

## **Mental health and wellbeing of Australian Police and Emergency Services Employees**

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## **Abstract**

*Answering the Call*, the Australian National Police and Emergency Services Mental Health and Wellbeing Study, surveyed 14,868 Australian ambulance, fire and rescue, police, and state emergency service employees. Emergency services personnel had lower rates of mental wellbeing and higher rates of psychological distress and probable PTSD than the general adult population. Overall 30% had low wellbeing, 21% had high and 9% had very high psychological distress, and 10% had probable PTSD. An estimated 5% had suicidal ideation and 2% had a suicide plan in the past 12 months, while 16% binge drink at least weekly. Only one in five of those with very high psychological distress or probable PTSD felt they received adequate support for their condition. These findings highlight the risk of mental health conditions associated with work in the emergency services sector.

**Keywords:** firefighters, ambulance, mental health, service users, stigma and discrimination, common mental disorders, post-traumatic stress disorder, psychological distress.

# **Mental health and wellbeing of Australian Police and Emergency Services Employees**

## **Introduction**

Emergency services personnel (ambulance, fire and rescue, police, state emergency services) are at high risk of developing mental health conditions. A meta-analysis by Berger et al. (2012) on studies worldwide has estimated the international pooled prevalence of Post-Traumatic Stress Disorder (PTSD) among rescue workers as being 10% [1]. The largest individual studies undertaken to date have reported high rates of mental health issues in emergency services personnel. In the Canadian study of Public Safety Personnel, more than one in three personnel screened positive for one or more mental health conditions [2]. A recent large self-selected sample of police officers in the United Kingdom reported prevalence of PTSD of 8.0% and prevalence of complex PTSD of 12.6% [3]. These data suggest that emergency services personnel may have comparable risks of developing mental health conditions to military veterans [4]. However, compared with military personnel and veterans, there has been significantly less study of the mental health of police and emergency services personnel. Unlike defence forces, which are typically organised at a national level, in many countries the majority of police and emergency services personnel are employed by organisations at a regional or local government area level. For logistical reasons, most studies to date have focussed on single organisations and have small sample sizes and limited power to undertake detailed analysis. Nevertheless, the studies that have been conducted have consistently found elevated rates of mental health issues including anxiety, depression and PTSD, as well as harmful levels of alcohol consumption [5,6].

Unlike military personnel who may have time-limited active deployments, police and emergency services personnel may be exposed to traumatic experiences repeatedly over the

course of a long career, which may impact on mental health and wellbeing [7-13]. While operational staff may be assumed to have higher levels of exposure to trauma, non-operational staff can also be involved in responding to traumatic events, may be vicariously exposed to trauma, and may suffer from expectations and lack of access to support services that may be provided primarily for operational personnel [12-17]. Significant gaps have been identified in the literature on police and emergency services mental wellbeing, including lack of large scale or national studies, no studies examining the prevalence of self-harming and substance use behaviours, and lack of investigation into help-seeking behaviour [18].

In 2014, Beyond Blue, Australia's peak mental health organisation addressing anxiety, depression and suicide, established its Police and Emergency Services program out of concern for the mental health and suicide risk of employees and volunteers in the sector. As part of this program, Beyond Blue commissioned a national study of the mental health and wellbeing of police and emergency services personnel. This paper presents main findings from *Answering the Call: the National Mental Health and Wellbeing Survey of Police and Emergency Services*, the largest study conducted to date of the mental health of police and emergency services personnel in Australia and worldwide. The aims of the survey were to establish a baseline measure of mental health and wellbeing of personnel in ambulance, fire and rescue, police, and state emergency service organisations in Australia; to examine individual and workplace factors associated with wellbeing; and levels of support provided and needed. The goal of the survey was to provide information to support the development of policies and programs to improve the mental health and wellbeing of police and emergency services personnel.

## **Participants and methods**

### **Survey methodology**

*Answering the Call* was a national survey of employees, volunteers and former employees working in ambulance, fire and rescue, police, and state emergency service (SES) organisations in Australia. Due to the wide scope of the survey, the current paper reports results only for employees. At the time of the survey, there were 36 organisations in scope, with 33 organisations participating. Each organisation provided information on the demographic composition of their workforce, from which stratified random samples of their current employees were selected (or full censuses in smaller organisations). The samples were designed to ensure at least 500 employees were included in the study in organisations with more than 500 employees, and all employees were included in small organisations. In most organisations, employees were stratified by gender and either length of service or rank. Random samples were selected in each stratum with sampling fractions held constant across all strata in each organisation to ensure proportional representation of the sample. Selected employees were contacted via email to participate in the online survey. Hard copy surveys were also made available upon request. Participation in the survey was voluntary. After an initial email requesting their participation, three subsequent follow-up emails were sent at weekly intervals. There were 117,500 people employed in the 33 organisations, and 67,500 were selected to participate, with 14,868 employees completing the questionnaire (22%). Data collection was staged around operational requirements of each individual organisation and all data were collected between October 2017 and March 2018. On average, the survey took about 20-25 minutes to complete. Further details of the sampling process, an examination of possible response bias and the approach to data weighting is included in the online supplementary material. All procedures involving human subjects were approved by the Human Research Ethics Committee at The University of Western Australia. The study

was also approved by the Ethics Review Committee (RPAH Zone), Sydney Local Health District; the Human Research Ethics Committee (Tasmania) Network; and by the CEO or Research Governance body of each of the 33 participating organisations. Informed consent was obtained from all participants.

## **Measures**

Individual survey items for the measures used in the survey, along with details on how they were scored, are presented in the online supplementary material.

### **Mental health and wellbeing**

Psychological distress was assessed using the Kessler-10 scale, which focusses on symptoms of depression and anxiety [19]. The Short Warwick-Edinburgh Mental Well-Being Scale (SWEMWBS) was used to measure positive aspects of mental health, including emotional, cognitive-evaluation and psychological functioning [20]. PTSD symptoms and severity were assessed using an adaptation of the PCL-5 PTSD screening scale [21]. The scale was adapted for three reasons: (i) The PCL-5 and most other PTSD screening scales ask symptom questions in relation to a specific event, which is less appropriate for a population where the impact of cumulative exposures to trauma may be more significant; (ii) the PCL-5 does not assess DSM-5 criterion G that “the disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning” [22]; and (iii) to include a measure of severity, consistent with the approach taken in Australia’s National Survey of Mental Health and Wellbeing. Participants in the survey were also asked a series of questions regarding whether they had been diagnosed with a range of mental health conditions by a doctor or mental health professional, and if so, whether they still had the condition at the time of the survey.

**Resilience and social support.** A shortened version of the Brief Resilience Scale was used to measure aspects of resilience [23]. Three items measured the ability to bounce back from adversity, each measured on a 5-point Likert scale (1 = Strongly disagree, 5 = Strongly agree). The full measure had good to excellent internal consistency ( $\alpha = 0.80-0.91$ ) and validity in prior research [23], and the shortened measure had good internal consistency in the current sample ( $\alpha = 0.88$ ). Social support was measured through the use of an adapted version of the Two-Way Social Support Scale [24]. The adapted scale was shown to have good levels of internal consistency ( $\alpha = 0.87$ ).

**Alcohol and drug use.** Alcohol consumption was assessed using the AUDIT-C [25]. Participants were also asked whether they had consumed prescription medication for non-medical purposes in the past 12 months, and whether they had also consumed illegal drugs.

**Suicidal Thoughts and Behaviours.** Participants were asked whether they had seriously thought about taking their own life, planned to take their own life or attempted to take their own life both ever, and in the past 12 months. Participants were given the option “prefer not to say” for each question, and if they chose this option they were not asked subsequent questions.

**Use of services and perceived needs.** Participants were asked about their perceptions of need for help or support with emotional or mental health issues, and their use of services. Questions were based on the model of perceived needs for care used in the Australian National Survey of Mental Health and Wellbeing [26]. Using this model, participants who had not used support services were classified into those who don’t believe they have an emotional or mental health problem, or those who recognised they had an emotional or mental health problem but did not seek help. Those who used support services were classified

into those who believed they received as much help as they needed, and those who believed they needed either a little or a lot more help with their problems.

**Demographic and service characteristics.** Along with demographic information, participants were asked how long they had worked for a police and emergency services organisation, whether their role was operational or non-operational, whether they did shift-work or were on-call, and their rank or level within the organisation.

### **Statistical analyses**

Survey data were weighted to reflect the demographic characteristics of each organisation. Weighted estimates were calculated using the *surveyfreq* procedure in SAS Version 9.4, to account for survey weights and the stratified sample design. Proportions of employees experiencing mental health issues were calculated by sector, and by demographic and service characteristics. For those with low wellbeing, high or very high psychological distress or probable PTSD, proportions who used services were calculated by level of perceived need. Confidence intervals were calculated using the method of linearisation in Taylor Series [27].

To explore the relationship between probable PTSD and demographic characteristics, we undertook a set of univariate logistic regression analyses. These analyses were designed to test the null hypothesis that there was no association between demographic characteristics and incidence of PTSD.

Due to the design of the online questionnaire, which prompted participants if they missed answering any questions, there was very little item missing data (less than 0.1% for most items). Due to the trivial effect on the results of such low levels of missing data, single imputation was performed using random hot deck imputation where the proportion of missing data was less than 0.1%. Participants were given an option of “prefer not to say” for questions about suicidal behaviours and no attempt was made to impute for respondents who chose this



option. Participants were also given an option to skip questions on alcohol and drugs. No attempt was made to impute these cases. Estimated proportions using alcohol or drugs have been calculated out of those who answered these questions.

## **Results**

### **Demographic and service characteristics**

The survey was completed by 14,868 employees from 33 police and emergency services organisations across Australia. Demographic characteristics of the sample are shown in Table 1. Police organisations are the largest employer, accounting for over half of all participants. SES organisations had the smallest number of employees as these are largely volunteer-based organisations. Police and fire and rescue organisations had a higher proportion of males than females. The majority of employees were in operational roles. Working in police or emergency services tends to be a long-term career for many, with 60%-70% of employees having worked in the sector for more than 10 years. A high proportion of employees across the sector engaged in shift work, with the highest proportion performing shift work within the ambulance sector.

### **Mental health and wellbeing**

Police and emergency services employees had higher rates of mental health issues and lower levels of mental wellbeing compared with the general population (Table 2). The SWEMWBS is designed so that 15% of the population would fall in the low wellbeing category [20]. Across the four sectors, the proportion of employees with low wellbeing ranged from 26.7% in the ambulance sector (95% CI 25.1–28.2) to 32.3% in the police sector (95% CI 31.0–33.6), roughly twice as high as population expectations. Almost a third of employees had high or very high levels of psychological distress (29.8%, 95% CI 28.8–30.7), which is significantly higher than for the general Australian population (11.7%), and 9.3% had very high psychological distress (95% CI 8.6–9.9) compared with 3.7% in the general Australian

population [28]. Approximately 10% (95% CI 9.4–10.7) met the criteria for probable PTSD, with the police sector having the highest rates. Further, sector-wide self-reported diagnosis of PTSD by a mental health professional (9.4%, 95% CI 8.8–10.0) was over two times higher than the general Australian population (4.4%) [28].

One in twenty employees (5.3%, 95% CI 4.9–5.8) had seriously considered ending their life in the 12 months prior to the survey, over two times higher than the general population (2.3%) [22]. While 2.0% had a suicide plan (2.0%, 95% CI 1.7–2.3), which was also higher than the population rate (0.6%) [28], there was no significant difference in terms of suicide attempts (0.3%, 95% CI 0.2–0.4). Approximately 7.5% of participants chose “prefer not to say” at the first question on suicidal ideation, and were not asked subsequent questions about suicidal behaviours. No attempt was made to impute for these cases, which have been treated as “no” responses. As such, the prevalence of suicidal thoughts and behaviours estimated from these data is likely to underestimate the true prevalence of suicidal thoughts and behaviours in this cohort.

Some 60% (95% CI 58.7–62.3) of employees screened positive for hazardous drinking or active alcohol use disorders using the AUDIT-C. Drinking five or more standard drinks on a single occasion weekly or more often was reported by 15.9% of employees (95% CI 15.2–16.7) and 16.9% (95% CI 16.1–17.7) reported having drunk ten or more standard drinks on a single drinking occasion (binge drinking) in the past month. We were unable to find comparable population level data using the AUDIT-C. However, the National Drug Use Household Survey found that 26% of Australian adults drink at hazardous levels based on Australian guidelines, 13% drink five or more standard drinks on a single occasion weekly or more often, and 7% drink ten or more standard drinks on a single occasion once a month [29]. Participants were given an option to skip questions on alcohol and drugs.

Approximately 5% of participants skipped this section. No attempt was made to impute these

cases. Estimated proportions using alcohol or drugs have been calculated out of those who answered these questions.

### **Demographic and service factors associated with mental health outcomes**

Univariate associations between demographic and service factors and mental health outcomes for each sector are shown in Supplementary Table 2. Univariate associations were tested using logistic regression analysis (Table 3). A strong association was found with length of service, with employees early in their careers having rates of high or very high psychological distress, low wellbeing and probable PTSD either lower or comparable to Australian population rates, while employees later in their careers had the highest rates of mental health outcomes. For example, 1.8% of police employees who had been in the service for less than two years had probable PTSD (95% CI 0.0-3.6), compared with 13.0% of employees who had been in the service for more than ten years (95% CI 11.8-14.1). Police employees with more than ten years of service were eight times more likely to have PTSD than those who had been in the service for less than two years (OR: 8.1; 95% CI 2.9-22.2). Ambulance employees with more than ten years of service were 4.7 times more likely to have PTSD than those who had been in the service for less than two years (OR: 4.7; 95% CI 1.7-13.1). This trend did not reach statistical significance in fire and rescue employees, and there was no trend for state emergency service employees. No associations were found between shift type or operational status and PTSD risk.

### **Perceived need for help**

While high psychological distress, low wellbeing and probable PTSD are more common in police and emergency services employees compared with the general population, most affected employees either don't receive help or need more help than they receive (Table 3). Of those with very high psychological distress, approximately two-fifths did not seek or

receive any help, with 18.3% (95% CI 15.5–21.1) acknowledging that they had an emotional or mental health issue but believing they did not need any help, and 17.7% (95% CI 15.1–20.4) acknowledging that they needed help but not seeking it. Of those who received help, only about one in three felt they received adequate help. Similar results were seen for probable PTSD, while for low wellbeing and high (rather than very high) psychological distress there were higher proportions of employees who didn't believe they had a problem.

## Discussion

The survey found that working in the police and emergency services sector is associated with substantially higher rates of mental health issues when compared with the general adult population. Specifically, police and emergency services employees had lower levels of wellbeing, and higher levels of psychological distress and probable PTSD. While 10% of employees screened positive for probable PTSD, 30% had low wellbeing and 30% had high or very high psychological distress, suggesting that depression and anxiety, as well as PTSD, are likely to be common mental health issues in the sector. The rates of probable PTSD across sectors in the current study (10%) were equivalent to rates determined in a worldwide meta-analysis of first responders [1].

Most employees in the sector reported that they have been exposed to events that had deeply affected them. A strong association was found between mental health issues and length of service. Rates of wellbeing and psychological distress among employees in their first years of service were comparable with or lower than rates in the general Australian population, but more than doubled among those with over 10 years of service. Similarly, there were increasing rates of low wellbeing and psychological distress by age, likely to be related to length of service. In contrast, rates of psychological distress do not increase with age in the general Australian population [28]. These findings are consistent with the theory that cumulative exposure to traumatic experiences may be a risk factor for mental health conditions [30, 31].

Prior to the conduct of *Answering the Call*, there was uncertainty, due to the lack of published evidence, as to whether rates of mental health problems were higher in police and emergency services organisations in Australia than the general population, and some had argued that the rates of mental health issues in the emergency services sector could be attributed to life

experiences outside of work, as seen in testimony to the 2019 Australian Senate inquiry ‘The people behind 000: mental health of our first responders’ [13]. *Answering the Call* was a large scale study of personnel in the sector, with over 14,000 employees participating across all four sectors, drawn from 33 of the 36 police and emergency services organisations in Australia. The survey results clearly demonstrate that the prevalence of mental health issues including probable PTSD, high levels of psychological distress and low levels of wellbeing are substantially higher in emergency services personnel than in the Australian community at large. Moreover, the low rate of PTSD among personnel in the early stages of their career and increasing rates over the duration of a career give support to the hypothesis that emergency services organisations do recruit people with positive mental health and that mental health may be impacted by ongoing exposure to trauma on the job.

While the study included a diverse range of emergency services work, there were similar rates for most indicators of mental health issues across each of the sectors. Employees in SES organisations generally had lower rates of most issues, although the small number of employees in the sector impacted on the precision of estimates for the SES sector. SES organisations in Australia are largely voluntary and have few paid staff.

Comparisons among individual organisations are not shown in order to preserve the confidentiality of each organisation that participated in the study and cannot be reported here in detail. Nevertheless, analysis by organisation showed a high degree of consistency across the 33 organisations participating in the study, with all having low levels of wellbeing and high rates of psychological distress and PTSD, along with low levels of seeking support and high levels of unmet perceived needs. This suggests that the predominant issues underpinning mental health issues and seeking support are common across the sector and unlikely to be due solely to the specific programs, circumstances or management of any single organisation. Instead they are likely to be driven by factors that are common across the sector, including

the nature of the work, as well as cultural and organisation factors that are likely to be common across organisations.

The current study found suicidal thoughts and planning to be heightened when compared to the general population, but not suicide attempts. These results are consistent with previous research [32, 33], although previously there has been a lack of rigorous studies [33]. These results are also partly congruent with a study of suicide deaths in Australia [34], which found that ambulance personnel, but not fire and rescue and police personnel, had significantly higher rates of completed suicide when compared with other occupations outside the police and emergency services sector. As 7.5% of the sample chose “prefer not to say” for these questions, and these were treated as not having suicidal ideation in the analysis, it is likely the true rate of suicidal ideation in this cohort is even higher, which would further add to the difference between police and emergency services employees and the population at large.

The study found that rates of alcohol consumption were high, and likely higher than in the general Australian population. While the AUDIT-C is a well-validated commonly used tool in research, we were unable to find Australian population norms for the AUDIT-C.

Nevertheless, data from the Australian National Drug Strategy Household Survey [29] suggest that rates of risky drinking and binge drinking are higher in emergency services personnel than the population at large. This finding needs to be considered in the context that, in the general population, alcohol consumption is higher in people with mental health issues than those without a mental health problem [35]. The higher rates of alcohol consumption may be partially explained by the higher rates of mental health problems. While social support is important for protecting wellbeing, and alcohol use can be a part of social interactions, alcohol use is also commonly used as a way of managing symptoms of mental health issues [36]. Of particular concern in groups that have a strong drinking culture is that alcohol use may be used to manage developing symptoms, leading to a delay in help-seeking



[37]. This can result in symptoms developing to a more severe level, with greater impact on functioning, and longer and less effective recovery. In environments where alcohol use is common it is important that organisations support personnel to be alert to changes in drinking patterns and to engage in proactive help-seeking [38, 39].

To date there has been very little research into support seeking among police and emergency services personnel, limited to small-scale convenience samples, and mainly limited to the United States and the United Kingdom [40, 41]. In Australia, as well as having access to government subsidised healthcare through the publicly-funded Medicare system, all police and emergency services organisations provide a range of general and specialist supports to their staff, including employee-sponsored psychological counselling services. Despite the availability of these services, only one in five of those screening positive for potential mental health issues felt they had received adequate help. About 40% of those with very high psychological distress or probable PTSD did not seek help, either because they felt they didn't need help or that they wanted to manage their problems on their own. Of those that sought help, two-thirds felt they needed more help than they received. Similar gaps and barriers have recently been reported in military personnel [42]. These data highlight the significant gaps in health service use for emergency services personnel with mental health issues.

While higher rates of mental health issues in emergency services personnel are consistent with previous research, of particular concern are the low rates of help-seeking. Among employees with low wellbeing, high or very high psychological distress or probable PTSD, no more than one in five reported receiving adequate levels of help. There are clearly multiple factors associated with this issue. Some employees with indicators of mental health distress felt that they did not need help, while others recognised a need for help but did not seek it. Of those who sought help, less than half reported that they received adequate help.

These findings suggest that a range of strategies will be required to increase levels of appropriate help-seeking in the sector [43]. Continued efforts to improve levels of mental health literacy may help to reduce the proportion of employees with mental health issues that do not feel that they have a problem or need help [44, 45]. As working in the emergency services sector is a higher risk for developing mental health issues, it is important that all employees have the knowledge and skills to be able to identify symptoms of emerging mental health problems, to know what types of help are available, and how and when to access them. Issues around workplace culture and stigma may inhibit employees who recognise they have problems from accessing help [46]. The high proportion of employees seeking help who report that they needed more help than they received raises questions about the types of services that are being provided to employees in the sector, and the level of support they receive in order to receive a sufficient amount of help to have therapeutic benefit. Guidelines for best practice treatment for the types of problems common in the sector, including anxiety, depression and PTSD, suggest that either counselling or drug therapies and in some cases a combination of both, are appropriate [47, 48]. For both counselling therapies and pharmaceutical therapies, guidelines indicate ongoing treatment over a period of time is needed for therapeutic benefit. There is growing evidence that while there are a range of effective treatments available for most mental health conditions, no treatment is optimal for all patients, and it can take time and persistence to find what treatment is most effective for each patient [49]. The common symptoms of anxiety, depression or PTSD can impair the persistence needed for an individual to find the appropriate therapy for their needs and stay the course of that therapy to receive its full benefit.

## **Limitations**

Several limitations of the current research need to be taken into account. Participants were asked their current operational status, without taking into account prior roles. Some staff may have been moved into non-operational roles as a result of mental health issues they have experienced. This may have influenced the differences between operational and non-operational staff in terms of indicators of mental health issues. The survey utilized screening scales to identify mental health issues. While participants also indicated if they had a condition diagnosed by a mental health professional, the survey diagnoses were not independently confirmed by a medical professional due to logistical and resourcing issues. However, prior studies have shown that the use of screening scales is a strong indicator of the prevalence of mental health issues in general [19] and in military populations [50].

Some scales in the survey were shortened to minimise respondent burden or adapted to make them relevant to experiences within the sector. While this increased the scope of the survey, there may have been a loss in specificity in some of the measures and consequent comparability of data with other studies. For instance, while the PTSD screening scale was adapted to capture aspects of impact on functioning to reflect all diagnostic criteria as described in the Diagnostic and Statistical Manual of Mental Disorders, further work is needed to fully evaluate its psychometric properties and utility in screening for PTSD. Rates of probable PTSD were largely comparable to many of the studies included in the meta-analysis of PTSD prevalence in rescue workers of Berger et al. (2012) [1], which suggests that the PTSD scale used in the current study may have some utility. Participants were given options to skip the questions on suicidal behaviours and alcohol and drug use, which may have resulted in underestimation of the prevalence of these behaviours. Another limitation is that the survey was cross-sectional in its design. As a result, it is not possible to determine causality between variables. Further longitudinal research is needed to explore causality and any reciprocal relationships between factors presented in the current study.

## **Conclusions**

*Answering the call* is the first large scale national study of mental health and wellbeing within the police and emergency services sector in Australia. Compared to the wider population, mental health issues are more common in employees of police and emergency services organisations. The sector-wide high rates of poor mental health outcomes and risk of exposure to traumatic experiences highlight the need for police and emergency services organisations to review their policies and programs for supporting the mental health and wellbeing of personnel. Employees in the sector do not always seek or receive adequate help when needed. Concerns about impacts on work roles and careers, being treated differently and confidentiality concerns were common barriers to seeking support. While employees at early career stages had relatively low rates of indicators of mental health concerns, these rates increased significantly with length of service. People working in police and emergency services organisations are often working in high stress environments and are at risk of repeated exposure to traumatic incidents. This study identified a number of findings providing a guide to future interventions, such as increased mental health literacy training, emphasis on the importance of seeking early and appropriate support or treatment, and cultural programs to reduce stigma towards disclosing mental health issues.

## References

1. Berger W, Coutinho ESF, Figueira I, Marques-Portella C, Luz MP, Neylan TC, Marmar CR, Mendlowicz MV (2012) Rescuers at risk: a systematic review and meta-regression analysis of the worldwide current prevalence and correlates of PTSD in rescue workers. *Soc Psychiatry Psychiatr Epidemiol* 47:1001-1011.
2. Carleton RN, Afifi TO, Turner S, Taillieu T, Duranceau S, LeBouthillier DM, et al (2018) Mental disorder symptoms among public safety personnel in Canada. *Can J Psychiatry* 63:54-64.
3. Brewin CR, Miller JK, Soffia M, Peart A, Burchell B (2020) Posttraumatic stress disorder and complex posttraumatic stress disorder in UK police officers. *Psychol Med*. <https://doi.org/10.1017/S0033291720003025>
4. Van Hooff M, McFarlane AC, Davies CE, Searle AK, Fairweather-Schmidt AK, Verhagen A, Benassi H, Hodson SE (2014) The Australian Defence Force Mental Health Prevalence and Wellbeing Study: design and methods. *Eur J Psychotraumatol* 5:1. <https://doi.org/10.3402/ejpt.v5.23950>
5. Carey MG, Al-Zaiti SS, Dean GE, Sessanna L, Finnell DS (2011) Sleep problems, depression, substance use, social bonding, and quality of life in professional firefighters. *J Occup Environ Med* 53:928.
6. Sterud T, Hem E, Ekeberg Ø, Lau B (2007) Occupational stress and alcohol use: a study of two nationwide samples of operational police and ambulance, personnel in Norway. *J Stud Alcohol* 68:896-904.

7. Harvey SB, Milligan-Saville JS, Paterson HM, Harkness EL, Marsh AM, Dobson M, Kemp R, Bryant RA (2016) The mental health of fire-fighters: An examination of the impact of repeated trauma exposure. *Aust N Z J Psychiatry* 50:649-658.
8. Bennett P, Williams Y, Page N, Hood K, Woollard M (2004) Levels of mental health problems among UK emergency ambulance workers. *Emerg Med J* 21:235-236.
9. Skeffington PM, Rees CS, Mazzucchelli T (2017) Trauma exposure and post-traumatic stress disorder within fire and emergency services in Western Australia. *Aust J Psychol* 69:20-28.
10. Carleton RN, Afifi TO, Taillieu T, Turner S, Krakauer R, Anderson GS, et al (2019) Exposures to potentially traumatic events among public safety personnel in Canada. *Can J Behav Sci* 51:37-52.
11. Ricciardelli R, Carleton RN, Groll D, Cramm H (2018) Qualitatively unpacking Canadian public safety personnel experiences of trauma and their well-being. *Can J Criminol Crim* 60:566-577.
12. Carleton RN, Afifi TO, Taillieu T, Turner S, Mason JE, Ricciardelli R, et al (2020) Assessing the relative impact of diverse stressors among public safety personnel. *Int J Environ Res Public Health* 17:1234.
13. Education and Employment References Committee (2019) The people behind 000: mental health of our first responders. Canberra: Parliament of Australia.
14. Australian Government (2020) Australian Government response to the recommendations of the Senate Education and Employment References Committee report 'The people behind 000: mental health of our first responders.' Canberra: Australian Government.

15. Barratt P, Stephens L, Palmer M (2018) When helping hurts: PTSD in first responders. Canberra: Australia21.
16. Foley J, Massey KLD (2020) 'The 'cost' of caring in policing: From burnout to PTSD in police officers in England and Wales', *The Police Journal*. doi: 10.1177/0032258X20917442.
17. Bywood P, McMillan J (2019) Cumulative exposure to trauma at work. Evidence review 226. Melbourne: Institute for Safety, Compensation and Recovery Research.
18. Varker T, Metcalf O, Forbes D, Chisolm K, Harvey S, Van Hooff M, et al (2018) Research into Australian emergency services personnel mental health and wellbeing: An evidence map. *Aust N Z J Psychiatry* 52:129-148.
19. Kessler RC, Andrews G, Colpe LJ, Hiripi E, Mroczek DK, Normand SL, Walters EE, Zaslavsky AM (2002) Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychol Med* 32:959-976.
20. Ng Fat L, Scholes S, Boniface S, Mindell J, Stewart-Brown S (2017) Evaluating and establishing national norms for mental wellbeing using the short Warwick–Edinburgh mental well-being scale (SWEMWBS): findings from the health survey for England. *Qual Life Res* 26:1129-1144.
21. Blevins CA, Weathers FW, Davis MT, Witte TK, Domino JL (2015) The posttraumatic stress disorder checklist for DSM-5 (PCL-5): Development and initial psychometric evaluation. *J Trauma Stress* 28:489-498.
22. American Psychiatric Association (2013) Diagnostic and statistical manual of mental disorders (DSM-5®). American Psychiatric Association, Arlington, VA.

23. Smith BW, Dalen J, Wiggins K, Tooley E, Christopher P, Bernard J (2008) The brief resilience scale: assessing the ability to bounce back. *Int J Behav Med* 15:194-200.
24. Shakespeare-Finch J, Obst PL (2011) The development of the 2-way social support scale: A measure of giving and receiving emotional and instrumental support. *J Pers Assess* 93:483-490.
25. Bush K, Kivlahan DR, McDonell MB, Fihn SD, Bradley KA (1998) The AUDIT alcohol consumption questions (AUDIT-C): an effective brief screening test for problem drinking. *Arch Intern Med* 158:1789-1795.
26. Meadows GN, Burgess PM (2009) Perceived need for mental health care: findings from the 2007 Australian Survey of Mental Health and Wellbeing. *Aust N Z J Psychiatry* 43:624-634.
27. Wolter KM (1985) *Introduction to variance estimation*. Second edition. Springer, New York.
28. Australian Bureau of Statistics (2015). *National Health Survey: First results, 2014-15*. Australian Bureau of Statistics Cat. 4364.0.55.001, Canberra.
29. Australian Institute of Health and Welfare. *National Drug Strategy Household Survey 2016: detailed findings (2017)* Australian Institute of Health and Welfare Cat. PHE 214, Canberra.
30. Armstrong D, Shakespeare Finch J, Shochet I (2014) Predicting posttraumatic growth and post-traumatic stress in firefighters. *Aust J Psychol* 66:38-46.
31. Marmar CR, McCaslin SE, Metzler TJ, Best S, Weiss DS, Fagan J, et al (2006) Predictors of posttraumatic stress in police and other first responders. *Ann N Y Acad Sci* 1071:1-18.



32. Nicholas CR, Afifi TO, Turner S, Taillieu T, LeBouthiller DM, Duranceau S, et al (2018) Suicidal ideation, plans, and attempts among public safety personnel in Canada. *Can Psychol* 59:220-231.
33. Stanley IH, Hom MA, Joiner TE (2016) A systematic review of suicidal thoughts and behaviors among police officers, firefighters, EMTs, and paramedics. *Clin Psychol Rev* 44:25-44.
34. Milner A, Witt K, Maheen H, LaMontagne AD (2017) Suicide among emergency and protective service workers: A retrospective mortality study in Australia, 2001 to 2012. *Work* 57:281-287.
35. Slade T, Johnston A, Teesson M, Whiteford H, Burgess P, Pirkis J, Saw S (2009) The mental health of Australians 2. Report on the 2007 National Survey of Mental Health and Wellbeing. Canberra: Australian Government Department of Health and Ageing.
36. McCarthy E, Petrakis I (2010) Epidemiology and management of alcohol dependence in individuals with post-traumatic stress disorder. *CNS Drugs* 24: 997-1007.
37. Hines LA, Goodwin L, Jones M, Hull L, Wessely S, Fear NT, Rona RJ (2014) Factors affecting help seeking for mental health problems after deployment to Iraq and Afghanistan. *Psychiatr Serv* 65: 98-105.
38. Ménard KS, Arter ML (2013) Police officer alcohol use and trauma symptoms: Associations with critical incidents, coping, and social stressors. *Int J Stress Manag* 20: 37-56.

39. Argustaitė-Zailskienė G, Šmigelskas K, Žemaitienė N (2020) Traumatic experiences, mental health, social support and demographics as correlates of alcohol dependence in a sample of Lithuanian police officers, *Psychol Health Med* 25: 396-401.
40. Haugen PT, McCrillis AM, Smid GE, Nijdam MJ (2017) Mental health stigma and barriers to mental health care for first responders: a systematic review and meta-analysis. *J Psychiatr Res* 94:218-229.
41. Tamrakar T, Langtry J, Shevlin M, Reid T, Murphy J (2020) Profiling and predicting help-seeking behaviour among trauma-exposed UK firefighters. *Eur J Psychotraumatology* 11:1 doi: 10.1080/20008198.2020.1721144
42. Britt TW, Sipos ML, Klinefelter Z, Adler AB (2020) Determinants of mental and physical health treatment-seeking among military personnel. *Br J Psychiatry* 217: 420-426.
43. Beyond Blue (2016) Good practice framework for mental health and wellbeing in first responder organisations. Melbourne: Beyond Blue.
44. Kelly CM, Jorm AF, Wright A (2007) Improving mental health literacy as a strategy to facilitate early intervention for mental disorders. *Med J Aust* 187: S26-S30.
45. Reavley NJ, Milner AJ, Martin A, Too LS, Papas A, Witt K, Keegel T, LaMontagne AD (2018) Depression literacy and help-seeking in Australian police. *Aust N Z J Psychiatry* 52: 1063-1074.
46. Hansson L, Markström U (2014) The effectiveness of an anti-stigma intervention in a basic police officer training programme: a controlled study. *BMC Psychiatry* 14: 55.
47. Black Dog Institute (2015) Expert guidelines: the diagnosis and treatment of post-traumatic stress disorder in emergency service workers. Sydney: Black Dog Institute.

48. Phoenix Australia (2013) Australian Guidelines for the treatment of acute stress disorder and posttraumatic stress disorder. Melbourne: Phoenix Australia.
49. Kessler RC, Bossarte RM, Luedtke A, Zaslavsky AM, Zubizarreta RJ (2019) Machine learning methods for developing precision treatment rules with observational data. *Behav Res Ther* 120: 103412. doi: 10.1016/j.brat.2019.103412
50. Searle AK, Van Hooff M, McFarlane AC, Davies CE, Fairweather-Schmidt AK, Hodson SE, Benassi H, Steele N (2015) The validity of military screening for mental health problems: diagnostic accuracy of the PCL, K10 and AUDIT scales in an entire military population. *Int J Methods Psychiatr Res* 24:32-45.

**Table 1** Demographic and service characteristics of employees in the police and emergency services, by sector

	Ambulance	Fire & rescue	Police	SES
	%	%	%	%
Total Participants –	3473	2975	8088	332
Sex—				
Male	53.2	83.3	62.6	45.3
Female	46.8	16.7	37.4	54.7
Age group—				
Less than 35 years	33.4	20.3	27.9	17.1
35 - 44 years	25.8	24.6	31.7	28.0
45 - 54 years	25.2	32.6	28.8	34.0
55 years or over	15.7	22.6	11.6	20.8
Role—				
Operational	74.2	62.3	64.9	15.7
Non-operational	14.2	23.2	13.5	26.6
Both operational and non-operational	11.6	14.5	21.6	57.8
Length of service—				
Less than 2 years	4.6	3.3	3.1	6.6
3-5 years	17.2	13.6	13.0	23.8
6-10 years	17.3	12.6	12.5	12.0
More than 10 years	61.0	70.5	71.5	57.5
Roster—				
Regular daytime schedule	20.2	31.5	22.6	60.3
Mostly daytime shifts	5.1	13.6	3.4	12.5
Rotating shift work	57.8	40.6	33.1	6.3
Regular shifts & on-call at other times	10.4	5.6	12.0	15.7
Other	6.5	8.6	29.0	5.3
Usual weekly work hours—				
35 hours or less	9.8	10.8	15.2	14.8
36 - 40	23.8	47.7	19.1	40.3
41 - 45	17.1	16.5	14.5	19.1
46 - 50	23.2	12.3	24.0	9.0
More than 50 hours	13.1	5.4	6.5	5.6
Hours vary	13.0	7.4	20.7	11.2
Rank or level—				
Senior executive	1.1	0.5	1.1	4.4
Middle management	6.9	7.0	10.4	19.0
Other management	16.2	28.7	28.1	31.3
Field or administrative operative	71.0	62.0	59.5	45.2
Trainee/recruit	4.9	1.8	0.9	0.0

SES = State Emergency Service.

**Table 2** Prevalence of mental health risk and protective factors, by sector

	Prevalence (95% CI)			
	Ambulance	Fire & Rescue	Police	SES
Wellbeing (SWEMWBS)—				
High	6.4 (5.5–7.3)	5.2 (4.1–6.3)	5.8 (5.1–6.4)	6.3 (3.2–9.3)
Medium	67.0 (65.3–68.6)	65.9 (63.5–68.3)	62.0 (60.6–63.3)	66.0 (60.6–71.4)
Low	26.7 (25.1–28.2)	28.9 (26.6–31.2)	32.3 (31.0–33.6)	27.8 (22.7–32.8)
Psychological Distress (K10)—				
Low	38.7 (36.9–40.5)	42.4 (39.9–34.6)	38.7 (37.3–40.0)	38.7 (33.1–44.2)
Moderate	32.9 (31.2–34.6)	30.4 (31.2–34.6)	30.7 (29.4–32.0)	28.6 (23.4–33.7)
High	20.8 (19.1–22.1)	19.0 (17.0–20.9)	20.7 (19.6–21.9)	24.5 (19.7–29.4)
Very High	7.8 (6.8–8.8)	8.2 (6.8–9.5)	9.9 (9.0–10.7)	8.3 (5.1–11.5)
Probable PTSD	8.2 (7.2–9.2)	9.1 (7.7–10.6)	10.7 (9.8–11.5)	6.4 (3.8–9.0)
Current Diagnosis of—				
Anxiety	13.8 (12.6–15.1)	11.6 (10.0–13.1)	16.1 (15.1–17.1)	16.3 (12.2–20.3)
Depression	16.0 (14.7–17.3)	13.7 (12.0–15.4)	16.3 (15.3–17.3)	16.1 (11.9–20.3)
PTSD	8.9 (7.9–10.0)	7.9 (6.5–9.3)	9.9 (9.0–10.7)	6.9 (4.3–9.6)
Other mental health condition	4.0 (3.2–4.7)	3.5 (2.7–4.3)	3.8 (3.3–4.3)	4.8 (2.6–7.1)
Any mental health condition	22.1 (20.6–23.6)	18.0 (16.2–19.9)	23.2 (22.1–24.4)	22.2 (17.5–26.9)
Lifetime Diagnosis of—				
Anxiety	21.0 (19.5–22.5)	17.5 (15.7–19.4)	23.8 (22.6–25.0)	25.1 (20.3–30.0)
Depression	26.5 (24.9–28.1)	23.9 (21.8–26.1)	26.2 (24.9–27.4)	30.1 (24.8–35.3)
PTSD	12.4 (11.3–13.6)	11.5 (9.9–13.2)	13.8 (12.8–14.7)	10.3 (7.1–13.5)
Other mental health condition	5.5 (4.7–6.3)	5.1 (4.1–6.1)	5.3 (4.7–5.9)	6.9 (4.2–9.6)
Any mental health condition	39.0 (37.3–40.8)	33.7 (31.4–36.1)	39.4 (38.1–40.8)	43.6 (38.0–49.2)
Suicidal thoughts and behaviours in the past 12 months—				
Ideation	6.5 (5.6–7.4)	6.9 (5.5–8.3)	4.7 (4.1–5.3)	4.5 (2.3–6.7)
Plan	3.0 (2.4–3.6)	2.6 (1.8–3.4)	1.6 (1.2–1.9)	2.9 (1.1–4.7)
Attempt	0.5 (0.2–0.8)	0.7 (0.2–1.1)	0.2 (0.0–0.3)	n.p.
Resilience—				
High	56.2 (54.5–58.1)	56.4 (53.9–58.9)	53.5 (52.2–54.9)	55.3 (49.6–61.0)
Moderate	35.0 (33.3–36.8)	35.7 (33.3–38.1)	36.3 (35.0–37.6)	38.8 (33.2–44.4)
Low	8.7 (7.7–9.7)	7.9 (6.6–9.1)	10.1 (9.3–11.0)	5.9 (3.4–8.3)
Social Support—				
Low	7.2 (6.2–8.1)	8.9 (7.5–10.4)	8.6 (7.8–9.4)	5.7 (3.3–8.1)
High	92.8 (91.9–93.8)	91.1 (89.6–92.5)	91.4 (90.6–92.2)	94.3 (91.9–96.7)
Alcohol use—				
AUDIT-C at risk	60.5 (58.7–62.3)	61.1 (58.5–62.3)	60.6 (59.2–62.0)	59.9 (54.2–65.6)
Binge drinking at least weekly	13.5 (12.3–14.7)	18.6 (16.6–20.6)	16.0 (15.0–17.0)	10.3 (6.9–13.6)
Heavy binge drinking	13.9 (2.6–15.2)	17.3 (15.3–19.2)	17.7 (16.6–18.8)	4.4 (2.2–6.6)
Illicit Drug Use	9.3 (8.3–10.4)	7.2 (5.8–8.5)	3.4 (2.9–3.9)	6.6 (3.6–9.6)

PTSD = Probable Post-Traumatic Stress Disorder, SES = State Emergency Service, n.p. = frequency &lt; 5

**Table 3** *Univariate associations between demographic and service characteristics and probable PTSD, by sector*

	Probable PTSD											
	Ambulance			Fire & Rescue			Police			State Emergency Service		
	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI	%	OR	95% CI
Sex –												
Male	9.5	1	[ref]	9.4	1	[ref]	11.6	1	[ref]	6.4	1	[ref]
Female	6.7	<b>0.69**</b>	[0.5 – 0.9]	8.0	0.68	[0.5 – 1.3]	9.1	<b>0.76**</b>	[0.6 – 0.9]	6.4	1.01	[0.4 – 2.4]
Age Group –												
Less than 35 years	5.9	1	[ref]	4.2	1	[ref]	6.2	1	[ref]	11.2	1	[ref]
35 - 44 years	8.0	1.38	[0.9 – 2.0]	9.9	2.52	[1.3 – 5.1]	11.0	<b>1.86***</b>	[1.4 – 2.5]	4.7	0.39	[0.1 – 1.4]
45 - 54 years	10.9	<b>1.95***</b>	[1.36 – 2.8]	12.1	<b>3.15***</b>	[1.6 – 6.1]	13.9	<b>2.43***</b>	[1.8 – 3.2]	5.8	0.49	[0.2 – 1.6]
55 years or over	8.8	<b>1.54*</b>	[1.0 – 2.4]	8.5	<b>2.12*</b>	[1.1 – 4.3]	12.6	<b>2.17***</b>	[1.6 – 3.0]	5.7	0.48	[0.1 – 1.7]
Role –												
Operational	8.8	1	[ref]	9.3	1	[ref]	10.6	1	[ref]	5.2	1	[ref]
Non-operational	6.4	0.93	[0.8 – 1.1]	8.1	0.86	[0.6 – 1.3]	10.0	0.95	[0.8 – 1.2]	6.6	1.27	[0.3 – 5.5]
Both	6.5	1.05	[0.9 – 1.3]	8.5	0.91	[0.6 – 1.4]	12.0	1.16	[0.9 – 1.5]	6.7	1.30	[0.4 – 4.9]
Length of service–												
Less than 2 years	2.2	1	[ref]	4.7	1	[ref]	1.8	1	[ref]	8.3	1	[ref]
2-5 years	6.3	2.94	[1.0 – 8.7]	5.5	1.16	[0.3 – 4.6]	4.4	2.48	[0.9 – 7.2]	3.9	0.45	[0.1 – 3.0]
6-10 years	7.2	<b>3.37*</b>	[1.1 – 9.8]	4.2	0.88	[0.2 – 3.3]	9.4	<b>5.60**</b>	[2.0 – 15.9]	4.3	0.50	[0.1 – 4.0]
Over 10 years	9.7	<b>4.66**</b>	[1.7 – 13.1]	11.0	2.47	[0.7 – 8.3]	13.0	<b>8.08***</b>	[2.9 – 22.2]	7.7	0.92	[0.2 – 4.4]
Roster –												
Regular daytime schedule	6.5	1	[ref]	9.0	1	[ref]	10.1	1	[ref]	4.8	1	[ref]

Mostly daytime shifts	9.7	1.5	[0.8 – 2.9]	13.7	1.6	[0.7 – 3.6]	11.8	1.2	[0.9 – 1.6]	7.3	1.6	[0.4 – 6.0]
Rotating shift work	8.2	1.3	[0.9 – 1.8]	9.0	1.0	[0.7 – 2.2]	11.3	1.1	[0.7 – 1.4]	13.3	3.0	[0.7 – 12.2]
Regular shifts & on-call at other times	9.2	1.4	[0.9 – 2.3]	11.6	1.3	[0.8 – 2.2]	7.6	0.7	[0.5 – 1.2]	4.8	1.0	[0.3 – 3.9]
Other	10.2	1.6	[0.9 – 2.9]	7.8	0.9	[0.5 – 1.5]	9.8	1.0	[0.9 – 1.4]	9.3	<b>4.7*</b>	[1.3 – 17.2]
Rank or level –												
Senior Executive	5.4	0.59	[0.1 – 2.8]	7.8	0.95	[0.3 – 6.4]	1.8	<b>0.16*</b>	[0.0 – 0.8]	6.7	1.02	[0.1 – 8.8]
Middle management	7.6	0.85	[0.5 – 1.4]	10.9	1.36	[0.8 – 2.2]	10.5	1.03	[0.7 – 1.5]	5.8	0.87	[0.3 – 3.0]
Other management	6.1	<b>0.67*</b>	[0.4 – 0.9]	10.5	1.31	[0.9 – 2.0]	12.4	<b>1.25*</b>	[1.0 – 1.5]	6.4	0.97	[0.4 – 2.6]
Field or admin operative	8.9	1	[ref]	8.0	1	[ref]	10.2	1	[ref]	6.6	1	[ref]
Trainee/recruit	6.6	0.73	[0.3 – 1.6]	9.0	1.11	[0.2 – 6.4]	1.3	<b>0.12**</b>	[0.0 – 0.5]	0	-	-

Note. OR = Odds Ratio. CI = Confidence Interval. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ . Significant factors are boldfaced.

**Table 4** Level of perceived need for help for personnel with low wellbeing, high or very high psychological distress or probable PTSD

Level of perceived need for help	Low wellbeing (SWEMWBS)		High psychological distress (K10)		Very high psychological distress (K10)		Probable PTSD	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Didn't identify a problem	15.6	(14.2 - 17.1)	12.0	(10.4 - 13.5)	2.4	(1.3 - 3.4)	2.4	(1.3 - 3.5)
Didn't need help	25.0	(23.4 - 26.7)	27.9	(25.8 - 30.0)	18.3	(15.5 - 21.1)	16.6	(14.1 - 19.2)
Didn't seek help	15.4	(14.0 - 16.8)	16.3	(14.6 - 18.0)	17.7	(15.1 - 20.4)	18.3	(15.6 - 20.9)
Didn't receive help	2.9	(2.3 - 3.6)	2.7	(1.9 - 3.5)	4.0	(2.7 - 5.4)	3.8	(2.5 - 5.1)
Needed a lot more help	11.8	(10.5 - 13.0)	8.7	(7.4 - 10.1)	22.1	(19.1 - 25.0)	22.9	(20.0 - 25.8)
Needed a little more help	13.3	(12.0 - 14.6)	13.7	(12.2 - 15.3)	16.9	(14.2 - 19.6)	15.7	(13.2 - 18.2)
Received adequate help	15.9	(14.6 - 17.3)	18.6	(16.9 - 20.4)	18.6	(15.8 - 21.4)	20.3	(17.5 - 23.1)