of, existing group and individual therapies such as behavioural activation. These were tailored to the military and veteran populations. Other interventions included self-paced, online programs, and home-based, multi-component interventions. Pharmacological and non-invasive brain stimulation techniques were also considered.
- Emerging concurrent treatments for PTSD with comorbid depression, pain, or substance use show early promise in reducing the symptomology of either condition, and in some cases, both conditions.
- Most of the studies were small, with study designs that had methodological flaws associated with them.

Veterans and intimate partner and family violence – prevalence, risk factors, and interventions (Pages 17 to 27)

- Prevalence studies in the US have found that between 18.5% and 47% of female US veterans experience victimisation at the hands of intimate partners, while for male US veterans this figure is 9.5%. However, the use of different definitions of violence and heterogeneous assessment tools makes it difficult to draw firm conclusions about the incidence of intimate partner violence (IPV) in military populations. The prevalence of IPV victimisation in Australian military samples has not been recently reported, however, in the Australian general population, 16.7% of females and 5.3% of males recently reported

experiencing physical or sexual violence from a current or former partner, since the age of 15.

- While risk factors for IPV in military populations include high levels of trauma and PTSD, there are many similarities with civilian risk factors for IPV, such as low levels of social support, high levels of stress, low levels of income, younger age, less education, higher levels of depression, and greater alcohol use.
- Research in the US provides some initial findings on screening for military-related intimate partner victimisation and risk assessment for IPV perpetration. However, existing tools and frameworks used in the Australian family violence sector may also be suitable for trials in the military context, due to the universal risk factors. There is also promising emerging evidence for interventions for perpetrators of IPV in reducing violence, while victims reported that their priorities for treatment for IPV experienced at the hands of their partners were physical safety and coping skills for emotional health.

Innovation in transition models for the military, elite sports, and/or emergency services (Pages 28 to 37)

- The majority of literature in this area was generated for military service members and veterans, rather than elite athletes and emergency services personnel, and reported on a diverse range of interventions and frameworks designed to assist with reintegration to civilian life.
- Initiatives for military service members addressed individual service member adjustment, the practicalities of resettling into civilian life, and family reintegration.
- The transition of elite athletes and emergency services personnel out of their occupations was relatively under-researched, and while no intervention studies were reported, factors that contributed to positive and negative transition experiences were identified. For athletes, these factors included career planning and structured retirement support programs, the extent of voluntariness of retirement decision, the level of sport career achievement, injuries and health problems as a source of transition difficulties, and positive and negative coping strategies, such as social support and denial, respectively. For emergency services personnel, these factors included pre-planned retirement, a step-down facility to gradually reduce work hours, and formally organised social gatherings to reconnect colleagues after retirement.

Development in treatment conceptualisations for addiction (Pages 38 to 45)

- Much is known about addiction, which is a chronic problem operating in a cyclical manner, however, relatively less is understood about recovery.
- Recent research has attempted to synthesise findings from long-term outcome studies to improve understanding about when and why relapse occurs.
- The literature emphasised that priority should be given to increasing rates of long-term recovery, while continuing to research short-term outcomes of addiction treatment.

Introduction

This triennial 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. Typically, the scan is a narrative review of literature pertaining to six to eight highly salient topics published in the preceding calendar year, which is deemed to be of quality and interest to DVA. However, for the 2016 literature scan it was determined that four topics covering a three-year period (2013–2016) would be required in order to provide a more in-depth review of each topic.

The literature included in this scan has met broad inclusion criteria based on regular standards of academic review, but it was not a systematic evaluation of all published research during this time period. 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 2016 triennial literature scan, Phoenix Australia consulted with DVA to identify the key topics on which to focus the review. Topic selection was based on relevance to the current work of DVA, and international relevance. The four topics selected were:

1. Concurrent treatment of PTSD and comorbidities of depression, substance use, and pain
2. Veterans and intimate partner and family violence: prevalence, risk factors, and interventions
3. Innovation in transition models for the military, elite sports, and/or emergency services
4. Development in treatment conceptualisations for addiction.

Methodology

The 2016 literature scan had 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 in Table 1.

Table 1. Search terms by topic

Topic Area	Search Terms
Concurrent treatment of PTSD and comorbidities of depression, substance use, and pain	veteran or military AND PTSD AND substance or depression or pain
Veterans and intimate partner and family violence – prevalence, risk factors and interventions	veteran or military AND intimate partner violence or IPV or domestic violence or family violence
Innovation in transition models for the military, elite sports, and/or emergency services	veteran or military AND reintegration or transition or postdeployment elite athlete or elite sport AND retirement or transition emergency services AND retirement or transition
Development in treatment conceptualisations for addiction	addiction or misuse or abuse or substance use disorder or alcohol use disorder AND long-term or course or recovery or remission or relapse OR veteran or military OR neuroscience or cognitive or neuropsychological

Inclusion and exclusion criteria for papers

Abstracts that were found in the initial search were screened using the inclusion and exclusion criteria presented in Table 2. The inclusion criteria were: (a) literature published between 2013–2016, given that the scope of the review was to examine literature from the past three years; (b) studies reporting empirical data and findings in relation to veteran/military populations; (c) studies published in high quality, impactful journals; (d) relevant review papers (e.g., systematic reviews and meta-analyses); (e) exceptional commentary pieces; and (f) papers drawn from other populations where findings are relevant to a veteran/military population. The exclusion criteria were: (a) qualitative studies without empirical data; (b) single case studies; (c) grey literature (e.g., reports, newsletters, conference proceedings); and (d) studies published in languages other than English.

In line with National Health and Medical Research Council (NHMRC) guidelines for evidence review, systematic reviews and meta-analyses were prioritised for inclusion over general literature reviews. Papers which were published in impactful and prominent journals were also prioritised for inclusion, these included *American Journal of Psychiatry*, *Psychological Medicine*, *Journal of the American Academy of Child and Adolescent Psychiatry*, *Journal of Clinical Psychiatry*, *Medical Care*, and *Epidemiologic Reviews*. Literature that explored themes that were considered to be of particular interest to DVA was also prioritised for

inclusion. The total number of abstracts derived from the literature search and the number of papers selected for inclusion is presented in Table 3. Articles which were published online first in 2016 were also included.

Table 2. Inclusion and exclusion criteria for papers

Inclusion Criteria	Exclusion Criteria
Literature published between 2013 and 2016	Qualitative studies without empirical data
Studies reporting empirical data and findings in relation to veteran/military populations	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 published in languages other than English
Exceptional commentary pieces	
Papers drawn from other populations where findings are relevant to a veteran/military population	

Yield

After running the searches in the specified databases, using the search terms (see Table 1), a number of abstracts were yielded for each of the four topics. These abstracts were reviewed by one of the authors to determine whether they fit the inclusion/exclusion criteria (outlined in Table 2). The number of papers yielded for each question, and the number of papers that were determined to be suitable for inclusion for the write-up of the topic area, are shown in Table 3.

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

Topic Area	Abstracts Yielded	Papers Included
Concurrent treatment of PTSD and comorbidities of depression, substance use, and pain	123	15
Veterans and intimate partner and family violence – prevalence, risk factors, and interventions	33	22
Innovation in transition models for the military, elite sports, and/or emergency services	36	18
Development in treatment conceptualisations for addiction	213	32

Literature Scan

1. Concurrent treatment of PTSD and comorbidities of depression, substance use, and pain

Comorbid psychiatric disorders

Comorbidity refers to the co-occurrence of two or more psychiatric conditions¹, and is often associated with PTSD. Approximately 80% of those with PTSD have at least one comorbid psychiatric disorder, with the most common comorbid disorders including depression, alcohol and substance use disorder and anxiety disorder². It has been suggested that comorbidity in PTSD may occur via four mechanisms: (i) a pre-existing psychiatric disorder may increase the risk for PTSD, (ii) PTSD may be a causal risk for a comorbid condition, (iii) PTSD and another disorder may co-occur independently due to shared risk factors, or (iv) a comorbidity may be an artefact of symptom overlap³. Comorbidity in PTSD can exacerbate the negative effects associated with a single disorder. For example, comorbid PTSD and depression is associated with greater symptom severity, poorer psychosocial functioning, poorer physical health, increased risk of suicidality, and negative treatment outcomes, compared to either disorder alone⁴.

Rationale for concurrent treatment of comorbid disorders

Concurrent treatment (also known as integrated treatment) is one of four approaches to treating comorbid disorders. The other three approaches are *sequential* (treatment of one disorder, then the other), *parallel* (treatment of each disorder, but in separate treatments), and *single diagnosis* (treatment of just one disorder, which may have an impact on comorbid conditions even if not originally designed for them)⁵.

A number of reasons for treating comorbid conditions concurrently have been suggested. A combined intervention may shorten treatment time and thus reduce the high treatment attrition rates characteristic of comorbid PTSD, substance use, and depression treatments⁶.

The recent literature highlighting interventions intended to improve the mental health of military and veteran populations with PTSD and comorbid conditions includes individual and group therapies, integrated/systems-based/collaborative care models, and self-directed online programs.

Concurrent treatment of comorbid PTSD and depression

Recent intervention studies centring on the concurrent treatment of comorbid PTSD and depression have used integrated, systems-level interventions, pharmacotherapy, group therapy, online interactive programs, and non-invasive brain stimulation.

Collaborative care models are multi-component, synergistic, service delivery packages, which have demonstrated robust treatment effects for various chronic mental health conditions⁷. One important collaborative care model recently trialled through a randomised controlled trial (RCT) in the US was centrally assisted collaborative telecare (CACT). CACT incorporated cognitive behavioural therapy (CBT) and pharmacotherapy to target PTSD and depression. Delivery was via a coordinated approach involving four parties: the patient; the primary care provider, who conducted screening for PTSD and depression; a nurse care manager/facilitator, who contacted patients monthly and assisted with follow-up, symptom monitoring, and treatment adjustment; and a mental health professional, who conducted CBT with the patient either telephonically or face-to-face, and who formally supervised the nurse care manager/facilitator⁸. CACT was an enhancement of an existing model used by the US Army called *RESPECT-Mil* which in this study constituted usual care⁹. Enhancements included additional training of care facilitators in behavioural activation (BA), problem solving and motivational interviewing (MI), and the allocation of a central psychiatrist, psychologist, and nurse care manager who remotely assisted sites telephonically. As part of a larger longitudinal study in the US military, 332 active-duty US Army returnees from Operation Iraqi Freedom (OIF), Operation Enduring Freedom (OEF), and Operation New Dawn (OND), trialled CACT over a 12-month period. Follow-up was conducted at three, six, and 12 months. There were no differences between groups in three or six-month PTSD scores, but a significant difference emerged at 12 months with those in the CACT group reporting lower scores. Similarly, with depression severity, CACT scores were significantly lower at six and 12 months. There were no adverse events related to the intervention, which were defined as study-related deaths, psychiatric emergencies, or study-related hospitalisations.

Pharmacotherapy treatments for combat veterans diagnosed with PTSD were evaluated in a systematic review and meta-regression analysis of 18 double-blind, placebo controlled trials¹⁰. The effect of pharmacotherapy on PTSD, anxiety, and depression was estimated, and the differential effects of medication classes on outcomes were examined. Medication classes included anticonvulsants, antipsychotics, novel class, selective serotonin re-uptake inhibitors (SSRIs), tricyclic antidepressants, and others. Reviewed studies assessed PTSD using validated measures including clinical interviews and self-reports, with the most frequent measures of anxiety in individual studies being the Hamilton Anxiety Rating Scale

and the Beck Anxiety Inventory, and the most frequent measures of depression being the Montgomery-Asberg Depression Rating Scale and the Hamilton Depression Rating Scale, which are well validated measures. It was acknowledged, however, that some studies did not use well validated anxiety and depression measures. Any adverse events occurring in individual studies were not reported in the review. There were three major findings of the review relevant to the concurrent treatment of comorbid PTSD and depression:

(i) pharmacotherapy significantly improved comorbid depressive symptoms among combat veterans with PTSD; (ii) the effects of SSRIs and tricyclic antidepressants on depressive symptoms were significantly greater than other medications up to a treatment period of approximately 14 weeks, after which there was no longer significant difference between SSRIs and tricyclic antidepressants and other classes of medication; and (iii) SSRIs and tricyclic antidepressants had a greater effect than other drug classes in the management of PTSD symptoms regardless of treatment duration. Based on their findings, the authors recommended that SSRIs and tricyclic antidepressants should be considered a pharmacological treatment for comorbid PTSD and depression until further evidence emerges. These recommendations are in line with *The Australian Guidelines for the Treatment of Acute Stress Disorder and Posttraumatic Stress Disorder* (Phoenix Australia – Centre for Posttraumatic Mental Health, 2013), which recommend that SSRIs should be considered as the first choice when medication is considered for PTSD. The authors of the review also noted, however, that there were limitations to the review due to the issues related to reporting adequacy and the methodological rigour of the studies included.

A single-group pre-post designed pilot study assessed Cognitive Behavioural Social Rhythm Therapy (CBSRT), which is a group therapy targeting PTSD, major depressive disorder (MDD), and sleep disturbances in veterans¹¹. The basis of CBSRT is the social rhythm model of depression¹². Disruptions to veterans' social rhythms, such as sleep-wake cycles and habitual daily routines, are considered to be a possible consequence of their traumatic experiences, and this therapy was designed to improve symptoms of PTSD, depression, and insomnia by developing consistent daytime and night-time routines. Notably, discussion of traumatic events during therapy was not the focus of therapy, and therapists made attempts to minimise any discussion of specific events. The all-male sample (n = 24) were veterans from the Vietnam, Persian Gulf, OEF and OIF military eras. They had clinical diagnoses of MDD and PTSD with at least moderate levels of symptomatology for both conditions, and significant sleep problems, but not severe sleep disorders. CBSRT was administered in groups with an average of five participants per group, and 21 veterans completed the therapy. Sessions included practice in monitoring mood, thoughts, and habitual behaviours, thought challenging, learning to create and implement a realistic social rhythm, and learning

to recognise unhelpful night-time behaviour and implement sleep strategies. Homework, in the form of practising learned skills, was a part of the therapy. Significant improvements in both PTSD and depression symptoms from baseline to three-month follow-up were found using the Clinician-Administered PTSD Scale (CAPS), which is the gold standard in PTSD assessment. However, only two veterans (8%) had a reliable change and a CAPS score less than 20 – a score associated with PTSD remission. The median CAPS score at three-month follow-up was 47.8, so most participants in the trial did not lose their PTSD diagnosis. This was a small pilot study and did not include a control group, therefore further testing is required to examine the efficacy of this intervention. The authors did not make comment on any adverse events in relation to the intervention.

Online treatment options for veterans can potentially help to overcome barriers to treatment-seeking. This is important, considering that it has been suggested that up to 77% of distressed veterans do not seek face-to-face treatment, for reasons such as not having adequate transport, difficulty scheduling an appointment or getting time off work, being embarrassed, or stigma-related issues¹³. By virtue of their accessibility, flexibility, and relatively greater privacy, online treatments may offer advantages over face-to-face treatments. A recent RCT in the US assessed a CBT intervention for PTSD and depression called *Vets Prevail*, which was delivered entirely online¹⁴. Non-active duty veterans (n = 209) with at least mild, but not severe, symptoms of PTSD and depression undertook the *Vets Prevail* program, which comprised seven self-paced CBT lessons, a community message board, and peer chat support. From baseline to 12 weeks, there was a significant reduction in PTSD and depression symptom severity, assessed via self-report, compared to veterans randomised to adjustment as usual (AAU) (n = 94), who were instructed to “go about their lives as they normally do over the next three months”. There were no adverse incidents, such as evident signs of increased stress or suicidality, requiring transfer of care to a mental health professional. The usefulness of *Vets Prevail* for veterans with mild-to-moderate PTSD and depression was demonstrated, although long-term follow-up was not reported which limits the degree to which we can comment on whether the changes persist over time.

A small pilot study tested the effects of repetitive transcranial magnetic stimulation (rTMS) in PTSD and comorbid depression¹⁵. rTMS is a non-invasive brain stimulation technique that is generally used to treat MDD. In a pre-post designed trial (with no control group), United States Department of Veteran Affairs (VA) patients (n = 10) with clinically diagnosed comorbid PTSD and depression received an average of 31 rTMS treatments with no serious adverse effects, and reported significantly reduced PTSD and MDD symptoms posttreatment compared to baseline, using self-report measures. This would suggest that larger,

methodologically rigorous trials may be warranted. It will be important to see whether any symptom changes are maintained over time, and to also examine attrition rates, given the extremely high number of treatments that are required with this particular intervention.

Concurrent treatment of comorbid PTSD and substance use

For individuals experiencing comorbid PTSD and substance use disorder (SUD), separate ('sequential') treatment approaches are complicated by the reciprocal effects of the two conditions on each other, indicating that integrated treatment approaches might be preferable⁴. Typically, sequential treatment has been the standard of care for comorbid PTSD and substance use, with substance use being addressed first, followed by targeted treatment of PTSD¹⁶. However, addressing PTSD during substance use treatment has been associated with increased dropout⁶. Additionally, patients treated with separate therapies have found it difficult to abstain from alcohol or drugs in the face of untreated PTSD symptoms¹⁶. *The Australian Guidelines for the Treatment of Acute Stress Disorder and Posttraumatic Stress Disorder*¹⁷ recommend that integrated treatment of PTSD and SUD be considered. Furthermore, before commencing the trauma-focussed component of PTSD treatment, the individual should have demonstrated the capacity to manage distress without recourse to substance misuse. Additionally, the Guidelines draw practitioners' awareness to the possibility that PTSD symptoms may worsen if SUDs are treated first, meaning that the substance is lost as a coping mechanism. One novel treatment to have recently been trialled in civilian populations is Concurrent Treatment of PTSD and Substance Use Disorders Using Prolonged Exposure (COPE)^{18,19}. COPE is a manual-based form of trauma-focussed CBT with prolonged exposure to concurrently address PTSD and SUD, and includes three key elements delivered over 12 sessions: psychoeducation on PTSD and SUD, prolonged imaginal exposure and *in vivo* exposure to trauma-associated stimuli for PTSD, and relapse prevention for SUD¹⁹. To date, there have been no reported trials using COPE with military or veteran populations, however a recent pilot study with civilians reported promising reductions in alcohol use, craving and dependence, and PTSD symptom severity¹⁹.

Using an RCT design, one US study assessed a 12-week online intervention called *Thinking Forward*, a CBT-based program targeting comorbid PTSD and hazardous substance use⁴. Participants were OEF/OIF/OND veterans, who reported engaging in hazardous alcohol use or drug misuse, and having at least subthreshold levels of PTSD symptoms. However, if they were currently receiving psychotherapy for PTSD they were excluded, therefore only 'non treatment-seekers' were included. Veterans either took part in *Thinking Forward* (n = 81), or underwent usual VA primary care services (n = 81), which included medical, behavioural health, pharmacy, weight management, and social work services. *Thinking Forward* involved

the self-managed completion of 24 online modules taking 20 minutes each to complete. One module concurrently targeted trauma and substance use ('Connecting trauma-related problems and alcohol and drug use'), two modules targeted substance use ('Functional analysis of alcohol and drugs' and 'Tobacco use'), one module targeted trauma ('Overcoming trauma through exposure'), and the remaining modules were designed to teach a variety of cognitive, behavioural, and distress management skills, focussing on topics such as relaxation, readiness to change, identifying and challenging automatic thoughts, anger management, insomnia, problem solving, and relationships. At three-months post-intervention, the treated group had maintained a significantly greater reduction in percent of heavy drinking days compared to the usual care group. This reduction was mediated by increased coping skills, social support, self-efficacy, and hope for the future. The treated group also reported a comparatively greater decline in drug use at three-month follow-up, but the difference was not significant. Both groups reported improvements in PTSD, however, differences in improvements between the groups were not significant. In the treated group, 37.5% of participants (compared to 29.7% in the usual care group) showed clinically meaningful improvement in PTSD symptoms. Furthermore, in the treated group, 17.9% of participants (compared to 23.4% in the usual care group) moved from reporting clinical levels of distress to no longer reporting clinical levels of distress. Decreases in PTSD symptoms achieved during the intervention period (weeks one to 12) were offset by a slight increase during the post-intervention period (weeks 13 to 24). One explanation given for the lack of improvement in PTSD symptoms was the self-managed nature of the intervention. Participants could choose the type and number of modules to complete, meaning that they could selectively attend to problems. In this trial, participants completed less than half of the modules, and only four chose the trauma exposure module. Adding professional support to the program may boost effectiveness in treating PTSD. Other factors contributing to lack of PTSD effect were that 21% of participants were assessed at subthreshold levels of PTSD at baseline, and participants were not treatment-seekers, so may have been unmotivated to change. The authors did not comment on study-related adverse events. It is notable that the evidence base for substance use interventions is beginning to encompass online options, because in the past, drug and alcohol abuse have more likely been treated in group settings²⁰.

A second RCT conducted in the US utilised an existing home telehealth care management program for PTSD, supplemented with an MI-based smoking cessation component²¹. The existing program comprised PTSD home telehealth care management and nurse care management, while the intervention program comprised the existing program plus smoking cessation curricula, including written material and weekly MI telephone counselling with a

nurse. MI is a client-centred therapeutic approach which aims to facilitate behaviour change by reducing ambivalence to change, thus increasing motivation. Adding a motivational component to usual PTSD care was prompted by evidence that about half of veterans who smoke are not motivated to quit. Veterans (n = 178) with a diagnosis of PTSD and who were currently smoking at least one cigarette a day were included in the trial. The intervention group (n = 89) averaged 5.5 MI sessions throughout the 12-week trial, while a comparison group (n = 89) underwent the existing program. Both groups reported equally favourable smoking cessation rates, indicating that there was no advantage of adding the MI component in terms of substance use reduction. However, the intervention group did show a greater comparative decrease in self-reported PTSD symptoms at six-month follow-up. The authors did not comment on adverse effects of the intervention.

A combined CBT and pharmacological intervention targeting co-occurring PTSD and SUD was trialled for eight weeks in a double-blind RCT²². US veterans (n = 27) who had been diagnosed with PTSD/subthreshold PTSD and SUD for the past six months were randomised to receive either an eight-week course of N-acetylcysteine plus group CBT for SUD (n = 13), or placebo plus group CBT for SUD (n = 14). The researchers hypothesised that the use of N-acetylcysteine, an amino acid, in combination with CBT for SUD, would reduce PTSD symptoms, craving, and substance use, on the basis that PTSD and SUD share neurobiological mechanisms. Compared to the placebo group, posttreatment reductions in self-reported PTSD symptoms were significantly greater for the group receiving N-acetylcysteine, however reductions in clinician-rated PTSD symptoms did not differ significantly between the groups. Posttreatment reductions in self-reported substance cravings were also greater for the N-acetylcysteine group compared to the placebo group. There were 31 reported adverse effects associated with the use of N-acetylcysteine which were indicated on the FDA-approved label, the most common being dry mouth and heartburn. Adverse effects were experienced by 66.7% of participants in the N-acetylcysteine group, and 47.1% in the placebo group. Additionally, three participants experienced serious adverse effects during the trial, involving cardiac arrhythmia, pancreatitis, syncopal episode, and hospitalisation for suicidality.

Finally, a small pilot study with a single-group, pre-post design assessed the feasibility and tolerability of using integrated CBT (ICBT) to treat co-occurring PTSD and SUD in veterans²³. ICBT is a manual-guided intervention, delivered individually and in small groups of two to three, and includes education, relaxation, and flexible thinking components. There is a growing evidence base for ICBT in civilian populations, and it has been adapted for OEF/OIF veterans. Participants were male OEF/OIF/OND veterans (n = 12) who had a current PTSD

diagnosis with high levels of symptom severity, and a diagnosis of substance abuse in the past year. ICBT was delivered over 12 weeks, and six veterans completed at least eight of the scheduled 12 ICBT sessions. The authors reasoned that the high dropout rate (45.5%) might have been due to high baseline severity of symptoms and stigma, rather than tolerability, and they made no comment on any adverse study-related events. Because this was a feasibility study, no outcomes were reported for SUD, however, a clinically meaningful improvement in PTSD was found for three of the six treatment completers, based on clinician-administered assessments. Further study is necessary to determine the effectiveness of ICBT on treating co-occurring PTSD and SUD.

Concurrent treatment of comorbid PTSD and pain

The treatment of pain individually has a solid evidence base, with guidelines recommending how chronic pain can be effectively treated²⁴. PTSD and pain share common neurological underpinnings and have conceptual, symptomatic, and behavioural overlaps^{25,26}. This substantiates the rationale for concurrent treatment of the two conditions. Common types of pain reported by veterans and service members include neuropathic (nerve-related, e.g., 'stinging', 'burning', or 'stabbing' pain), somatic (musculoskeletal, e.g., 'aching' or 'pulling' pain), visceral (related to internal organs, vaguely described as 'squeezing' or 'cramping'), concussion or feeling dazed (related to traumatic brain injury and/or tinnitus), neck, joint, and lower back pain, migraine, rheumatism/arthritis, and fibromyalgia^{27,28}.

Reported in the recent literature were three notable interventions which appeared to demonstrate a positive effect on comorbid PTSD and pain. These included one collaborative approach, and two types of brief intervention. While only one was designed as a concurrent treatment, those that targeted PTSD also noted reductions in pain.

In a single group pilot study targeting veterans with PTSD diagnosis and comorbid chronic pain, Integrated Management of Pain and PTSD in Returning OEF/OIF/OND Veterans (IMPROVE) was delivered to 58 OEF/OIF/OND veterans²⁸. IMPROVE was an intervention utilising BA and collaborative care. BA psychotherapy sessions were delivered individually and in-person by a psychologist, and targeted the integrated treatment of chronic pain and PTSD. The mechanism by which BA is thought to work is by targeting avoidance through problem-solving barriers to engaging in meaningful activities, rather than targeting underlying cognitions as other CBTs do. Up to eight structured sessions were delivered, which included pain and PTSD education, identification of the veteran's values and goals, collaborative development of treatment goals, problem-solving strategies and tools to help overcome avoidance, and relapse and prevention planning. Of the 58 veterans who began the

intervention, 25 completed eight sessions, and five completed between two and seven sessions, which was deemed 'completion' if they felt that their treatment goals had been met. Collaborative care comprised multidisciplinary pain and mental health management involving a psychologist and a physiatrist. 'Physiatrist' is a US term which describes medical doctors who specialise in physical medicine and rehabilitation, one specialty of which is pain medicine. Psychologists and physiatrists collaboratively conducted the veteran's initial assessment, discussed veterans' cases weekly, made recommendations for pain and mental health treatment (e.g., physical therapy, prosthetics, and pain medication), and reviewed progress. Veterans' electronic case files were updated, facilitating access by primary care providers to veterans' treatment and progress. The benefits of collaborative care management include coordination of care between medical and mental health services, facilitating communication between the veteran and providers, monitoring veterans' adherence to treatment recommendations, and facilitating posttreatment planning. Results based on the 30 completers' information demonstrated preliminary effectiveness in significantly reducing self-reported PTSD symptoms (although there was no remission of PTSD diagnoses) and pain. Follow-up was conducted by the psychologist who telephoned the veteran one month posttreatment to assess clinical status, adherence with recommendations, and additional treatment needs. However, no long-term follow-up was conducted to assess the maintenance of treatment effects. The authors suggested that the high rate of non-completers (48.3%) may have been due to offers of medical treatment during the study being favoured over psychological interventions, and they did not comment on study-related adverse events. While IMPROVE showed promise in reducing comorbid PTSD and pain, further rigorous study including randomisation and a comparison group is required.

A brief intervention study assessed the usefulness of receiving coaching in Emotional Freedom Techniques (EFT) in conjunction with primary care²⁹. EFT involves applying pressure to traditional acupuncture points (acupressure), rather than needles, while the patient focusses on fearful situations or traumatic memories. Underlying EFT is the assumption that emotional disturbances associated with traumatic events are caused by disturbances in the body's energy field (meridian system) that can be restored using this technique. EFT coaching involved EFT-certified practitioners and participants working together to initially create a list of traumatic events, which were then self-rated by the participant according to the level of associated emotion. Coaching enabled participants to use EFT on each memory until their emotion rating was zero or close to zero, and then proceed to the next memory. This small RCT included 49 US veterans with clinical levels of PTSD symptoms. Secondary measures included self-rated pain. Treated veterans (n = 29)

each received six sessions of EFT coaching supplementary to primary care, while a wait list group (n = 20) continued with their usual primary care, crossing over to active EFT treatment once the first group had been treated. The authors combined the posttreatment results of both groups, effectively transforming the study into a pre-post design. Posttreatment PTSD symptomatology was significantly improved compared to pretreatment, reverting to sub-clinical levels which were maintained at six-month follow-up. Furthermore, pain levels significantly improved, with improvements maintained at six-month follow-up. There were no adverse events reported. Given that there was not an active comparison group, it is not possible to say how these results would compare to other standard treatments.

The second brief intervention to be examined was Accelerated Resolution Therapy (ART)²⁷. ART is an exposure therapy comprising imaginal exposure, imagery rescripting, and bilateral eye movement. ART was compared to an Attention Control (AC) condition which comprised two one-hour sessions covering either fitness assessment or career assessment and planning, as chosen by the participant. AC training interventions are designed to improve controlled selective attention in the face of more automatic ruminative cognitions (Siegle, Ghinassi, & Thase, 2007). A secondary analysis conducted of data from an RCT which evaluated ART versus AC for treating PTSD was performed to assess the concomitant effect of ART on comorbid pain²⁷. A group of 24 US service members (active duty and reservists) and veterans received between two and five sessions of ART (average 3.7) depending on their individual needs. To be included in the initial study, participants were required to have self-reported levels of PTSD symptoms indicative of a provisional PTSD diagnosis. Pre-intervention pain levels were also assessed via self-report, but there was no specified pain level for inclusion. The original study reported significantly greater reductions in PTSD symptoms for the ART group compared to the AC group³⁰. Additionally, the original study reported seven adverse events, classified as severe (e.g., sporadic nightmares consistent with previous history of nightmares) (n = 2), moderate (e.g., events triggered combat flashbacks or reminders, increased anxiety levels) (n = 4), or mild (nightmares related to traumatic events) (n = 1). Four of the adverse events were 'possibly' or 'probably' attributed to ART as determined by the treating clinician. In the secondary analysis, compared to AC participants (n = 21), ART participants (n = 24) reported significantly greater reductions in self-reported pain. It was suggested that the underlying mechanism of ART-related improvements in pain was the focus of the PTSD treatment on physiological sensations elicited from recall of psychological trauma, during imaginal exposure. These sensations linked directly to adverse pain experiences, and therefore physiological sensations were 'processed out' during eye movements, resulting in pain reduction. Although it seems that there were reductions in both PTSD and pain, which may suggest that ART is an effective

concurrent treatment, the fact that these outcomes were not analysed and reported in a single paper raises concerns. When outcomes are published separately, it is difficult to accurately interpret the treatment effect for the two outcomes, in this case, PTSD and pain. Furthermore, no long-term outcomes were reported, so it is unknown how long the treatment effects persist.

Conclusions

The evidence from this review suggested that emerging concurrent treatments for PTSD with comorbid depression, substance use, or pain, show early promise in reducing the symptomology of either condition, and in some cases, both conditions. In addition, reported adverse events were rare and not serious, suggesting that concurrent treatment of these comorbid conditions is relatively safe. Among the diverse range of interventions were extensions or modifications of existing therapies, which had their protocols adapted to allow integrated treatment of two disorders concurrently. Other interventions were more flexible and accessible including self-paced, online programs, and home-based, multi-component interventions which provided ongoing support outside of scheduled treatment sessions. However, it is important to note that most of the studies were small with study designs that had a high risk of bias associated with them. This is certainly an area where further, methodologically rigorous studies are required.

2. Veterans and intimate partner and family violence – prevalence, risk factors, and interventions

In Australia in recent years, violence inflicted on another by a partner or family member has been brought to the forefront of national attention. Such violence has been referred to as intimate partner violence (IPV), domestic violence (DV), and family violence, and may include acts of physical, sexual, financial, emotional, or psychological abuse. Australian statistics show that women are victims of this type of violence significantly more than males, and males are significantly more likely to perpetrate such acts of violence³¹. The World Health Organisation in 2013 described IPV as a global epidemic³². The Australian Government has developed a 12-year *National Plan to Reduce Violence against Women and their Children 2010–2022* in order to make reductions in the levels of violence experienced by Australian women.

Mirroring the growing awareness in the civilian population about the significant health, mental health, and economic impacts of IPV, research into IPV in veteran and military relationships has been emerging. Several studies have been conducted in the past three years, primarily in US samples. They have focussed on efforts to define IPV, establish victimisation and perpetration rates in veterans, identify potential risk factors, and develop screening and treatment, and pertinent findings from key studies are summarised below.

Definitions

Intimate partner violence (IPV) is the term mostly commonly used in US research examining violence involving veterans and their partners and families. In Australia, family violence is the most current term used in policy, research, and practice, and is defined as “violent or threatening behaviour, or any other form of behaviour, that coerces or controls a family member or causes that family member to be fearful”, and includes physical violence, sexual assault or abuse, economic abuse, emotional or psychological abuse, and damage to property³³. Historically, such acts were primarily conceptualised as being committed by male partners in heterosexual relationships against their female partners and/or children³⁴. However, in recent years there has been significant development in understanding that violence can occur in any relationship, be it perpetrated by a same-sex partner, adolescent child, or another family member.

Significant debate regarding the gendered nature of violence is ongoing, and is compounded by inconsistent use of assessment tools, and conflicting definitions used across multiple sectors, including legal and forensic, law enforcement, research, victim support, and

advocacy groups³⁵⁻³⁷. Australian research supports the gendered nature of violence, in other words, the recognition that women tend to be the victims of violence more often and tend to experience more coercive, prolonged forms of violence^{31,38}. To better understand the central role of gender in defining and understanding IPV or family violence, it is important to define the different types of violence being perpetrated in families. The two broad types of IPV are coercive controlling violence, and violence that occurs within conflict between partners³⁹.

Coercive controlling violence: Also termed intimate partner terrorism or patriarchal violence/terrorism, coercive controlling IPV is a set pattern of behaviours with the goal of controlling the victim⁴⁰. It includes acts such as threats of negative consequences for noncompliance, isolating the victim from friends and family, monitoring of the victim's behaviour through surveillance, and the use of emotional, physical and sexual abuse to punish and assert power⁴¹. IPV with coercive control affects all aspects of a victim's life. There may be physical injuries, stress-related health problems, and psychological issues. Coercion and intimidation are the defining characteristics of this typology, and it is thought to be gender asymmetrical, in that it is overwhelmingly perpetrated by males against their female partners.

Mutual violence or situational couple violence: This typology loosely defines any physical aggression between partners not embedded within an effort to obtain power and control, nor in response to such efforts^{34,40}. Typically, this type of violence is conceptualised as an escalation following unresolved issues or ongoing conflict in a relationship. While severe physical harm occurs at a lower rate with this type of violence than with coercive control, it can still be dangerous and potentially lethal. This typology is more likely to be perpetrated by both males and females, and is thought to be more common than other types⁴².

Although literature has yet to empirically establish different typologies of IPV, particularly as to whether such typologies translate into veteran and military populations, what is clear from the emerging evidence is that the context of IPV differs significantly and is vitally important when considering risk factors, prevalence, screening, and treatment. Knowledge about a single incident of IPV does not indicate important factors such as whether the behaviour is typical and/or reflects a broader relationship issue of coercion and control⁴¹.

Prevalence

Establishing accurate estimates of the prevalence of IPV is difficult, as typologies of violence are not universally agreed upon, and currently there is no tool that distinguishes between typologies of IPV⁴³. Prevalence is typically measured by the Conflict Tactics Scale (CTS), but this measure fails to consider the context of violence, including different typologies of

violence, and may over-represent mutual violence and under-represent coercive control⁴⁴. In addition, the CTS omits acts such as sexual abuse, stalking, and choking, and omits incidents that occur after separation and divorce, which is a time of increased danger for women³⁹. The Revised Conflicts Tactics Scale (CTS2) is considered to be an improved measure, however, it has been criticised for insufficient sensitivity to circumstances and context. It is common for researchers to modify the CTS2 to meet the needs of particular studies, or to supplement it with measures of additional aspects of violence and the context in which it occurs. An alternative measure which does measure coercive control and intimidating partner abuse is the Relationship Behavior Rating Scale (RBRS)⁴⁵.

The following prevalence studies have been conducted recently in military or veteran populations, primarily in the US. If a specific typology of IPV has been investigated in a particular study, it is noted.

Victimisation

Female veterans

In general, female veterans appear to be exposed to a higher prevalence of IPV victimisation compared to female civilians⁴⁶. A 2016 prevalence study found that 18.5% of female US Veterans Health Administration primary care users reported experiencing IPV in the past year, with a higher rate of 25.5% amongst women aged 18–30⁴⁷. A second 2016 study reported that in a VA medical centre, 47% of women who had been screened reported current or past history of IPV⁴⁸. Recent veteran and military research has also found elevated rates of victimisation in women identifying as non-heterosexual^{47,49}, as well as female veterans who are rurally located⁴⁶. To provide some context for these rates when compared to the Australian population, the 2012 ABS Personal Safety Survey revealed that one in six women (16.7%) have experienced physical or sexual violence from a current partner since the age of 15³⁸.

A 2016 study focussed on a specific behaviour associated with IPV by measuring prevalence of intimate partner stalking in female UK veterans⁵⁰. Of the 225 women with a history of any type of IPV victimisation, 64.4% reported lifetime intimate partner stalking. The most common forms of intimate partner stalking were being followed/spied upon, receiving unwanted calls, and having the individual show up at places uninvited.

Male veterans

A 2014 US study into prevalence rates of male veteran victimisation found a lower prevalence rate in male veterans (9.5%) than nonveterans (12.5%) for reported lifetime IPV

victimisation⁵¹. As a point of comparison, one in 19 Australian men (5.3%) have experienced physical or sexual violence from a current or former partner since the age of 15³⁸. It is unclear in the Cerulli et al.⁵¹ study as to why male veterans experience lower IPV victimisation than civilians, as the nature of the violence and the dynamic of the relationships were not investigated. The researchers found that not only were male veterans less likely to be victims than civilians, they were also less likely to have poorer health outcomes as a result of IPV victimisation compared to civilians. Researchers concluded that the coordinated health care that male veterans receive in the US may contribute to their veteran status being protective of both IPV and subsequent poor health⁵¹. However, as discussed above, a number of studies have found that female veterans are a high-risk population for IPV compared to civilians⁴⁶. It remains unclear as to whether being a veteran is a protective factor in risk of IPV victimisation, whether veteran status is a protective factor that applies only to male veterans, or whether the findings are due to many other reasons such as under-reporting or being part of a male-oriented culture.

Perpetration

A 2016 review of IPV research in US military families concluded that while some researchers propose that perpetration is both more frequent and severe in military personnel, other research has found no difference between perpetration and severity rates compared to civilians⁴². Perpetration prevalence rates have also been investigated in military personnel with mental health problems, which may be another risk factor for IPV perpetration. Both Australian and US civilian research shows that individuals with mental health problems are at increased risk for committing violence towards others⁴⁴. A systematic review in 2015 of IPV perpetration prevalence rates amongst male and female military personnel with mental health problems reviewed 10 studies, with most studies from the US, as well as Canada, Israel and the UK⁴⁴. A prevalence rate could not be determined for female military personnel or for male military personnel with a mental health disorder other than PTSD, as the number of studies eligible for inclusion in the review was too low. The median prevalence rate for past year perpetration of physical IPV among male military personnel with PTSD was 27.5%, and a median prevalence rate of 91% was reported for past year perpetration of psychological IPV⁴⁴. A limitation of this review was that severity and frequency of emotional and other forms of violence were not reported. In addition, some of the samples included those engaging in hazardous substance use.

Two studies have also specifically investigated perpetration rates of physical IPV in relationships where the male was a veteran and the partner (female) was civilian^{52,53}. Both studies had US samples of OEF/OIF veterans. One study utilised a sample of individuals that

were receiving couples treatment and measured IPV using a combination of items from the CTS and CTS2, and the second study recruited a sample based on high levels of self-reported relationship distress and measured IPV using the CTS2. Although both studies predicted that male veterans and their female civilian partners would report similar amounts of physical IPV perpetration, the findings showed that the female civilian partners perpetrated significantly more physical IPV than their male veteran partners. One of the studies also found that male veterans reported perpetrating significantly more frequent sexual coercion than female partners reported perpetrating, which is consistent with the broader literature in IPV⁵². It remains unclear as to what might be contributing to higher female civilian partner perpetration rates of physical IPV against their male veteran partners, given this finding is not typical in the broader civilian literature. It is more typical in the literature for female violence to be described as more one-off, less coercive violence. Given that the frequency, duration and severity of the violence was not measured or analysed in both of these studies, it is possible that these results may be explained by a lack of consideration for these factors. In addition, the measures that were used (i.e., the CTS and CTS2) are also problematic in that they are not sensitive to circumstance or context and have been criticised by researchers for not adequately measuring coercive and controlling violence.

A 2013 prevalence study in the Canadian Armed Forces (CAF) investigated rates of perpetration and victimisation of IPV⁵⁴. Importantly, the Canadian military has a comprehensive prevention program, including yearly training on family violence for commanding officers. Prevalence was measured within the current relationship only, as opposed to lifetime rates, and included self-reported perpetration of any form of physical and/or sexual abuse against a partner (9.4%), and self-reported experiences of physical and/or sexual abuse at the hands of a partner (15.4%). Less physically injurious forms of IPV were typical, and perpetration of emotional and/or financial abuse against a partner was 19.3%, while the experience of emotional and/or financial abuse at the hands of a partner was 25.1%. There was no notable relationship between gender and perpetration, and the authors concluded that male and female CAF personnel were both victims and perpetrators of the full spectrum of physical and psychological IPV. Furthermore, they found reciprocal occurrence of physical and/or sexual abuse (6.7%) and emotional and/or financial abuse (15.7%).

Risk factors

Veteran and military families present with some important risk factors for both perpetration and victimisation of IPV, including high rates of trauma and PTSD⁴². There is some evidence linking psychopathology with perpetration of IPV, particularly PTSD, although the emerging

evidence indicates that the relationship between psychopathology and IPV appears to be complex.

A 2013 observational study of interactions between US veterans with PTSD and their partners found that PTSD was associated with more hostility and psychological abuse and less functional/empathic relationship behaviours⁵⁵. In a 2014 study of male and female US veterans with PTSD, female veterans were more likely to engage in aggression in the family context, whereas being male was positively related to stranger aggression. In the study, aggression was measured using items from the CTS, which, as previously noted, fails to take into account context and circumstances and is not considered a good measure of coercive and controlling violence. The only symptom of PTSD associated with increased likelihood of family aggression was anger⁵⁶. A 2013 study of Canadian military personnel found that PTSD and depression had differential effects on risk of IPV, with PTSD associated with perpetration, and depression associated with victimisation⁵⁴. A second US study of male veterans in 2014 also found that depression was associated with IPV victimisation⁵¹.

In addition to perpetration of IPV, PTSD is also associated with victimisation from/in the context of IPV, given that many forms of IPV are potentially traumatic events. A 2016 study found that women who experienced intimate partner stalking were 2.5 times more likely to experience probable PTSD than women who did not experience intimate partner stalking⁵⁰.

A 2016 meta-analysis of military risk factors for physical IPV compared similarities and differences in significant risk factors between military and civilian personnel⁵⁷. Overall, the findings indicated more similarities between military and civilian risk factors than differences. The strongest risk factor of physical IPV perpetration in both male and female military personnel was perpetration of emotional abuse, and this finding mirrored civilian risk factors. The remaining risk factors for perpetration of IPV, including lower levels of social support, increased levels of stress, lower income, younger age, less education, higher levels of PTSD, higher levels of depression, and more experience of child abuse in the family of origin, were deemed to be small or trivial risk factors in military personnel. An investigation of risk factors and how they differed in males found that although problems with alcohol and low relationship satisfaction were significant (albeit small) risk factors for physical IPV perpetration in military male personnel, they were significantly stronger risk factors for civilian males. Stress was the only significantly stronger (albeit small) risk factor for physical IPV perpetration for military males relative to civilian males.

Screening

Significant efforts have been made to establish an evidence base supporting universal screening in the US VA services, reflecting a national movement in the US to universally screen for IPV in healthcare settings. A 2016 feasibility study found that universal screening of IPV victimisation in female veterans in a VA medical centre was highly feasible, with 95% of patients agreeing to be screened⁴⁸.

Although there are a number of risk assessment tools for civilian samples, previously there were no IPV risk assessment tools developed for military populations to identify either victims or perpetrators. In 2016, a risk assessment instrument called the Intimate Partner Physical Injury-Risk Assessment Tool (IPPI-RAT) was developed and tested for use by military providers⁵⁸. The study tested the tool’s ability to predict future physical injury based on an alleged victim’s responses across a six-month period. At six-months follow-up the tool was found to have accurately detected 80% of perpetrators who inflicted future physical injury, based on the alleged victim’s responses, indicating good predictive ability. The final 15 items that were included in the IPPI-RAT are presented in Table 4.

Table 4. Risk factors identified using the IPPI-RAT

Perpetration	Victimisation
Caused minor injury (not requiring medical care) in incident	Fears for self or children or pets
Denies incident occurred	Attempting to leave relationship
Blames others for incident	Dissatisfied with military lifestyle
Physically aggressive toward partner prior to incident	
Increased frequency or severity of violence toward partner	
Ever used or threatened to use weapons against partner	
Emotionally abusive toward partner	
Ever choked or strangled partner	
Feels desperate about relationship	
Attempts to control partner’s access to friends/family/resources	
Holds unrealistic expectations of partner	
Expresses ideas or opinions that justify violence toward partner	

Findings from the IPPI-RAT study showed that risk factors for future IPV resulting in physical injury may be more similar than dissimilar across military and civilian samples and among men and women. Although the military faces unique stressors that may dispose them to a higher prevalence of IPV, only one military-specific factor appeared in the final 15-item IPPI-RAT scale. Moreover, the risk factor was for victimisation, not perpetration (i.e., '*victim is dissatisfied with military lifestyle*'). Factors such as deployment-related stress, traumatic brain injury, and PTSD, although present within this population, were not significant predictors of subsequent IPV resulting in physical injury to the victim. It is important to note, however, that the IPPI-RAT study did not address types of IPV beyond physical injury, such as psychological, emotional, and financial abuse, sexual coercion, or stalking, and it remains unknown as to whether or not these types of IPV are associated with military risk factors.

Accurate risk assessment is particularly important in the context of potential escalating or continuing violence, although no research has investigated risk factors relating specifically to escalating violence in military or veteran populations. Although military and veteran populations differ from civilians in that they have access to lethal weapons and training in mortal combat, there is no research comparing level of danger of IPV perpetrated by a military service member or veteran compared to a civilian, nor investigating whether military or veteran populations are at greater risk of perpetrating, or being victim, to escalating violence⁴⁰.

Treatment/prevention

Included in this review were perpetrator intervention programs aimed at preventing violence, and treatment programs aimed at supporting victims.

Intervention programs for perpetrators

A 2016 literature review concluded that there is almost no empirical or clinical literature focussed on IPV perpetrator interventions in military and veteran families⁴². The authors propose guidelines for interventions for domestically violent military personnel, to help end violence. While recognising the lack of empirical evidence supporting a particular approach, they suggest perpetrator interventions that consider the developmental attachment theory of IPV/DV, in addition to considering comorbid psychopathology⁴².

In response to the evidence gap, one treatment program has recently been developed. *Strength at Home* is a cognitive behavioural-based treatment and prevention program developed specifically for military/veteran populations. A 2013 pilot study in 14 male military personnel with PTSD who were perpetrators of IPV found that physical and psychological IPV perpetration significantly decreased by six-month follow-up⁵⁹. A follow-up RCT of 69

male military personnel compared *Strength at Home* to a control condition and found that *Strength at Home* prevented more physical IPV and reduced psychological IPV compared to controls⁶⁰.

A qualitative study of male veteran perpetrators found a preference for intervention programs to be delivered through veterans' services as opposed to civilian services, as well as a preference for treatment to go beyond perpetrators, as they reported that IPV was often mutual or reciprocated^{53,61}.

Treatment programs for victims

A study of female veteran victims found that their priorities for IPV-related treatment were around the physical safety of themselves, their children, and their pets, as well as coping skills for emotional health, but there was significant variability in priorities in the sample, and the authors concluded that a one-size-fits-all approach to female veteran victims was unsuitable⁶².

A qualitative study of female veterans who had experienced IPV or non-partner sexual assault found that the military could offer opportunities to gain freedom and independence from an IPV perpetrator (through resources, acquisition of skills, and opportunities to escape physically, as well as other sources of assistance)⁶³. However, there were also instances where the military response to their experiences was negative. After reporting IPV victimisation, some female veterans commented that leadership provided negative and unsupportive responses, they felt confronted by a culture accepting of violence against women, they felt personal concerns for negative career consequences, and disliked policies requiring that reports be made through a chain of command that may include the perpetrator of the assault. Although this study was conducted in the US military it is important to consider any barriers to veterans reporting IPV victimisation and other types of violence in the military, and how those barriers may impact screening and prevention efforts in Australia.

Conclusions

The overwhelming majority of evidence in this area comes from the US, where IPV is the main concern. In Australia, the main focus is on family violence, which is inclusive of children who are victims of violence, or who witness violence. It is important to note that the vast majority of the studies included in this review fail to take into account the impact of family violence on children.

While public concern about IPV in military families may focus on male military personnel inflicting PTSD-fuelled physical violence on their female civilian intimate partners soon after

return from difficult combat deployments, the emerging data paints a far more complex picture of IPV⁵⁴. Military families can have one partner in the military or be a dual-military family, as well as identify as heterosexual or LGBTQI (lesbian, gay, bisexual, transgender, queer or questioning, and intersex). Prevalence rates of IPV might differ significantly in all these types of families⁴⁶. Research is still emerging, and the extent of the problem in military and veteran families is currently unclear, particularly given that there is little empirical research conducted in Australia. The differences in healthcare access and service provision in military and veteran populations and the established prevention programs means that data from the multiple US and single Canadian study presented here may not apply to the Australian context. In addition, the different definitions of violence used by researchers and the reliance on assessment tools that do not fully measure the more coercive and controlling types of violence make it difficult to draw firm conclusions about the incidence of IPV in military populations.

The research in the US provides some initial findings on screening and perpetrator intervention programs. While a risk assessment tool has recently been developed and validated on a US military sample, it is only predictive of physical injury rather than other types of abuse. However, emerging evidence indicates that military-specific factors are far less common than universal factors when assessing risks of IPV⁵⁸, and in this context, existing risk assessment tools and frameworks that have been used and evaluated for many years in the Australian family violence sector could be trialled and assessed in a military context. For example, well regarded programs such as the Family Violence Risk Assessment and Risk Management Framework (often referred to as the common risk assessment framework – CRAF)⁶⁴, which offer not only a screening framework but also a whole of organisation approach to risk assessment, could be examined. In terms of intervention programs, the Strength at Home program offers a potential model of intervention that could be trialled in Australia, although interventions in other areas that are examined in the Australian civilian context, such as restorative justice programs, may also merit some investigation⁶⁵.

The research on IPV in the military context is emerging, and more studies to help better conceptualise violence in a military context, and a more consistent approach to the measurement of violence and to perpetrator intervention programs, would be beneficial. In addition, research still needs to elucidate the fact that female veterans in the US are victims of IPV significantly more than non-veteran women⁴⁶. One firm conclusion that can be drawn from the findings presented here is that the context of violence in military and veteran families is essential. A contextual analysis serves to clarify what happened by determining

the perpetrator's intent in his/her use of violence, the meaning of the violence to the victim, and the effect of the violence on the victim and children⁴⁰.

3. Innovation in transition models for the military, elite sports, and/or emergency services

Introduction

A transition is an event or non-event accompanied by a process of leaving one set of roles, relationships, routines, and assumptions and establishing new ones⁶⁶. Transition models provide a framework for understanding how humans adapt to life and career transitions (Schlossberg, 1981). They contribute to the development of targeted strategies to facilitate adjustment following transition out of challenging occupations⁶⁷, three of which are the military, elite sports, and emergency services. Military careers are characterised by lengthy deployments away from home, prolonged or repeated traumatic experiences, and robust enculturation⁶⁸. Elite sporting careers are characterised by pressure to succeed and an exclusive focus on the sport at the cost of education, work, family, and other life interests⁶⁹. Emergency service careers are characterised by having to regularly execute extraordinary duties that often save the lives of others, unpredictable environments, the potential for regular exposure to trauma, and shift work⁷⁰. However, commonalities in the transition process among the three careers emerged from the reviewed literature, including the potential benefits of pre-transition or retirement planning to a successful transition, and the challenges of redefining post-transition sense of self and social identity.

Transition models for the military

The transition from the military to civilian life is generally referred to as reintegration. Reintegration has been viewed as both a process and an outcome, involving the resumption of family, community, and workplace roles⁷¹. As a process, reintegration entails managing the return to civilian life and facing changes in day-to-day demands as well as family roles, responsibilities, and routines⁷². As an outcome, successful reintegration comprises post-deployment achievement of satisfactory levels of functioning at home, at work, in relationships, and in the community⁷³.

Included in the reviewed literature were theoretical transition frameworks and empirically assessed transition models which targeted the individual service member, the practical requirements of resettlement, and family unit functioning and parenting skills.

An ecological model of returning military service member and veteran (MSMV) reintegration was proposed by Elnitsky et al.⁷¹, who suggested that reintegration involves interactions between the individual and the environment, and is best understood by considering four levels: individual, interpersonal, community, and societal contexts, and the interactions

between them. The model was developed from a literature review identifying the challenges and facilitators of reintegration at each of the four levels. Individual level factors included psychological and physical health; interpersonal level factors included family and spousal relationships; community level factors included health systems, work and school, and legal services; and societal level factors included social policy such as US Department of Defense (DoD) and VA initiatives. The purpose of developing the model was to provide a unified definition and systematic understanding of reintegration, and to guide research and practice. By using the model, it was argued that interventions could be targeted toward the different levels.

One RCT assessed an online expressive writing intervention designed to reduce reintegration difficulty for US Afghanistan and Iraq war veterans transitioning to civilian life⁷⁴. Reintegration difficulty referred to self-assessed difficulties in domains such as social relations, productivity, community participation, perceived meaning in life, and self-care and leisure. Participants, of whom 39% were female, were randomly allocated to either an expressive writing group (n = 508), or one of two control groups – factual writing (n = 507) and no writing (n = 277). Expressive writing was intended to deeply explore thoughts and feelings about the transition to civilian life, while factual writing considered veterans' information needs, such as VA services and benefits. Four online writing sessions of 20 minutes each were scheduled for the writing groups. Expressive and factual writers completed an average of 2.5 and 2.8 sessions, respectively, over the course of ten days or less. At six months post-intervention, the expressive writers reported significantly reduced reintegration difficulty compared to the no writing group, but there was no benefit of expressive writing over factual writing on this measure. Lack of difference between expressive and factual writing was surmised to be due to the possibility that veteran-specific topics in factual writing may have evoked sufficient emotion or cognitive processing to improve certain outcomes. The benefits of this intervention included its brevity and ease of access, which support its use as an adjunct to psychotherapy. However, this approach does not involve clinician support, meaning that participants are not monitored or supported, despite the potential for the writing to cause distress.

Another perspective on veteran reintegration was a theoretical framework based on 'cultural persistence', and a related model called 'reverse culture shock'^{68,75}. Cooper et al⁶⁸ applied Pierre Bourdieu's theoretical concepts of *habitus*, *capital*, and *field* to the UK Armed Forces, to understand how the cultural legacy of military life may potentially disrupt reintegration. In other words, what happens when an individual immersed in military culture returns to civilian life? According to this framework, military culture can potentially endure post-transition, the

implication being that the veteran's "grip on military culture" prevents adaptation to civilian life. In a similar vein, Bergman and colleagues (2014) discussed a model of reverse culture shock in the military context, which posits that unexpected re-entry difficulties can occur upon return to a once familiar environment. Such difficulties might include feeling disoriented, neglected, frustrated, being unemployed, and struggling with personal relationships. Based on such theorising, it was suggested that transitions could be managed by employing a high level of planning and preparation. This might include translating skills gained in the military into forms which civilian employers can understand, conducting personal development planning and workplace schemes prior to discharge, providing training on the differences between military and civilian fields, explaining how the military legacy stays with veterans when they leave, and preparing them for a significant shift in identity⁶⁸.

Another group of studies highlighted initiatives and models developed to support veterans' informational and practical needs for returning to civilian life.

One study evaluated the effectiveness of the Yellow Ribbon Reintegration Program (YRRP) (<http://www.yellowribbon.mil/yrrp/>) in meeting the reintegration information needs of National Guard/Reserve service members and their families⁷⁶. Established by DoD in 2008 and currently in operation, the YRRP is a public health strategy designed to connect service members and their families with supportive resources as they transition between their military and civilian roles throughout the deployment cycle. At scheduled events throughout the year, information supporting such needs as legal, financial, psychosocial, employment, and education is disseminated. The current study surveyed 683 National Guard/Reserve service members and 411 'supporters' (mainly spouses) who attended YRRP events at 30 and 60-days post-deployment. The aim was to examine the perceived utility of the delivery of information during the post-deployment reintegration period across five domains: education, employment, family and relationships, legal, and health. A survey revealed that service members and their spouses/supporters prioritised information needs differently, with the spouse (mainly females) being mostly concerned about family and relationship matters, while the service member was mostly concerned about education, employment, and health. It was also found that for more spouses than service members, these events were the first occasion on which they had heard about such services. Finally, both service members and spouses rated the YRRP program as being helpful in providing information or help across the five domains (between 50% and 78% across the domains). Overall, the YRRP was effective at providing information, referral, and assistance in several reintegration domains at two to four months post-deployment.

Another study described a needs-based model called the motivation model of resettlement, which was empirically derived using survey responses from 400 Indian Air Force veterans⁷⁷. In the survey, participants identified noteworthy socioeconomic resettlement needs, such as children's education, finding civilian employment, and purchasing a home and car, and ranked them in terms of importance. The consolidated needs and rankings formed a socioeconomic need continuum, from which was derived the resettlement model. The model was inspired by Maslow's needs hierarchy, and contained five pyramidal levels, with the foundation being essential socio-economic needs (acquire house, job, child's education), and the apex being social fulfilment needs (living in the place of origin). The three remaining levels from the foundation upwards covered socio-economic security, comfort, and esteem needs. It is worth noting that the model incorporated traditional Indian needs such as arranging a child's marriage and caring for aging parents, indicating that such models could encompass cultural specificity. By analysing the resettlement of veterans to better understand the constituent needs, such needs might be better managed and facilitated.

As noted in the introduction, reintegration involves re-establishing family roles, responsibilities, and routines. A recent review concluded that the literature to date is underdeveloped regarding strategies supporting successful military family reintegration⁷². However, there have been several studies to empirically assess family and relationship models which have been adapted for the military post-deployment context.

The first three studies, underpinned by the relational turbulence model (RTM), identified three potential intervention targets that might improve how couples experience reunion and reduce their children's reintegration difficulties. The RTM is a relationship model which suggests that couples perceive their relationships as tumultuous during times of transition. When used in the military context, the model might help to identify obstacles to smooth transition for military couples.

The first study investigated predictors of couples' appraisals of relationship turmoil (chaotic, stressful, tumultuous relationships) during the first three months after a service member's homecoming⁷⁸. Participants were 118 couples with at least one serving member, who completed an online questionnaire once per month for the first three months after homecoming. Three constructs, derived from the RTM, were found to be predictive of the couples' perceived relationship turmoil. These constructs were depressive symptoms of either partner, relational uncertainty (being unsure about involvement in a relationship), and interference from a partner (disruptions in both partners' routines which were established during the service member's absence). The findings suggested that best practices for reuniting military couples might include relationship information delivered after the

honeymoon phase, which comprises the first weeks of reintegration, and when the relationship experiences upheaval. Additionally, the findings supported the development of interventions that help couples manage depressive symptoms, relational uncertainty, and partner interference.

Using the same sample, a second study used the same three constructs to predict service members' perceptions of their children's reintegration difficulty⁷⁹. It was found that parents who experienced depressive symptoms, relational uncertainty, and interference from a partner, reported that their children had more difficulty with reintegration. However, because the child's reintegration difficulty was reported by the parents, it should ideally be corroborated with the child. It was suggested that interventions should offer support to children early upon reunion (because children don't appear to experience the same honeymoon period as their parents), and age emerged as a risk factor, with parents reporting older children fared worse than younger (children were aged between six months and 20 years). Support services should therefore target older children for maximum effectiveness. The RTM was therefore shown as a useful way to explain how children experience the post-deployment transition, as a function of the interpersonal dynamics of their parents.

Finally, in a third study, the RTM was also employed in a military context where a different sample of 118 military families completed an online survey within six months of homecoming⁸⁰. Two constructs from the RTM, relational uncertainty and interference from a partner, were predictive of topic avoidance about deployment. Topic avoidance refers to couples' reluctance to talk about their deployment experiences during reunion, and tends to be dissatisfying within romantic relationships. The results showed that the couples were more likely to avoid talking about deployment when they were experiencing relational uncertainty and interference from a partner. A suggestion for intervention targets arose from these findings – helping military couples to manage their expectations about the reintegration process by preparing them to experience questions about involvement and disruptions to their everyday goals - which may equip couples to communicate better.

A second model to be evaluated in the context of military family adjustment was derived from family stress models, called the military family stress model (MFSM)⁸¹. Family stress models seek to explain the mechanisms through which external stressors, including transitions, may increase parental psychological distress. This, in turn may impair parenting practices and/or dyadic adjustment, increasing risks for child maladjustment. The MFSM posits that there are associations between deployment-related stressors (deployment length/number, and PTSD symptoms), and adjustment in parent, child, parenting, and dyadic processes. Participants were families (n = 293) with at least one parent from the National Guard/Reserves who had

recently deployed to the Middle East conflicts, and at least one child between the ages of four and 12 years. Multiple method and multiple informant data was collected via self-report questionnaires and observations of parent-parent and parent-child interactions. Marital quality referred to dyadic adjustment, while parenting practices were assessed using five core parenting practices – problem-solving outcome, harsh discipline, positive involvement, skill encouragement, and monitoring – measured by observing parent-child interactions. Child adjustment was assessed using parent, child, and teacher ratings on a range of measures including interpersonal strength, degree of depressive symptoms, and behavioural problems, such as hyperactivity, attention problems, aggressive behaviour, and withdrawal. It was found that the number and length of deployments was not associated with dyadic adjustment, parenting, or child adjustment. It was however found that dyadic adjustment was associated with more effective parenting. In addition, PTSD symptoms of both parents were directly associated with children's adjustment, implicating PTSD symptoms as a key family stressor following deployment and a potential target for interventions to support families after deployment.

A final study assessed a parenting program, *Strong Families Strong Forces* (SFSF), for military families during the reintegration phase⁸². The efficacy of SFSF was assessed using an RCT with the families and children (up to five years of age) of 115 National Guard/Reserve service members who had returned from Iraq or Afghanistan not longer than one year prior. By targeting parenting quality (more specifically, 'parental reflective function' – defined as the ability to be mindful of, and respond to, emotional states of self and children), the program was designed to mitigate the impact of deployment-related stressors on parent-child relationships, and ultimately child wellbeing. The SFSF program consisted of eight modules delivered via a home-based modality by study clinicians. Modules focussed on central reintegration tasks such as military identity, parent/child deployment narratives, and co-parenting practices. Families were randomly allocated to the intervention group (n = 58), 90% of whom completed all eight sessions and post-test assessments, or to a waitlist comparison (n = 57). Compared to the waitlist group, the intervention group reported improvements on two parenting measures. First, there were greater reductions in parenting stress, and second, there were gains in parental reflective functioning, which meant that parents had an improved capacity to reflect on the mental state of their child. The high rate of program completion (93%) indicated that military families were interested in family reintegration/parenting programs, and that the home-based modality was an effective means of delivery for families who otherwise may not have been able to participate in the program.

Transition models for sports people

Over 20 years ago an early transition model of athletic retirement was created to address the entire course of the athletic retirement process, including causes of retirement, factors related to adaptation to retirement, available resources for retirement adaptation, quality of adaptation to retirement, and intervention for retirement difficulties⁸³. While no innovative transition models in elite sport have been reported in the literature recently, there have been a number of reviews and studies focussed on understanding the experience of the retirement transition and post-sport career adaptation. It is evident that the early transition model has been influential in providing a framework on which these more recent studies were based. The current literature claims to be foundational to developing future models and interventions⁸⁴.

A recent systematic review of ten studies of elite athlete end-of-career transitions highlighted factors contributing to a successful transition⁸⁵. One factor was pre-planned retirement. Athletes who planned their retirement in advance, compared to those who did not plan, were more cognitively, emotionally, and behaviourally ready for their career transition. Recommendations to emerge from the review included focussing on involuntarily retired athletes, because those who experienced involuntary retirement were found to be at greater risk of adjustment difficulties compared to voluntarily retiring athletes, psychological training programs for athletes approaching sport career termination, development of sport career assistance programs, use of a progressive detraining program, helping athletes become aware of, develop, and use transferrable skills, and retirement planning.

Another systematic review which evaluated 126 studies on athletes' career transitions out of sport from 1968–2010 identified 15 variables related to the quality of athletes' career transition, and four types of available resources during career transition⁸⁴. Quality of transition was not clearly defined but generally referred to the positivity and negativity of emotions experienced during the transition, and the extent of adjustment difficulties experienced post-transition. Variables related to the quality of career transition included athletic identity (a strong athletic identity and high tendency towards identity foreclosure were negatively associated with the quality of transitions), voluntariness of retirement decision (a greater degree of control over retirement was generally positively associated with the quality of career transition, while forced retirement was associated with negative emotions), injuries/health problems (which were sources of transitional difficulties), and career and personal development (vocational and life skill development, educational involvement, and career planning were positively associated with quality of transition). Sport career achievement (achievement of sporting goals was associated with stable levels of self-

identity, self-esteem, and global self-concept, while failure to achieve goals was associated with loneliness, missing people related to sport, and difficulty organising post-sport lives) was also related to the quality of career transition. Available resources during transition included coping strategies (keeping busy, seeking social support, searching for new career or interests, avoidance or denial, and acceptance), pre-retirement planning (psychological preparation before career-end, having a clear goal outside of sport, financial planning), psychosocial support, and support program involvement. An example of such a support program is the Australian Institute of Sport (AIS) initiative 'Personal Excellence' (http://www.ausport.gov.au/ais/personal_excellence). It was suggested that for sport psychologists to assist athletes' career transitions, they need to provide programs that provide both proactive support (e.g., career planning, education in transferrable skills) and reactive support (e.g., coping with emotions, supporting the identity reformation process) to assist athletes to prepare for their career transition.

A Spanish quantitative study compared the retirement experiences of Greek (n = 76) and Spanish (n = 57) elite athletes⁸⁶. Retirement experience was measured in terms of the pre-conditions of retirement (athletic identity, satisfaction with athletic career, reasons for career termination, and whether retirement was planned), the transitional period (emotional reactions upon retirement, areas of perceived difficulties during the transition, the difficulty to change identity, the degree of perceived financial and psychological support, coping reactions, and the amount of time needed to adjust), and the consequences of the transition (athletic identity nowadays, satisfaction with professional choice, perceived success in sporting career, and current relation with sports). Two characteristics common to both cultures were lack of retirement planning and high athletic identity after the career, both of which can contribute to adjustment difficulties post-retirement. Some cultural differences were detected, for example, the use of different coping strategies, and the level of difficulty faced in changing athletic identity, indicating that future transition models should take culture into consideration.

Given the absence of quantitative studies related to transition and sports people, a notable qualitative study was also identified to shed some light on this under-researched topic. Seventeen retired South African Olympic athletes were interviewed; a major theme to emerge was that having dual careers facilitated retirement transition (Tshube & Feltz, 2015). Examples of dual careers were graduating from university and working full or part-time during the sporting career. Having a dual career was reported as facilitating "smooth" or "automatic" transfer from competitive sport to a new career.

Transition models for emergency services personnel

There were no transition models for emergency services personnel reported on in the 2013–2016 literature, however, two studies identified potential post-retirement factors for consideration in future models or targeted interventions, for the promotion of successful transition.

An Irish study investigated the long-term impact of trauma exposure and emergency services work on the quality of life and trauma symptomology of ambulance (n = 55) and fire services (n = 114) retirees, and compared this to non-emergency service retirees⁸⁷. Emergency and non-emergency services personnel had been retired for an average of seven years and 12 years, respectively. Quality of life was assessed using four life domains, physical, psychological, social relationships, and environmental, while trauma symptomology was assessed using self-reports of re-experiencing, arousal, and avoidance symptoms for the most recent three months. Emergency services personnel reported lower levels of overall quality of life and higher levels of PTSD symptomology in relation to the non-emergency services comparison group. As such, consideration of the role PTSD symptoms may play may be important for targeted transition interventions for emergency services personnel.

Another study qualitatively investigated the perceptions and beliefs in relation to retirement for Irish emergency services personnel, resulting in suggested improvements to the transition to retirement for this group⁷⁰. Currently employed ambulance (n = 8) and fire services (n = 6) personnel took part in semi-structured interviews which explored the topics of perception of current Irish retirement policies and procedures, support for retirees, improving the transition to retirement, current contact with fellow retirees, and facing one's own retirement. Results suggested that there was consensus about the concern of feeling isolated post-retirement, and not having contact with a significant part of their previous lifestyle, such as the camaraderie among work colleagues. A subsequent recommendation was that organisations implement formal systems through which retirees could retain connection to their workplace, such as organised social gatherings. Results also suggested that the potential for 'culture shock', similar to that experienced by military personnel, was a distressing prospect for participants as it represented a major life change. A subsequent recommendation was that a preparatory period for retirement be incorporated into the employment cycle to encourage a structured approach to retirement planning (for example, pre-retirement courses, seminars, and information), and that a 'step-down' facility be implemented, whereby hours are gradually reduced in the pre-retirement years.

Conclusion

The growing understanding of the challenges facing individuals transitioning out of military, elite sports, and emergency services careers received considerable attention in the literature spanning 2013–2016. The vast majority of literature was generated for military service members and veterans, and reported the development and trialling of diverse interventions and theoretical frameworks designed to assist with the transition and reintegration processes. These initiatives addressed individual service member adjustment, the practicalities of resettling into civilian life, and family reintegration. The transition of sports people and emergency services personnel out of their occupations was relatively under-researched, with the major outcomes of studies being the identification of factors contributing to positive and negative transition experiences. The findings of the studies for sports and emergency services career transitions may prove foundational to future interventions and models, which were notably absent in the reviewed literature.

4. Development in treatment conceptualisations for addiction

Defining addiction

Addiction is widely considered a chronic problem by practitioners and researchers, operating in a cyclical manner with periods of remission and relapse throughout an individual's life⁸⁸⁻⁹¹. Decades of research have resulted in effective behavioural, psychosocial, and pharmacological interventions available in a variety of treatment settings for substance and alcohol use disorders (see Figure 1 for definitions). Several national and international treatment guidelines exist that recommend various evidence-based approaches for a range of populations with alcohol and SUDs (Kleber et al., 2007; National Institute on Drug Abuse, 2012; US Department of Health & Human Services, 2005).

Substance use disorder

A diagnostic category in the DSM-5 referring to recurrent use of alcohol or other drugs that causes clinically and functionally significant impairment, such as health problems, disability, and failure to meet major responsibilities at work, school, or home. Depending on the level of severity, this disorder is classified as mild, moderate, or severe.

Addiction

A term used to indicate the most severe, chronic stage of substance use disorder, in which there is a substantial loss of self-control, as indicated by compulsive drug taking despite the desire to stop taking the drug. In the DSM-5, the term *addiction* is synonymous with the classification of severe substance use disorder, however, it is not a medically recognised diagnosis.⁹²

Substance abuse or substance dependence

Previous diagnostic categories used in DSM-IV-TR that are no longer considered valid. Substance dependence was considered a more severe diagnosis than substance abuse.

Harmful use or dependence (ICD-10)

Current diagnostic categories used in the ICD-10. Harmful use criteria require a pattern of substance use that is damaging to the mental or physical health of the user, for example, hepatitis from sharing contaminated injecting equipment, or depression secondary to heavy consumption of alcohol. Dependence criteria include experiencing at least three specified symptoms, including compulsion to use the substance, difficulties controlling substance use, a physiological withdrawal state, tolerance (such that increased doses are required to achieve effects originally produced by lower doses), progressive neglect of alternative interests, and persisting with substance use despite clear evidence of harmful consequences.

Figure 1. Definitions of substance use disorder, addiction, and substance abuse/harmful use or dependence

In general, evidence-based treatments have been shown to be efficacious in the short to medium-term (i.e., less than two years)⁹³. Although some treatments result in long-term, sustained recovery, relapse is more commonly seen in individuals with alcohol and SUDs,

even after receiving evidence-based treatment and/or maintaining long periods of remission⁹³. Researchers and clinicians have argued that currently, the greatest challenge facing addiction treatment and research is not finding evidence-based treatments, but rather improving or extending current treatments in order to tackle the bigger problem of relapse⁹⁴.

Developments in understanding the life course of addiction

Recent research since 2013 has attempted to synthesise findings from long-term¹ outcome studies, in both naturalistic² and treatment-receiving populations, to better understand when and why periods of relapse and remission occur. Relatively few studies have charted the long-term course of recovery, despite acceptance amongst most researchers and clinicians that addiction is typically a chronic, life-long disorder⁹⁵. The lack of data in general speaks to the complications involved with long-term studies. Firstly, they are extremely difficult and expensive to conduct, and secondly, given they follow a group of individuals for dozens of years or even decades, the final dataset often does not reflect the current situation of drug users, treatments, and policies⁸⁸. For example, prescription medicine (opioid-based) addiction is a relatively newer phenomenon that has not yet been fully captured in recently published longitudinal studies on opioid use disorders that began 20 or 30 years ago. In addition, there is no standardised definition or measure of remission or recovery that is commonly used, making comparisons between studies difficult⁸⁸.

A 2016 meta-analysis of naturalistic studies investigating remission in alcohol and SUDs reviewed 21 studies, and found that 35.0% to 54.4% of individuals achieved remission after a mean of 17 years of substance use⁹⁵. There were no significant differences between alcohol and other SUD remission rates. The mean consumption period prior to remission for most individuals was at least 14 years. A secondary analysis of the data found that between one in 10 or as few as one in 15 people with SUDs achieved remission per year. Overall, these findings paint a fairly bleak picture when it comes to the life course of addiction across all substance types, in that remission rates are low and tend to occur after very long periods of substance use.

The following sections below synthesise findings from recent long-term studies that have focussed on specific substances.

¹Defined for the purposes of this report as in excess of three years.

² Refers to a population that has had little or no interference by researchers. As a result, some individuals may have received treatment and some may not.

Alcohol

A study published in 2013 reported on a 20-year naturalistic dataset of a sample of males who had alcohol use disorders at 30 years of age. The researchers re-measured the sample every five years (to approximately age 50)⁹¹. Of the sample, 60% reported at least one five-year period during which they met none of the criteria for alcohol use disorders (i.e., remission). Nearly half of the sample (45%) had sustained remission, in that they had no further alcohol use disorder diagnoses over the 20-year follow-up period. Receiving formal treatment for alcohol use disorders was associated with greater likelihood of sustained remission, however, not all individuals who received formal treatment obtained remission.

A second 20-year study of treatment-seeking individuals with alcohol dependence investigated whether long-term outcomes differed by gender⁹⁶. Women achieved better short-term and long-term outcomes, despite having more severe alcohol dependence when starting treatment. The authors conclude that although women have a greater biological vulnerability to alcohol, it does not necessarily lead to less favourable treatment outcomes.

Substances

A recently published naturalistic Australian study followed 615 heroin users for 11 years⁹⁰. At follow-up, 10.2% of participants were deceased, and past-month heroin use was reported in nearly a quarter (24.8%). More than three-quarters of participants were also using other substances at 11-year follow-up. Close to half (46.6%) at 11-year follow-up were in current treatment⁹⁰. The relationship between treatment and long-term outcomes was complex, with all of the participants at 11-year follow-up having participated in a median of four treatment episodes. Commencing residential treatment was consistently associated with positive outcomes at long-term follow-up, whereas other types of treatment were not. Major depression was the most significant predictor of poor outcomes at 11-year follow-up.

A 2015 review of 28 studies investigating the course of opioid use disorders (primarily heroin) with long-term follow-up periods found that the prevalence of stable abstinence from opioid use was low, with less than 30% of participants achieving stable abstinence over 10–30 years of follow-up⁸⁸. In addition, for those who did achieve sustained remissions from opioid use, many continue to use alcohol and other drugs⁸⁸.

A 2014 follow-up study over five years of methamphetamine users who received treatment found that 61% relapsed within the first year, and 25% during years two and five⁹³. Just 13% of the initial sample achieved five years of continuous remission. Predictors of longer time to relapse were longer duration of initial treatment, and participating in self-help, or other secondary formal treatment.

In contrast to the above studies indicating low remission/recovery rates, a 2016 large-scale longitudinal national investigation into alcohol and/or substance dependence found very high rates of abstinence or asymptomatic alcohol and/or substance use over three years among US adults, with 69.1% of participants achieving abstinence and only 13.5% being still alcohol and/or substance dependent⁹⁷. Treatment was not associated with abstinence at three-year follow-up. The higher rates of recovery in this study may be attributable to the fact that the most severe form of addiction according to the diagnostic criteria in use at the time was the focus of the study.

Summary

Across all alcohol and SUD types, recent long-term naturalistic and treatment-seeking studies indicate that relapse is common, even after periods of sustained remission, and although treatment is associated with greater likelihood of remission, a significant number of individuals who receive even multiple forms of evidence-based treatment are still addicted or using substances at long-term follow-up. While more research is needed to continue to improve the short-term outcomes of addiction treatment, the priority for addiction research must be on how to increase rates of long-term recovery⁹⁸. Unlike the majority of common psychological disorders, the chronic nature of addiction, which is seen by some researchers and clinicians as largely incurable, means that treatment must be holistic in addressing all areas of an individual's life, and not time-limited⁸⁹.

Moreover, little is known about how people experience recovery, a broad construct that has been defined as “a voluntarily maintained lifestyle comprised of sobriety, personal health and citizenship”⁹⁹. In particular, very little is known about individuals in stable recovery (in excess of five years), including how they achieved that state.

Developments in treatment approaches

There are several areas of recent developments in addiction treatment published since 2013, including the focus on drop-out, treatment goals, and models of care, all with significant clinical implications discussed in sections below.

Treatment drop-out

Drop-out from treatment is not unique to addiction – it beleaguers all areas of psychopathology. However, arguably the consequences of drop-out from addiction treatment are more severe than other common psychiatric disorders. General psychotherapy typically sees immediate improvement in roughly a quarter of patients, with a dose-cumulative effect for early sessions for a majority of patients, indicating that even for patients who drop out early, they are likely to have experienced at least some benefit¹⁰⁰. In comparison, individuals

who leave addiction treatment even after three months of completed therapy have no therapeutic gain¹⁰⁰. In other words, positive outcomes in addiction treatment are very unlikely during the early phases of treatment. Longer retention in treatment^{88,93}, as well as on-going self-help, or additional treatment after the initial treatment period⁹³, have been consistently associated in long-term follow-up studies with sustained remission and more positive outcomes.

These findings converge to indicate the significant potential benefits of being able to modify or extend current treatments in order to retain or reduce drop-out of individuals in addiction treatment¹⁰⁰. Therefore, identifying key risk factors or predictors of drop-out from addiction treatment is essential. A 2013 meta-analysis of risk factors that predicted drop-out from addiction treatment found that over 91% of the reviewed studies focussed on patient factors, with the vast majority of individual factors being irrelevant to likelihood of drop-out¹⁰⁰. The only important patient factors that predicted drop-out were cognitive dysfunction, younger age, and having a personality disorder. Just 4% of the studies focussed on treatment or clinician factors that might impact recovery, and emerging evidence from the review indicated that improving therapist alliance was a promising avenue for reducing drop-out.

Treatment goals

Arguably, the effectiveness of any addiction treatment and ending the long-term cycle of relapse and remission is dependent upon clients continuing to want to achieve recovery⁹⁸. Researchers and clinicians have argued that current treatments focus too much on reducing substance use, or achieving abstinence, and not enough on linking individuals to reinforcers that will make the long road to recovery more appealing⁹⁸. It is well established that long-term addiction erodes every aspect of an individual's life, including education and employment prospects, financial security, physical health, relationships, and meaningful activities that provide the individual with a sense of purpose. As a result, in the absence of strong incentives for sustained behaviour change, even the most effective medication or behavioural treatment is unlikely to be effective for very long⁹⁸.

Research supports this shift in treatment goals, in that engagement in rewarding non-substance activities and relationships, as well as attainment of a meaningful sense of purpose or identity are strongly associated with recovery^{88,89}. Recent long-term studies into treatment outcomes further points to the importance of social relationships in promoting recovery. One of the most enduring treatments for addiction is the Alcoholics Anonymous (AA) program, which has also been expanded successfully to other substance types, including Narcotics Anonymous (NA). Established in 1935, it remains a successful form of addiction treatment more than 80 years later, despite huge advances in the interim in the

fields of psychotherapy and pharmacotherapy. Although it is commonly thought of as a self-help therapy, researchers have argued that given that the primary goals of AA (to achieve sobriety and support other alcoholics) incorporate helping others, the therapy is in fact, better conceptualised as a 'mutual-help' program¹⁰¹. A 10-year follow-up study of AA treatment-receiving individuals found that more involvement in helping others with aspects of the program, as opposed to greater participation in the more self-focussed, 12-step work, was associated with greater abstinence over time, as well as higher reported interest in others¹⁰¹.

In summary, while current evidence-based treatments have successful short-term outcomes for many individuals, in order to achieve higher rates of sustained recovery, current treatments need to go beyond a focus on reducing or eliminating substance use, and in addition, target greater access to experiences that will be enjoyable or otherwise rewarding to clients⁹⁸. Given that recent developments in neuroscience research has established that long-term substance use hijacks the brain's reward systems, which makes it difficult for an individual to find pleasure in anything¹⁰², converging neuroscientific and longitudinal evidence now makes a strong case for even greater need for treatment to incorporate strong incentives for abstinence. Treatment must address the damage that long-term addiction creates in all aspects of an individual's life, including relationships, and support the notion that helping others achieve sobriety may contribute to a meaningful sense of purpose that in turn leads to recovery from addiction⁹⁸.

Care models

Findings indicate that relapse is common after completing treatment, and typically occurs early on, such as within one year after receiving treatment⁹³. The findings in recent years from several studies investigating the long-term course of addiction add to growing calls for the treatment system of addiction to be re-built around concepts of continuity of care, disease management, and chronic care, modelled off the successes in management of other illnesses such as diabetes and hypertension^{88,95,100}. An RCT published in 2013 involving Australian Vietnam veterans with alcohol misuse and comorbid psychiatric conditions compared a chronic condition management program (Flinders Program) with usual care, and found significantly greater improvements in alcohol outcomes in the chronic condition approach¹⁰³. The program is not a single intervention, but rather aims to tailor interventions to meet the person's needs whilst simultaneously motivating the patient to achieve their medical, psychosocial or lifestyle risk factor goals. Health practitioners deliver the program over a period of 12 months.

Although significant evidence and subsequent shifts in policy around addiction treatment management reflect an understanding that addiction is a disease of the brain, debates

continues as to whether addiction can truly be considered a disease of the brain, or instead, is a matter of choice¹⁰⁴. A significant proportion of individuals with addiction attain and sustain recovery without any treatment⁹⁹. Given relapse rates for treatment are so high, and so many achieve remission without treatment, the debate around whether a chronic model of care is suitable or wasteful is ongoing.

Developments in neuroscience

In the past two decades, advances in neuroscientific research has driven a shift in thinking that addiction is a disease of the brain⁹². This view contrasts sharply with centuries of deeply ingrained views within medicine and society more broadly that addiction is a voluntary act that can be overcome with willpower and strict moral values. Advances in neurobiology have uncovered profound disruptions in important aspects of cognition such as decision-making ability and emotional regulation in individuals with addiction, which are thought to underlie the maintenance of addictive behaviours.

A 2016 systematic review of 46 studies investigating cognitive functioning in addiction after treatment found evidence of associations, of moderate effect size, between general cognition and treatment adherence, and reward-based decision-making and relapse¹⁰². The authors propose that deficits in general cognition (such as speed, attention, and reasoning) are likely to be barriers to benefiting from traditional CBT or other talking therapies used commonly in addiction treatment, because they require a high cognitive load in order to be successful. This conclusion was the result of the findings that cognitive deficits resulted in poorer outcomes specifically relating to treatment adherence. Additionally, the review found that cognitive deficits in reward-based decision-making resulted in increased vulnerability to poor choices that led to relapse. The clinical implications of these findings are two-fold, in that addiction treatments that require a lower cognitive load may result in more treatment adherence, and that traditional addiction treatment should be further complemented by both cognitive enhancement interventions, as well as efforts to strengthen decision-making ability¹⁰².

Veterans and addiction

While in many ways veterans and civilians with SUDs are comparable, there are some important differences⁸⁹. A 2014 review of long-term outcomes for US veterans and civilians with addiction found that veterans had active substance use for an average of four years longer than civilians and initiated recovery seven years later than civilians⁹⁹. Veterans also typically have a significant number of comorbid problems that can complicate addiction recovery, particularly PTSD⁸⁹. Previously, it was thought that the substance use problems

needed to be treated prior to the PTSD, however, treatments that treat both disorders simultaneously have been recently developed after evidence was found that there was low success rate with treating substance use without also addressing traumatic experiences¹⁰⁵. Recent studies indicate that reductions in substance use are associated with significant improvements in PTSD symptoms in dually diagnosed and dually treated veterans¹⁰⁶. However, clinicians also argue that the stress of trauma-focussed PTSD treatment may lead to difficulty in maintaining abstinence, and therefore, addiction must be treated prior to PTSD rather than dually¹⁰⁷. A protocol published in 2016 aims to conduct the first RCT designed to directly evaluate the benefits of sequential versus integrated treatment for veterans with comorbid PTSD and SUDs in order to resolve the outstanding issue of sequential versus dual treatments for addiction comorbid with PTSD¹⁰⁵.

Treatment options for veterans are largely comparable to those for civilians, and clinicians emphasise the importance of a focus beyond reducing or eliminating substance use, and non time-limited treatment to ensure relapse prevention over a veteran's lifetime⁸⁹. Clinicians treating veterans with addiction have recommended that using military-related analogies to explain addiction and recovery concepts facilitates bonding and understanding between therapist and veteran⁸⁹. They also state that programs such as AA and NA use the concept of 'surrender' throughout their program, and that veterans sometimes have problems accepting such terms, given their military training.

Summary

While we know a great deal about addiction, we know much less about recovery^{99,108}. Addiction is a chronic problem, operating in a cyclical manner. Recent research has attempted to synthesise findings from long-term outcome studies to better understand when and why relapse occurs. While more research is needed to continue to improve short-term outcomes of addiction treatment, the priority must be given to increasing rates of long-term recovery⁹⁸.

References

1. Markon KE. (2014). From comorbidity to constructs: Recurring and emergent issues in modeling comorbidity. In: Richards CS, O'Hara MW, eds. *The Oxford handbook of depression and comorbidity*.
2. Bradley D, Grinage MD. (2003) Diagnosis and management of post-traumatic stress disorder. *American Family Physician*. 15:2401-2409.
3. Ginzburg K, Ein-Dor T, Solomon Z. (2010) Comorbidity of posttraumatic stress disorder, anxiety, and depression: A 20-year longitudinal study of war veterans. *Journal of Affective Disorders*. 123:249-257.
4. Acosta MC, Possemato K, Maisto SA, et al. (2017) Web-delivered CBT reduces heavy drinking in OEF-OIF veterans in primary care with symptomatic substance use and PTSD. *Behavior Therapy*. 48:262-276.
5. Najavits LM, Ryngala D, Back SE, Bolton E, Mueser KT, Brady KT. (2009) Treatment of PTSD and comorbid disorders. In: Foa E, Keane, T., Friedman, M., & Cohen, J.A., ed. *Effective treatments for PTSD*. 2nd ed:508-613.
6. Cui R, Haller M, Skidmore JR, Goldsteinholm K, Norman S, Tate SR. (2016) Treatment attendance among veterans with depression, substance use disorder, and trauma. *Journal of Dual Diagnosis*. 12:15-26.
7. Woltmann E, Grogan-Kylor A, Perron B, Georges H, Kilbourne AM, Bauer MS. (2012) Comparative effectiveness of collaborative chronic care models for mental health conditions across primary, specialty, and behavioral health care settings: Systematic review and meta-analysis. *American Journal of Psychiatry*. 169:790-804.
8. Engel CC, Jaycox LH, Freed MC, et al. (2016) Centrally assisted collaborative telecare for posttraumatic stress disorder and depression among military personnel attending primary care: A randomized clinical trial. *Journal of the American Medical Association*. 176:948-956.
9. Engel CC, Oxman T, Yamamoto C, et al. (2008) RESPECT-Mil: Feasibility of a systems-level collaborative care approach to depression and posttraumatic stress disorder in military primary care. *Military Medicine*. 173:935-940.
10. Puetz TW, Youngstedt SD, Herring MP. (2015) Effects of pharmacotherapy on combat-related PTSD, anxiety, and depression: A systematic review and meta-regression analysis. *PLoS ONE*. 10:1-18.
11. Haynes PL, Kelly M, Warner L, Quan SF, Krakow B, Bootzin RR. (2016) Cognitive behavioral social rhythm group therapy for veterans with posttraumatic stress disorder, depression, and sleep disturbance: Results from an open trial. *Journal of Affective Disorders*. 192:234-243.
12. Ehlers CL, Frank E, Kupfer DJ. (1988) Social zeitgebers and biological rhythms: A unified approach to understanding the etiology of depression. *Archives of General Psychiatry*. 45:948-952.
13. Hoge CW, Castro CA, Messer SC, McGurk D, Cotting DI, Koffman RL. (2004) Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *The New England Journal of Medicine*. 351:13-22.
14. Hobfoll SE, Blais RK, Stevens NR, Walt L, Gengler R. (2016) Vets Prevail online intervention reduces PTSD and depression in veterans with mild-to-moderate symptoms. *Journal of Consulting and Clinical Psychology*. 84:31-42.
15. Philip NS, Ridout SJ, Albright SE, Sanchez G, Carpenter LL. (2016) 5-Hz transcranial magnetic stimulation for comorbid posttraumatic stress disorder and major depression. *Journal of Traumatic Stress*. 29:93-96.
16. Back SE, Killeen TK, Teer AP, et al. (2014) Substance use disorders and PTSD: An exploratory study of treatment preferences among military veterans. *Addictive Behaviors*. 39:369-373.
17. Phoenix Australia - Centre for Posttraumatic Mental Health. (2013) *Australian guidelines for the treatment of acute stress disorder and posttraumatic stress disorder*. Melbourne.

18. Back SE, Foa EB, Killeen TK, et al. (2015) *Concurrent treatment of PTSD and substance use disorders using prolonged exposure (COPE): Therapist guide*. New York, NY: Oxford University Press.
19. Persson A, Back SE, Killeen TK, et al. (2017) Concurrent treatment of PTSD and substance use disorders using prolonged exposure (COPE): A pilot study in alcohol-dependent women. *Journal of Addiction Medicine*. 11:119-125.
20. Grubbs KM, Fortney JC, Dean T, Williams JS, Godleski L. (2015) A comparison of mental health diagnoses treated via interactive video and face to face in the Veterans healthcare administration. *Telemedicine and E-Health*. 21:564-566.
21. Battaglia C, Peterson J, Whitfield E, et al. (2016) Integrating motivational interviewing into a home telehealth program for veterans with posttraumatic stress disorder who smoke: A randomized controlled trial. *Journal of Clinical Psychology*. 72:194-203.
22. Back SE, McCauley JL, Korte KJ, et al. (2016) A double-blind, randomized, controlled pilot trial of N-acetylcysteine in veterans with posttraumatic stress disorder and substance use disorders. *The Journal of Clinical Psychiatry*. 77:e1439-e1446.
23. Capone C, Eaton E, McGrath AC, McGovern MP. (2014) Integrated Cognitive Behavioural Therapy (ICBT) for PTSD and substance use in Iraq and Afghanistan veterans: A feasibility study. *Journal of Traumatic Stress Disorders and Treatment*. 3:1-15.
24. Scottish Intercollegiate Guidelines Network. (2013) *Management of chronic pain*. Edinburgh, UK:: Scottish Intercollegiate Guidelines Network.
25. Bosco MA, Gallanati JL, Clark ME. (2013) Conceptualizing and treating comorbid chronic pain and PTSD. *Pain Research and Treatment*. 2013:1-10.
26. Scioli-Salter E, Forman DE, Otis JD, et al. (2016) Potential neurobiological benefits of exercise in chronic pain and posttraumatic stress disorder: Pilot study. *Journal of Rehabilitation Research and Development*. 53:95-106.
27. Kip KE, Rosenzweig L, Hernandez DF, et al. (2014) Accelerated resolution therapy for treatment of pain secondary to symptoms of combat-related posttraumatic stress disorder. *European Journal of Psychotraumatology*. 5:1-12.
28. Plagge JM, Lu MW, Lovejoy TI, Karl AI, Dobscha SK. (2013) Treatment of comorbid pain and PTSD in returning veterans: A collaborative approach utilising behavioral activation. *Pain Medicine*. 14:1164-1172.
29. Church D. (2014) Reductions in pain, depression, and anxiety symptoms after PTSD remediation in veterans. *Explore*. 10:162-169.
30. Kip KE, Rosenzweig L, Hernandez DF, et al. (2013) Randomized controlled trial of Accelerated Resolution Therapy (ART) for symptoms of combat-related post-traumatic stress disorder (PTSD). *Military Medicine*. 178:1298-1309.
31. 4906.0 - Personal Safety, Australia, 2012. 2013. <http://www.abs.gov.au/ausstats/abs@.nsf/mf/4906.0>.
32. World Health Organization. (2013) *Global and regional estimates of violence against women: prevalence and health effects of intimate partner violence and non-partner sexual violence*. World Health Organization.
33. Australian Law Reform Commission. (2010) *Family violence - A national legal response*. Canberra, ACT: Commonwealth of Australia.
34. Kelly JB, Johnson MP. (2008) Differentiation among types of intimate partner violence: Research update and implications for interventions. *Family Court Review*. 46(3):476-499.
35. Fact file: Domestic violence in Australia. 2016.
36. Johnson MP. (2011) Gender and types of intimate partner violence: A response to an anti-feminist literature review. *Aggression and Violent Behavior*. 16(4):289-296.
37. Dutton DG, Hamel J, Aaronson J. (2010) The gender paradigm in family court processes: Re-balancing the scales of justice from biased social science. *Journal of Child Custody*. 7(1):1-31.
38. Cox P. (2015) *Violence against women in Australia: Additional analysis of the Australian Bureau of Statistics' Personal Safety Survey, 2012*. Sydney, NSW: ANROWS: Australia's National Research Organisation for Women's Safety.
39. Taft A, Hegarty K, Flood M. (2001) Are men and women equally violent to intimate partners? *Australian and New Zealand Journal of Public Health*. 25:498-500.

40. Tinney G, Gerlock AA. (2014) Intimate partner violence, military personnel, veterans, and their families. *Family Court Review*. 52(3):400-416.
41. Dutton MA, Goodman LA. (2005) Coercion in intimate partner violence: Toward a new conceptualization. *Sex Roles*. 52(11-12):743-756.
42. Tasso A, Whitmarsh L, Ordway A. (2016) Intimate partner violence within military families: Intervention guidelines for relational aggressors. *The Family Journal*. 24(2):114-121.
43. Wangmann JM. (2011) *Different types of intimate partner violence-an exploration of the literature*. Australian Domestic & Family Violence Clearinghouse.
44. Trevillion K, Williamson E, Thandi G, Borschmann R, Oram S, Howard LM. (2015) A systematic review of mental disorders and perpetration of domestic violence among military populations. *Social Psychiatry and Psychiatric Epidemiology*. 50(9):1329-1346.
45. Beck CJA, Menke JM, O'Hara Brewster K, Figueredo AJ. (2009) Validation of a measure of intimate partner abuse with couples participating in divorce mediation. *Journal of Divorce and Remarriage*. 50:295-308.
46. Gerber MR, Iverson KM, Dichter ME, Klap R, Latta RE. (2014) Women veterans and intimate partner violence: Current state of knowledge and future directions. *Journal of Women's Health*. 23(4):302-309.
47. Kimerling R, Iverson KM, Dichter ME, Rodriguez AL, Wong A, Pavao J. (2016) Prevalence of intimate partner violence among women veterans who utilize Veterans Health Administration primary care. *Journal of General Internal Medicine*. 31(8):888-894.
48. Latta RE, Elwy AR, Ngo TA, Kelly MM. (2016) Intimate partner violence screening in a women veterans' health clinic: Assessing feasibility. *Journal of Family Violence*. 31(5):595-606.
49. Dardis CM, Shipherd JC, Iverson KM. (2016) Intimate partner violence among women veterans by sexual orientation. *Women & Health*. Advance online publication.
50. Dardis CM, Amoroso T, Iverson KM. (2016) Intimate partner stalking: Contributions to PTSD symptomatology among a national sample of women veterans. *Psychological Trauma: Theory, Research, Practice and Policy*. Advance online publication.
51. Cerulli C, Bossarte RM, Dichter ME. (2014) Exploring intimate partner violence status among male veterans and associated health outcomes. *American Journal of Men's Health*. 8(1):66-73.
52. Tharp AT, Sherman MD, Bowling U, Townsend BJ. (2016) Intimate partner violence between male Iraq and Afghanistan veterans and their female partners who seek couples therapy. *Journal of Interpersonal Violence*. 31(6):1095-1115.
53. LaMotte AD, Taft CT, Weatherill RP, Scott JP, Eckhardt CI. (2014) Examining intimate partner aggression assessment among returning veterans and their partners. *Psychological Assessment*. 26(1):8.
54. Zamorski MA, Wiens-Kinkaid ME. (2013) Cross-sectional prevalence survey of intimate partner violence perpetration and victimization in Canadian military personnel. *BMC Public Health*. 13(1):1019.
55. Miller MW, Wolf EJ, Reardon AF, et al. (2013) PTSD and conflict behavior between veterans and their intimate partners. *Journal of Anxiety Disorders*. 27(2):240-251.
56. Sullivan CP, Elbogen EB. (2014) PTSD symptoms and family versus stranger violence in Iraq and Afghanistan veterans. *Law and Human Behavior*. 38(1):1.
57. Smith-Marek EN, Cafferky B, Dominguez MM, et al. (2016) Military/civilian risk markers for physical intimate partner violence: A meta-analysis. *Violence and Victims*. 31(5):787-818.
58. Stith SM, Milner JS, Fleming M, Robichaux RJ, Travis WJ. (2016) Intimate partner physical injury risk assessment in a military sample. *Psychology of Violence*. 6(4):529.
59. Taft CT, Macdonald A, Monson CM, Walling SM, Resick PA, Murphy CM. (2013) "Strength at Home" group intervention for military populations engaging in intimate partner violence: Pilot findings. *Journal of Family Violence*. 28(3):225-231.
60. Taft CT, Creech SK, Gallagher MW, Macdonald A, Murphy CM, Monson CM. (2016) Strength at Home Couples program to prevent military partner violence: A randomized controlled trial. *Journal of Consulting and Clinical Psychology*. 84(11):935.

61. Tharp AT, Sherman M, Holland K, Townsend B, Bowling U. (2016) A qualitative study of male veterans' violence perpetration and treatment preferences. *Military Medicine*. 181(8):735-739.
62. Iverson KM, Stirman SW, Street AE, et al. (2016) Female veterans' preferences for counseling related to intimate partner violence: Informing patient-centered interventions. *General Hospital Psychiatry*. 40:33-38.
63. Dichter ME, Wagner C, True G. (2016) Women veterans' experiences of intimate partner violence and non-partner sexual assault in the context of military service implications for supporting women's health and well-being. *Journal of Interpersonal Violence*. Advance online publication.
64. Department of Human Services. (2012) *Family violence: Risk assessment and risk management framework and practice guides 1-3*. State Government of Victoria.
65. Mackay E, Gibson A, Lam H, Beecham D. (2015) *Perpetrator interventions in Australia: Part two - perpetrator pathways and mapping*. NSW: ANROWS: Australia's National Research Organisation for Women's Safety.
66. Goodman J, Schlossberg NK, Anderson ML. (2006) *Counseling adults in transition: Linking practice with theory*. 3rd ed. New York: Springer Publishing Company.
67. Sipos ML, Foran HM, Wood MD, et al. (2014) Assessment of an alternative postdeployment reintegration strategy with soldiers returning from Iraq. *Psychological Services*. 11:185-191.
68. Cooper L, Caddick N, Godier L, Cooper A, Fossey M. (2016) Transition from the military into civilian life: An exploration of cultural competence. *Armed Forces & Society*. Advance online publication.
69. Tshube T, Feltz DL. (2015) The relationship between dual-career and post-sport career transition among elite athletes in South Africa, Botswana, Namibia and Zimbabwe. *Psychology of Sport and Exercise*. 21:109-114.
70. Bracken-Scally M, McGilloway S, Mitchell JT. (2016) Retirement policies and support for emergency service personnel: The transition to retirement. *Canadian Journal on Aging*. 35:161-174.
71. Elnitsky CA, Blevins CL, Fisher MP, Magruder K. (2017) Military service member and veteran reintegration: A critical review and adapted ecological model. *American Journal of Orthopsychiatry*. 87:114-128.
72. Gil-Rivas V, Kilmer RP, Larson JC, Armstrong LM. (2017) Facilitating successful reintegration: Attending to the needs of military families. *American Journal of Orthopsychiatry*. 87:176-184.
73. Sayer NA, Frazier P, Orazem RJ, et al. (2011) Military to Civilian Questionnaire: A measure of postdeployment community reintegration difficulty among veterans using Department of Veterans Affairs medical care. *Journal of Traumatic Stress*. 24:615-762.
74. Sayer NA, Noorbaloochi S, Frazier PA, et al. (2015) Randomized controlled trial of online expressive writing to address readjustment difficulties among US Afghanistan and Iraq war veterans. *Journal of Traumatic Stress*. 28:381-390.
75. Bergman BP, Burdett HJ, Greenberg N. (2014) Service life and beyond - Institution or culture? *The RUSI Journal*. 159:60-68.
76. Scherrer JF, Widner G, Shroff M, et al. (2014) Assessment of a post-deployment Yellow Ribbon Reintegration Program for National Guard members and supporters. *Military Medicine*. 179:1391-1397.
77. Maharajan K, Krishnaveni R. (2016) Managing the migration from military to civil society: Motivation model for socioeconomic needs in resettlement of veterans in India. *Armed Forces & Society*. 42:605-625.
78. Knobloch LK, McAninch KG, Abendschein B, Ebata AT, McGlaughlin PC. (2016) Relational turbulence among military couples after reunion following deployment. *Personal Relationships*. 23:742-758.
79. Knobloch LK, Knobloch-Fedders LM, Yorgason JB, Ebata AT, McGlaughlin PC. (2017) Military children's difficulty with reintegration after deployment: A relational turbulence model perspective. *Journal of Family Psychology*. Advance online publication.
80. Knobloch LK, Theiss JA. (2017) Topic avoidance about deployment upon reunion: Applying the relational turbulence model. *Military Behavioral Health*. 5:117-128.

81. Gewirtz AH, DeGarmo DS, Zamir O. (2017) Testing a military family stress model. *Family Process*. Advance online publication.
82. DeVoe ER, Paris R, Emmert-Aronson B, Ross A, Acker M. (2016) A randomized clinical trial of a postdeployment parenting intervention for service members and their families with very young children. *Psychological Trauma: Theory, Research, Practice, and Policy*. Advance online publication.
83. Taylor J, Ogilvie BC. (1994) A conceptual model of adaptation to retirement among athletes. *Journal of Applied Sport Psychology*. 6:1-20.
84. Park S, Lavallee D, Tod D. (2013) Athletes' career transition out of sport: A systematic review. *International Review of Sport and Exercise Psychology*. 6:22-53.
85. Knights S, Sherry E, Ruddock-Hudson M. (2016) Investigating elite end-of-athletic career transition: A systematic review. *Journal of Applied Sport Psychology*. 28:291-308.
86. Dimoula F, Torregrosa M, Psychountaki M, Gonzalez Fernandez MD. (2013) Retiring from elite sports in Greece and Spain. *Spanish Journal of Psychology*. 16(e38):1-11.
87. Bracken-Scally M, McGilloway S, Gallagher S, Mitchell JT. (2014) Life after the emergency services: An exploratory study of well being and quality of life in emergency service retirees. *International Journal of Emergency Mental Health and Human Resilience*. 16:44-51.
88. Hser Y-I, Evans E, Grella C, Ling W, Anglin D. (2015) Long-term course of opioid addiction. *Harvard Review of Psychiatry*. 23(2):76-89.
89. Carroll JF, Hall CE, Kears R, Mooney M, Potestivo J, Forman N. (2016) Meeting the treatment needs of veterans with substance use disorders. *Alcoholism Treatment Quarterly*. 34(3):354-364.
90. Teesson M, Marel C, Darke S, et al. (2015) Long-term mortality, remission, criminality and psychiatric comorbidity of heroin dependence: 11-year findings from the Australian Treatment Outcome Study. *Addiction*. 110(6):986-993.
91. Trim RS, Schuckit MA, Smith TL. (2013) Predictors of initial and sustained remission from alcohol use disorders: Findings from the 30-year follow-up of the San Diego prospective study. *Alcoholism: Clinical and Experimental Research*. 37(8):1424-1431.
92. Volkow ND, Koob GF, McLellan AT. (2016) Neurobiologic advances from the brain disease model of addiction. *New England Journal of Medicine*. 374(4):363-371.
93. Brecht M-L, Herbeck D. (2014) Time to relapse following treatment for methamphetamine use: A long-term perspective on patterns and predictors. *Drug and Alcohol Dependence*. 139:18-25.
94. Aklin WM, Wong CJ, Hampton J, et al. (2014) A therapeutic workplace for the long-term treatment of drug addiction and unemployment: Eight-year outcomes of a social business intervention. *Journal of Substance Abuse Treatment*. 47(5):329-338.
95. Fleury MJ, Djouini A, Huynh C, et al. (2016) Remission from substance use disorders: A systematic review and meta-analysis. *Drug Alcohol Depend*. 168:293-306.
96. Bravo F, Gual A, Lligoña A, Colom J. (2013) Gender differences in the long-term outcome of alcohol dependence treatments: An analysis of twenty-year prospective follow up. *Drug and Alcohol Review*. 32(4):381-388.
97. McCabe SE, Cranford JA, Boyd CJ. (2016) Stressful events and other predictors of remission from drug dependence in the United States: Longitudinal results from a national survey. *J Subst Abuse Treat*. 71:41-47.
98. McKay JR. (2016) Making the hard work of recovery more attractive for those with substance use disorders. *Addiction*. 17(10):13502.
99. Laudet A, Timko C, Hill T. (2014) Comparing life experiences in active addiction and recovery between veterans and non-veterans: A national study. *Journal of Addictive Diseases*. 33(2):148-162.
100. Brorson HH, Arnevik EA, Rand-Hendriksen K, Duckert F. (2013) Drop-out from addiction treatment: A systematic review of risk factors. *Clinical Psychology Review*. 33(8):1010-1024.
101. Pagano ME, White WL, Kelly JF, Stout RL, Tonigan JS. (2013) The 10-year course of Alcoholics Anonymous participation and long-term outcomes: a follow-up study of outpatient subjects in Project MATCH. *Substance Abuse*. 34(1):51-59.

102. Domínguez-Salas S, Díaz-Batanero C, Lozano-Rojas OM, Verdejo-García A. (2016) Impact of general cognition and executive function deficits on addiction treatment outcomes: Systematic review and discussion of neurocognitive pathways. *Neuroscience & Biobehavioral Reviews*. 71:772-801.
103. Battersby MW, Beattie J, Pols RG, Smith DP, Condon J, Blunden S. (2013) A randomised controlled trial of the Flinders ProgramTM of chronic condition management in Vietnam veterans with co-morbid alcohol misuse, and psychiatric and medical conditions. *Australian and New Zealand Journal of Psychiatry*. 47(5):451-462.
104. Peele S. (2016) People control their addictions: No matter how much the “chronic” brain disease model of addiction indicates otherwise, we know that people can quit addictions – with special reference to harm reduction and mindfulness. *Addictive Behaviors Reports*. 4:97-101.
105. Kehle-Forbes SM, Drapkin ML, Foa EB, et al. (2016) Study design, interventions, and baseline characteristics for the Substance use and TRauma Intervention for VEterans (STRIVE) trial. *Contemporary Clinical Trials*. 50:45-53.
106. Coker KL, Stefanovics E, Rosenheck R. (2016) Correlates of improvement in substance abuse among dually diagnosed veterans with posttraumatic stress disorder in specialized intensive VA treatment. *Psychological Trauma: Theory, Research, Practice, and Policy*. 8:41-48.
107. Gielen N, Krumeich A, Havermans RC, Smeets F, Jansen A. (2014) Why clinicians do not implement integrated treatment for comorbid substance use disorder and posttraumatic stress disorder: A qualitative study. *European Journal of Psychotraumatology*. 5.
108. Laudet A, Savage R, Mahmood D. (2002) Pathways to long-term recovery: A preliminary investigation. *Journal of Psychoactive Drugs*. 34(3):305-311.