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What work-related exposures are associated with posttraumatic stress disorder? A systematic review with metaanalysis

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What work-related exposures are associated with post-traumatic stress disorder? A systematic review with meta-analysis

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Abstract

<u>Objectives</u>: Although there is evidence that work-related exposures cause post-traumatic stress disorder (PTSD), there are few quantitative studies assessing the degree to which these factors contribute to PTSD. This systematic review with meta-analysis identified work-related exposures associated with PTSD, and quantified their contribution to this disorder.

<u>Methods</u>: We searched Medline, PsycINFO, Embase, PILOTS and Web of Science (2005 to 10-09-2019) for longitudinal studies on work-related exposures and PTSD. We described included articles, and conducted meta-analyses for exposures with sufficient homogeneous information. We performed subgroup analyses for risk of bias, study design and PTSD ascertainment. We assessed evidence quality using GRADE, and estimated population attributable fractions.

Results: After screening 8,590 records, we selected 33 studies (n=5,719,236). From what was moderate quality evidence at best, we identified various work-related exposures that were associated with PTSD, mainly involving individuals in the military and first responder (e.g., police or fire brigade) occupations. These exposures included the number of army deployments (odds ratio: 1.15 [1.14 1.16]), combat exposure (1.89 [1.46 2.45]), army deployment (1.79 [1.45 2.21]) and confrontation with death (1.63 [1.41 1.90]). Effects were robust across subgroups and exposures attributed modestly (7%-34%) to PTSD. We identified additional exposures in other occupations, including life threats, being present during an attack, and hearing about a colleague's trauma.

<u>Conclusions</u>: We identified various work-related exposures associated with PTSD and quantified their contribution. While exposure assessment, PTSD ascertainment, and inconsistency may have biased our findings, our data are of importance for development of preventive interventions and occupational health guidelines.

Key words: Post traumatic stress disorder; occupational health; occupational diseases; systematic review; meta-analysis

Strengths and limitation of this study

- Post-traumatic stress disorder (PTSD) is particularly prevalent among certain occupational groups, e.g., first responder (such as police or fire brigade) and military personnel.
- However, the association of work-related exposures with PTSD has not previously been quantified in a meta-analysis.
- We identified 33 studies (with n=5,719,236 participants) in which various work-related exposures were found to be associated with PTSD, based on moderate quality evidence at best.
- These findings can be used to support the development of preventive interventions, and as an aid to the assessment of occupational PTSD in occupational medicine guidelines.

Background

Post-traumatic stress disorder (PTSD) can be triggered when individuals experience or witness traumatic events. PTSD has been a clinical diagnosis since 1980, when the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) was published¹. The most recent DSM-5² states that PTSD results from exposure to severely traumatic event(s), while exhibiting a pattern of symptoms characterised by intrusion, avoidance, negative moods and cognitions, arousal, and reactivity. A diagnosis of PTSD also involves duration and functional impairment criteria, and the patient's symptoms should be exclusive (i.e., not caused by drugs or other illnesses). Estimates of PTSD prevalence among the general population differ widely. For example, lifetime PTSD prevalence ranged from 6% to 9% in United States (US) and Canadian samples, while prevalence rates in Australian samples range from 1% to 2%³. The substantial differences between individual studies could result from different ways in which PTSD was ascertained, varying from any type of clinical diagnosis, to self-reports of DSM-5 criteria and PTSD symptoms assessed as *probable PTSD*.

PTSD can have a major impact on individuals and society as a whole, as it is associated with mental comorbidities⁴, substance abuse⁵ and suicide⁶. PTSD is particularly prevalent among certain occupational groups, such as police officers, firefighters, medical workers and military personnel, all of whom can experience events that might trigger PTSD⁷. One particular systematic review showed that the prevalence of PTSD in military veterans and other high-risk occupational groups can be almost twice as high as among the general population⁸. Another more recent review identified a number of occupational groups, including healthcare workers, police officers, prison workers, and emergency personnel, with an increased risk of PTSD⁹. Also, various specific work-related exposures (i.e., exposures to situations or conditions at work that may have an effect on PTSD) and their association with PTSD have been reported⁷. This included traumatic events experienced by military personnel and first responders (e.g., police officers or fire fighters). The latter review also identified journalists, healthcare workers or individuals in other occupations who are exposed to traumatic events or the aftermath thereof⁷.

Despite this evidence, the association of work-related exposures with PTSD has not yet been quantified in a meta-analysis. Such knowledge is of importance to answer questions regarding work-related causation and prevention, as a prelude to developing interventions. With regard to prevention, we need to quantify the contribution of work-related exposures in the onset of PTSD¹⁰. Such data could be used to formulate clinically relevant exposure threshold limits, as has been done with other disorders¹¹ 12. It could also be of use in occupational health guidelines, as many countries provide financial compensation for individuals diagnosed with an occupational disease.

In this study, our aim was to 1) identify the work-related exposures associated with the onset of PTSD, and 2) quantify the extent to which such exposures contribute to this disorder. Evidence on the contribution of work-related factors to PTSD could be used to facilitate decisions in reporting schemes. It could also help to identify and prioritise preventive interventions against those exposures with the strongest effect, in terms of triggering PTSD.

Methods

The protocol for this systematic review with meta-analysis was registered in PROSPERO¹³ a-priori. The review itself was conducted in accordance with the PRISMA statement guidelines¹⁴.

Searches

The Medline, PsycINFO, Embase, PILOTS and Web of Science databases were systematically searched for material published from 2005 (January) to 2019 (September 10). This was an arbitrarily chosen period on the basis of changes in people's exposure to work-related traumatic events and changes in the definition of PTSD over time². The search strategy consisted of a combination of controlled search terms (e.g., Medical Subject Headings/MeSH) and free-text words used to specify search terms related to: 1) PTSD 2) exposure, and 3) work. A methodological filter was used to select longitudinal studies (prospective, retrospective or case-control), studies published in English, and those involving human participants only. The search strategy used is described in detail in supplementary file 1. We validated this search with various key references, to avoid term bias. In addition to the database search, we conducted snowball searches for additional studies. These were based on citation tracking (forwards and backwards) from the articles and reviews retrieved in our electronic search. We also conducted scoping searches for key researchers on this topic, and used ResearchGate profiles to identify relevant records and projects (including unpublished projects). Outcome articles were compared to potential protocol papers, to assess selective reporting.

Inclusion and exclusion criteria

Two reviewers, working independently of one another, used Rayyan (an online tool: https://rayyan.qcri.org/) to screen for eligible references. The full texts of any such references (whose eligibility was based on the screening title and abstract) were retrieved for further screening. Any conflicts were resolved during a consensus meeting. We included studies on the association between any work-related exposure and the onset of PTSD (acute or delayed) in paid workers of working age (aged 18-65). Any studies that described work-related exposures in terms of work demands or other occupational factors were eligible for inclusion. However, studies in which exposures were related to job title or work title only were excluded. Studies were included if there was an actual diagnosis of PTSD (either using checklists with defined cut-off values or clinical criteria, e.g., using DSM criteria² and/or coded according to the International Classification of Disorders -ICD-9-CM 309.81-). Studies in which PTSD was assessed by means of self-reports only (not using any criteria) were excluded. We excluded any studies into the persistence or growth of PTSD. Those studies in which the exposure-outcome association was quantified, e.g., in terms of effect sizes such as a hazard ratio (HR), relative risk (RR) or odds ratio (OR), were included. We restricted ourselves to original articles, in English or Dutch, published in peer-reviewed scientific journals from 2005 onwards. Studies with a prospective, retrospective or case-control longitudinal design were included, while cross-sectional studies were excluded, to be able to monitor the time sequence between exposure and the PTSD onset, in which the assessments of exposure precede the actual onset of the disorder. The above-mentioned set of criteria were finalised after a pilot screening of 300 references.

Data extraction and risk of bias assessment

Two reviewers, working independently of one another, extracted data and assessed risk of bias from each of the eligible articles. Any conflicts were resolved during a consensus meeting. We extracted first author and year of publication, study name and design, sample (country, occupational group,

age and sex), exposure assessment, PTSD ascertainment, and effect size. Where it was not possible to retrieve sufficient information from the published articles, additional data were requested from study researchers.

Risk of bias was assessed using the 'Quality in Prognosis Studies' tool¹⁵, with criteria related to study participation, attrition, prognostic factor (i.e., exposure) measurements, outcomes, confounding, and statistical analysis. Here, we attributed a low risk of bias regarding attrition to studies with a >80% participant retention.

Data analysis

The included articles were described in terms of extracted data and risk of bias. Work-related exposures were categorised according to the DSM-5 criteria for PTSD stressors²: 1) direct exposure to the trauma, 2) witnessing a trauma, 3) hearing about a colleague/co-workers (adapted to work context) was/were exposed to a trauma, or 4) indirect exposure to aversive details of a trauma (e.g., first responders and medics).

Where sufficient clinically and methodologically homogeneous information were available, a quantitative meta-analysis was conducted to determine a pooled effect size for the association of each exposure with PTSD. Review Manager (RevMan 5) was used for the meta-analyses, and to generate forest and funnel plots. The latter were used to assess publication bias, through visual inspection. According to the Cochrane collaboration handbook, funnel plots were only generated for exposures with effect sizes from ≥10 studies¹6. Most of the exposure-outcome associations featured statistical heterogeneity (I²>75%), so random-effects estimates were adopted for statistical pooling. We assumed that the interpretation of effect estimates (e.g., HR and OR) was consistent, and we estimated pooled OR with 95% confidence interval (95%CI). We adopted the OR, as this was the most frequently reported effect size in the articles found (being reported in 32 articles, whereas two articles reported HRs and three articles reported RRs).

When more than one article reported on the same study, information from just one of these articles was used for analyses, using effect sizes from the article with the shortest follow-up duration (with a latency time of at least four weeks) to ensure that the work-related exposure of interest is indeed the most likely cause of PTSD. Wherever possible, we used information from fully adjusted models and we did not consider subgroups (e.g., sex differences). Population attributable fractions (PAFs) were estimated¹⁷ to assess the extent to which work-related exposures contributed to the development of PTSD. Here, the proportion of workers exposed to the exposure of interest (P_e) were multiplied by the attributable proportion in the exposed workers: $P_e(OR-1)/(1+P_e(OR-1))$.

In line with our registered protocol¹³, subgroup analyses were based on the risk of bias (with a cut-off score of 60% for the risk of bias scale summary score, to obtain two subgroups), on the study design (prospective vs retrospective) and on PTSD ascertainment (clinically diagnosed PTSD vs probable PTSD). In contrast to the protocol that we registered a-priori,¹³ we were unable to compare other characteristics of PTSD (i.e., acute vs delayed) due to limited available data. Any information that could not be qualitatively analysed was described narratively.

Strength of evidence

The strength of the evidence was assessed using the GRADE (Grades of Recommendations, Assessment, Development and Evaluation) framework¹⁸. Four quality levels were distinguished: high, moderate, low, and very low. Our starting point for evidence grading was 'moderate', which has previously been proposed for use in the assessment of prognostic factors¹⁹. Various study limitations

could have detracted from the strength of the evidence (if the majority of the studies scored <60% on the risk of bias scale), as could inconsistency (I²>50%), indirectness, imprecision (95%CI boundaries are <1 and >2), and publication bias (based on the funnel plots). Study findings with moderate or large effect sizes (i.e., lower limit of 95%CI OR>2.0) or an exposure-response gradient could boost the quality of the evidence.

Patient and public involvement

There was no patient or public involvement in designing and conducting this study.



Results

Study selection

The study selection procedure is described in Figure 1. We identified 14,529 records during database searches. After discarding duplicates, we screened the remaining 8,590 records on title and abstract. Of these, we assessed 107 full text articles and excluded 65 for various reasons (see Supplementary file 2 for more details). As no additional articles were found during snowball and scoping searches, 42 articles from 33 studies were described in this review²⁰⁻⁶¹.

Study description and methodological quality/risk of bias

Supplementary file 3 contains the extracted data, and risk of bias assessment is shown in supplementary file 4-5. The 33 included studies provided data on n=5,719,236 participants, ranging from n=19 to n=2,549,949 participants per study. Eighteen studies were from the US, four were from the United Kingdom, two were from Denmark, and two others from Japan. There was one study from each of the following countries: Israel, The Netherlands, Germany, Portugal, Italy, Norway and Korea. The majority of the studies (N=21) involved participants from armed forces. Five studies featured first responders who had attended the scene of a disaster, three focused on healthcare workers, two on employers at the scene of a disaster, one on bank workers and one on public transport workers.

Four studies reported no details of sex, five studies only used male participants, and 17 used samples in which the majority of participants were male (≤20% females). In only seven studies, did female participants make up a reasonable proportion (>20%) of the study sample. Twenty-eight studies reported exposures obtained from self-reports, 12 studies used deployment administration databases, and two studies were based on a combination of these two measurements. Baseline exposure assessment was carried out for the period 1983-2012. Twenty-five articles assessed PTSD (by clinical diagnosis) while the remaining 17 articles assessed probable PTSD/PTSD symptoms (by self-reports using pre-defined (e.g., DSM-5) criteria). The weighted average for PTSD prevalence during in the follow-up periods was 7.3%, while individual study prevalence ranged from 1.0% to 70.5%. The average prevalence for diagnosed cases of PTSD was slightly higher (7.3%) than for probable PTSD (6.4%).

Twenty-five studies were prospective studies and eight were retrospective studies. On average, methodological quality was 62% (SD:19%), ranging from 25% to 100%. Most articles showed a low risk of bias on analysis/reporting (N=37) and confounding (N=25). Less than half of the articles showed a low risk of bias on participation selection (N=11), attrition (N=9), prognostic factor (exposure) assessment (N=9) and outcome (PTSD) ascertainment (N=13).

Work-related exposures

Each of the exposure-outcome associations presented have been described and categorised according to the DSM-5 criteria for PTSD stressors²: 1) direct exposure, 2) witnessing a trauma, 3) hearing that a colleague or co-worker was exposed to a trauma, or 4) indirect exposure to aversive details of a trauma. An overview of qualitative and quantitative analyses of all exposure-outcome associations is shown in Table 1. Figures 2 and 3 depict quantitative analyses, while Table 2 contains an overview of any exposure-outcome associations that could not be statistically pooled.

Direct exposure

The exposure-outcome associations for direct exposures were quantitatively analysed for: number of army deployments (OR[95%CI]: 1.15[1.14 1.16], I²=0%, n=333,024, Figure 2), combat exposure

(OR[95%CI]: 1.89[1.46 2.45], I²=89%, n=28,304, Figure 2) and army deployment (OR[95%CI]: 1.79 [1.45 2.21], I²=0%, n=11,023, Figure 3). The PAFs for these exposures were 7%, 14% and 34%, respectively. Evidence for these exposure-outcome associations was moderate, very low, and low quality, respectively. In some cases, the evidence was downgraded due to high risk of bias and inconsistency. There was some evidence for publication bias, although it was only possible to assess that for the 'combat exposure' variable (Supplementary file 6). Subgroup analyses based on risk of bias (Supplementary file 7-9), study design (Supplementary file 11-13) and PTSD ascertainment (Supplementary file 15-17) showed no statistically significant differences between effects for those subgroups.

In our qualitative analyses of exposures that could not be statistically pooled, we found exposure-outcome associations for exposures related to undergoing a traumatic event, cumulative exposure and the severity of exposure (Table 2). With regard to undergoing a traumatic event, the effect sizes ranged from OR[95%CI]: 0.86[0.32 2.28] (physical contacts with thieves)³⁴ to OR[95%CI]: 5.65[3.27 9.74] (workers fleeing from a tsunami)⁴². Cumulative exposure was e.g. expressed in length of deployment³⁷ (OR[95%CI]: 0.97[0.92 1.03]) and high frequency of violence (compared to no violence)⁵⁵ (OR[95%CI]: 6.5[1.6 25.6]). The effect sizes for exposure severity ranged from OR[95%CI]: 1.01[0.67 1.35] (severity of battles)⁴⁵ to OR[95%CI]: 6.5[1.6 26.0] (severe compared to no violence)⁵⁵

Witnessing a trauma

With regard to the DSM-5 criterion 'witnessing a trauma', there was insufficient homogeneous data to pool studies statistically (Table 2). In five studies (with n=4,876 participants), effect sizes ranged from OR[95%CI]: 1.01[0.63 1.64] ('perceiving a life threat')⁵⁶ to OR[95%CI]: 9.3[6.1 14.2] ('being present during an attack')³⁸.

A colleague or co-worker was exposed to a trauma

Only one study (n=980) reported on effect sizes regarding 'colleague or co-worker exposed to a trauma'. This study, among public transport workers, found that 'hearing that a close colleague had suffered a person under train experience' was not significantly association with PTSD (OR[95%CI]: 0.55[0.12 2.47])⁴⁶

Indirect exposure to aversive details

Regarding indirect exposure to adverse events, we statistically pooled the effect sizes from seven studies (n=75,902 participants) with moderate-quality evidence for an association between confrontation with death and PTSD (Figure 3; OR[95%CI]: 1.63[1.41 1.90]). Subgroup analyses regarding risk of bias (Supplementary file 10), study design (Supplementary file 14) and PSTD ascertainment (Supplementary file 18) showed no statistically significant differences between any of those subgroups.

Additional evidence from four studies (n=14,085 participants), which could not be statistically pooled, showed effect sizes ranging from OR[95%CI]: 1.03[1.00 1.06] (being exposed to the aftermath of a battle)³⁷ to OR[95%CI]: 4.0[2.5 6.6] (being present during the morning of the 9/11 attacks)²⁷.

Other exposures

We found additional evidence that could not be categorised into any of the DSM-5 criteria. An increased risk of PTSD was associated with experiencing stress, with evidence ranging from

OR[95%CI]: 1.01[0.98 1.04] (deployment concerns)²⁸ to OR[95%CI]: 3.52[2.94 4.21] (high deployment stress)²¹. Also, the time that has passed since a given traumatic event seems to be associated with PTSD. This factor can either reduce the PTSD risk (OR[95%CI]: 0.47[0.32 0.70] with a longer dwell time between deployments)⁴⁸ or increase it (OR[95%CI]: 1.89[0.99 3.60] if the period since the return from deployment exceeds 6.5 years)³². Other exposures included experiencing discrimination at work (OR[95%CI]: 5.72[3.37 9.71])⁴² and having to perform duties that involved a risk of radiation exposure (OR[95%CI]: 1.08[0.97 1.20])⁵³.



Discussion

In this systematic review with meta-analysis and evidence grading, we found various associations, albeit based on moderate-quality evidence at best, showing that several work-related exposures are associated with PTSD development. This includes exposures such as the number of army deployments, combat exposure, army deployment and confrontation with death. The corresponding effect sizes ranged from 1.15[1.14 1.16] to 1.89[1.46 2.45] and PAFs varied from 7% (for the number of army deployments) to 34% (for army deployment). The latter values indicate the proportion of PTSD cases that could potentially be avoided in a working population, if the exposure in question were to be totally eliminated. The data suggests that there could be an only moderate relationship between PTSD and work situations. However, they could also indicate that PTSD cannot be attributed to a single work-related exposure and that it is multi-factorial in nature and/or is mediated by other factors. This could, perhaps, also account for the relatively low ORs found for some of the effects.

Only a limited data, which could not be statistically pooled, was available concerning exposures that corresponded to the DSM-5 criteria 'witnessing a trauma' and 'hearing that a colleague/coworker was exposed to a trauma'. These exposures include 'perceiving a life threat', 'being present during an attack', and 'hearing that a close colleague had suffered a person under train experience'. The additional exposures that could not be categorised according to DSM-5 criteria include 'military deployment', 'deployment stress', and 'time since return from deployment'. In future, it may be worth considering exposures of this kind when diagnosing work-related PTSD.

The details uncovered by this review are key to a better understanding of work-related causes of PTSD, to the selection or development of preventive interventions, and to the identification of thresholds for occupational health guidelines. This review has updated earlier work^{7 9} and we are the first to quantify the association between work-related exposures and PTSD. This update identifies occupational groups and exposures that do not feature in previous reviews, such as public transport workers⁴⁶ and bank workers (being exposed to robberies)³⁴. The exposures described in this review typically lead to an increased risk of PTSD, however, other work-related factors can actually reduce the risk of PTSD. For instance, among highly exposed occupational groups, a high level of preparedness (OR[95%CI]: 0.6[0.4 0.9])⁶², unit support (OR[95%CI]: 0.5[0.3 0.8])⁶², post-deployment support (OR[95%CI]: 0.3[0.2 0.4]) ⁶² and social support (OR[95%CI]: 0.96[0.93 0.98])³⁷ were all found to be associated with a reduced risk of PTSD. These elements can be used in the development of interventions, especially for those in occupations that involve high PTSD risks.

Methodological strengths and limitations

The strengths of this review are the systematic methods used plus a protocol that was registered apriori, the systematic review with meta-analysis, and the assessment of evidential quality using GRADE¹⁸. The findings appear to be quite robust, since subgroup analyses based on risk of bias, study design and PTSD ascertainment produced results that did not differ between any of those subgroups. Moreover, the PAFs estimated in our study provide insight into the extent to which the identified exposures were occupationally related to PTSD.

We deviated from our a-prior registered protocol¹³ in that we were unable to compare different PTSD diagnoses (acute vs delayed). In our meta-analysis, we used effect sizes from the article with the shortest follow-up duration (with a latency time of at least four weeks). There were, however, also data available from few studies measuring both the short-term and long-term effects of exposure and their association with PTSD. For example, 'being present during a terrorist attack' was strongly associated with PTSD in the acute phase (after 10 months; OR[95%CI]: 9.3[6.1 14.2]), but this

association was even stronger in the long term (after 34 months; OR[95%CI]: 10.0[5.4 18.6])³⁸. Regarding 'being exposed to combat', the opposite was true. Stronger effects were seen in short term (OR[95%CI]: 2.91[1.34 6.31]) than long term (OR[95%CI]: 2.42[1.04 5.62])³⁹. This is in line with another review indicating that, following exposure, the risk of PTSD attenuates over time⁷.

Another potential source of heterogeneity stems from the method used to ascertain PTSD. In 25 articles, PTSD was assessed by clinical diagnosis while 17 articles assessed probable PTSD/PTSD symptoms, based on self-reports using pre-defined (e.g., DSM-5) criteria. We found that the average prevalence was slightly higher for diagnosed PTSD (7.3%) than for probable PTSD (6.4%). This is in line with a study of disaster workers, following the 9/11 attacks, in which 2-9% had probable self-reported PTSD, respectively³¹. However, 6-15% of these workers were diagnosed with PTSD. Nevertheless, our pooled effect sizes were robust across different methods for ascertaining PTSD. While ascertaining PTSD by clinical diagnosis may be more valid, this source of heterogeneity is unlikely to have substantially affected the findings presented. We have only assessed incidence of PTSD. Accordingly, this review does not address the persistence or growth of PTSD. Future studies should, therefore, focus on different types of PTSD diagnoses. They should also assess the work-relatedness of PTSD persistence and growth, as an aid to the development of occupational health guidelines.

One limitation of our study is that the majority of the studies in this review were based on participants from armed forces (N=21) and first responders (N=5). There was limited information on other occupations, such as public transport workers, bank employees and healthcare workers. Furthermore, most studies of the armed forces and of first responders tend to be male dominated and from Western countries. Future research should address these issues, by assessing previously unexplored occupational sectors and groups, as well as data from other countries. In this review we only included longitudinal studies in which the exposure would proceed the outcome, as a result of which a better inference of causality can be provided than with cross-sectional studies only. Moreover, we focussed in our review on articles published from 2005 onwards. This cut-off was based on changes in people's exposure to work-related traumatic events and changes to the definition of PTSD over time².

Although methodological quality of the included studies was of an acceptable level (62%, on average), the quality of the evidence was rated moderate at best. More than half of the articles showed a risk of bias with regard to participation (i.e., selection bias), attrition (with <80% of the participants being retained during the follow-up period), and misclassification due to a limited assessment of the prognostic factors (i.e., exposure) and the outcome of interest. As mentioned above, the ascertainment of PTSD is unlikely to have caused a substantial bias in our findings. However, exposures were often measured by means of self-reports, which may well have biased our findings. In addition, the quality of the evidence was downgraded due to inconsistency for some of the exposures. Our assessment of publication bias was limited to just one of the pooled exposures, which did not indicate a strong risk of such bias. It appeared, however, that none of the studies had published or registered their protocol, which could have caused publication bias.

Conclusion

In this systematic review with meta-analysis of 33 studies (with n=5,719,236 participants), based on moderate quality evidence at best, we identified a number of work-related exposures (mainly involving individuals in the armed forces and in first responder occupations) that increase the risk of PTSD (by 15% to 189%). These exposures include 'number of army deployments', 'combat exposure', 'army deployment' and 'confrontation with death', for which we found a moderate contribution to the development of PTSD. We identified additional exposures in other occupations, such as bank workers, public transport workers, and medics. These included 'life threats', 'being present during an attack' and 'hearing about a colleague's trauma'. Although exposure assessment, PTSD ascertainment and inconsistency may have biased our findings, the results of this review are quite robust and are of importance for the development of preventive interventions and occupational health guidelines.

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Author contribution

Both authors (PC and HvdM) designed the study and reviewed the manuscript for important intellectual content. Both authors identified relevant articles and conducted data extraction and analyses together. PC drafter the first version of the manuscript. HvdM is the study guarantor.

Data sharing

All data relevant to the study are included in the article and supplementary documents.

Study ethics

Not applicable as this study is a systematic review

Competing interests

The authors declare no competing interests

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Data sharing

Additional data is provided in the supplementary files.

Ethical approval

As this is a systematic review, no ethical approval is required

Patient consent

As this is a systematic review, no patient consent is required

Table 1. Overview of the evidence from both qualitative and quantitative analyses, with exposures categorised according to DSM-5 criteria. For exposures for which quantitative analyses could be performed (Figure 2 and 3), quality of the evidence for the relationship between work-related exposures and PTSD according to the GRADE framework is shown. Other exposures are described qualitatively (Table 2).

DSM-5 criterion	Exposure	N	n	Limit ¹	Incons ²	Indirect ³	Imprec ⁴	Pub bias ⁵	OR [95%CI] ⁶ 25	Grad ⁷	GRADE	PAF	Reference
Direct exposure	Number of army deployments ⁸	3	333,024	No	0%	No	No	N/A	1.15 [1.14 1.16]	No	Moderate	7%	Figure 2
-	Combat exposure	11	28,304	Yes	89%	No	No	Yes	1.89 [1.46 2.45]	No	Very low	14%	Figure 2
	Army deployment ⁹	4	11,023	Yes	0%	No	No	N/A	1.79 [1.45 2.21]	No	Low	34%	Figure 3
	Undergoing a traumatic event	13	1,703,107	-	-	-	-	-	Min: 0.86 [0.32 2 28] Max: 5.65 [3.27 5 .74]	-	-		Table 2
	Cumulative exposure	8	1,749,762	-/-	-	-	-	-	Min: 0.97 [0.92 $\frak{R}03$] Max: 6.5 [1.6 25 \frak{R}]	-	-		Table 2
	Exposure severity	3	2,558	- /	7 0	-	-	-	Min: 1.01 [0.67 🛱 35] Max: 6.5 [1.6 26 🕏]	-	-		Table 2
Witnessing trauma	-	5	4,876	-	-70	-	-	-	Min: 1.01 [0.63 164] Max: 9.3 [6.1 142]	-	-		Table 2
Colleague exposed ¹⁰	-	1	980	-	-	-	-	-	0.55 [0.12 2.47]	-	-		Table 2
Indirect exposure	Confrontation with death	7	75,902	No	46%	No	No	N/A	1.63 [1.41 1.90]	No	Moderate	15%	Figure 3
		4	14,085	-	-	-	. 16	7	Min: 1.03 [1.00 3 06] Max: 4.0 [2.5 6.6]	-	-		Table 2
Other exposures	Stress	4	1,390,641	-	-	-	-		Min: 1.01 [0.98 104] Max: 3.52 [2.94 4.21]	-	-		Table 2
	Time since event	3	1,358,468	-	-	-	-	-	Min: 0.47 [0.32 6 70] Max: 1.89 [0.99 60]	-	-		Table 2
	Other	3	69,176	-	-	-	-	-	Min: 1.08 [0.97 120] Max: 5.72 [3.37 2,71]	-	-		Table 2

¹ Limitation: downgraded if the majority of studies score lower than 60% on the risk of bias scale. ² Inconsistency: downgrade if l²≥50%.

³ Indirectness: downgrade if indirectness is present. ⁴ Imprecision: downgrade if the 95% confidence interval is <1 and >2.

Indirectness: downgrade if indirectness is present. Imprecision: downgrade if the 95% confidence interval is <1 and >2.
 Publication bias: downgraded if publication bias is present (based on the funnel plots). Effect size: upgrade if the lower limit of the 95% confidence interval is >2.0.

⁷ Gradient: upgraded if there is a dose-response gradient available.

⁸ Depicting the effect of being deployed more than once, as compared to being deployed once.

⁹ Depicting the effect of being deployed, as compared to not being deployed.

¹⁰ For this study on occupational exposures, the DSM-5 criterion 'relative/friend' was adapted to 'colleague or co-worker'.

Table 2. Overview of all exposure-outcome effect sizes from qualitative analyses, with exposures categorised according to DSM-5 criteria. Odds ratios (OR) with 95% confidence intervals (95%CI) are shown.

DSM-5 criterion	Exposure category	Exposure	Effect size (OR [95%CI])
Direct exposure	Undergoing	Work-related threats ²⁰	1.10 [1.04 1.15]
	an event	Work-related violence ²⁰	1.02 [0.98 1.06]
		Previous disaster experience ²³	1.4 [1.2 1.6]
		One injury sustained during the 9/11 attacks ²⁹	1.1 [0.6 2.0]
		Two or more injuries sustained during the 9/11 attacks ²⁹	1.4 [0.6 3.4]
		Participation in abusive violence ³³	3.32 [1.81 6.08]
		Robberies during working life ³⁴	1.18 [0.97 1.44]
		Physical contacts with robbers ³⁴	0.86 [0.32 2.28]
		Scuffle [taking part or being present] ³⁴	1.92 [0.63 5.79]
		Being injured during the robbery ³⁴	1.28 [0.31 5.21]
		Discharged weapon on deployment ³⁶	1.48 [0.61 3.60]
		Experience of life-threatening danger ⁴²	4.32 [2.89 6.48]
		Major property loss ⁴²	3.45 [2.28 5.23]
		Escape from tsunami ⁴²	5.65 [3.27 9.74]
		Life threatening war ⁴⁵	
		-	1.91 [1.07 3.24]
		Conflict with passengers ⁴⁶	3.21 [1.14 9.03]
		Felt in great danger of being killed ⁴⁸	3.44 [2.50 4.72]
		Exposure to blast ⁵⁰	4.72 [2.9 7.7]
	C 1. 11	Encountering explosive devices ⁵⁴	1.26 [0.95 1.66]
	Cumulative	Prolonged work at the WTC site ²³	2.0 [1.7 2.3]
	exposure	Length of deployment ³⁷	0.97 [0.92 1.03]
		≥5 critical cases per call for traumatic surgeons ⁴³	7 [1.1 8]
		≥7 call duties a month for traumatic surgeons ⁴³	3.8 [0.9 7.2]
		≥15 operative cases per month ⁴³	2.8 [0.4 3.2]
		Cumulative years deployed in navy ⁴⁷	2.04 [1.93 2.15]
		Cumulative years deployed in army ⁴⁷	1.74 [1.71 1.76]
		No. of Combat Exposures ⁴⁸	1.62 [1.46 1.79]
		Two combat exposure deployment ⁴⁸	1.37 [1.17 1.61]
		Three combat exposure deployment ⁴⁸	1.30 [0.94 1.82]
		Two deployments ⁴⁸	1.00 [1.00 1.01]
		Three deployments ⁴⁸	1.00 [0.99 1.01]
		One exposure (compared to no exposure)50	4.67 [3.1 7.1]
		Two or more deployments (compared to no exposure) ⁵⁰	6.15 [4.4 8.7]
		Deployment length 1–3 months ⁵³	1.53 [1.37 1.70]
		Deployment length ≥3 months ⁵³	2.64 [2.33 2.99]
		Low frequency of violence (compared to no violence) ⁵⁵	4.0 [1.0 16.3]
		Medium frequency of violence (compared to no violence) ⁵⁵	5.9 [1.4 24.2]
		High frequency of violence (compared to no violence) ⁵⁵	6.5 [1.6 25.6]
	Exposure	Combat exposure scale ³³	1.98 [1.50 2.62]
	severity	Severity of battles ⁴⁵	1.01 [0.67 1.35]
	Severity	Max. mild violence (compared to no violence) ⁵⁵	3.8 [0.3 46.2]
		Max. threats of violence (compared to no violence) ⁵⁵	5.4 [1.2 24.2]
		Max. moderate violence (compared to no violence) ⁵⁵	2.6 [0.6 10.8]
		Max. severe violence (compared to no violence) ⁵⁵	6.5 [1.6 26.0]
Mitnossina tha		Perceived life threat ⁵⁶	
Witnessing the			1.01 [0.63 1.64]
trauma		Observation of abusive violence ³³	8.36 [4.56 15.35
		Presence during attack ³⁸	9.3 [6.1 14.2]
		Witnessing of plant explosions ⁴²	2.09 [1.43 3.06]
		Person under train experience ⁴⁶	1.54 [0.52 4.55]
		One person under train experiences ⁴⁶	1.77 [0.31 4.47]
		Two or more person under train experiences ⁴⁶	2.36 [0.57 9.70]
		Sudden train stop ⁴⁶	3.66 [0.82 16.4]
		Near train accident ⁴⁶	8.81 [1.96 39.3]

	Person under train experience of colleague ⁴⁶ Aftermath of battle ³⁷ morning of 9/11 (compared to >3 days) ²⁷ afternoon of 9/11 (compared to >3 days) ²⁷ day 2 (compared to >3 days) ²⁷ Morning of 9/11 (compared to >3 days) ²³	0.55 [0.12 2.47] 1.03 [1.00 1.06] 4.0 [2.5 6.6] 2.1 [1.3 3.3] 1.4 [0.9 2.4]
	morning of 9/11 (compared to >3 days) ²⁷ afternoon of 9/11 (compared to >3 days) ²⁷ day 2 (compared to >3 days) ²⁷ Morning of 9/11 (compared to >3 days) ²³	4.0 [2.5 6.6] 2.1 [1.3 3.3]
	afternoon of 9/11 (compared to >3 days) ²⁷ day 2 (compared to >3 days) ²⁷ Morning of 9/11 (compared to >3 days) ²³	2.1 [1.3 3.3]
	day 2 (compared to >3 days) ²⁷ Morning of 9/11 (compared to >3 days) ²³	
	Morning of 9/11 (compared to >3 days) ²³	1.4 [0.9 2.4]
		2.0 [1.3 2.9]
	Afternoon of $9/11$ (compared to >3 days) ²³	1.1 [0.8 1.5]
	Exposure to aftermath of battle ⁵⁶	1.81 [1.08 3.06]
Stress	High deployment stress ²¹	3.52 [2.94 4.21]
	Deployment concerns summary score ²⁸	1.01 [0.98 1.04]
	Worried by other issues related to robbery ³⁴	2.64 [0.95 7.36]
	Unit cumulative high deployment stress rate (marine) ⁴⁷	1.04 [1.03 1.05]
	Unit cumulative high deployment stress rate (army) ⁴⁷	1.05 [1.04 1.06]
Time since	Months since most recent deployment ²⁸	1.00 [0.98 1.02]
event	Time since return from deployment (up to 2 years) ³²	1.18 [0.75 1.86]
	Time since return from deployment (up to 3 years) ³²	1.80 [1.05 3.10]
	Time since return from deployment (up to 4 years) ³²	1.88 [0.98 3.62]
	Time since return from deployment (up to 5 years) ³²	1.53 [0.92 2.55]
		1.89 [0.99 3.60]
		0.83 [0.60 1.13]
		0.47 [0.32 0.70]
Other		2.2 [1.7 2.9]
		5.72 [3.37 9.71]
		1.08 [0.97 1.20]
		Unit cumulative high deployment stress rate (marine) ⁴⁷ Unit cumulative high deployment stress rate (army) ⁴⁷ Months since most recent deployment ²⁸ Time since return from deployment (up to 2 years) ³² Time since return from deployment (up to 3 years) ³² Time since return from deployment (up to 4 years) ³² Time since return from deployment (up to 5 years) ³² Time since return from deployment (up to 6.5 years) ³² Dwell to deployment ratio (1:1 versus <1:1) ⁴⁸ Dwell to deployment ratio (2:1 versus <1:1) ⁴⁸ Other Supervising responsibilities ²³ Discrimination/slurs ⁴² Duties with radiation exposure risk ⁵³

Figure caption

Figure 1. Flow chart depicting the search for literature.

Figure 2. Study findings (i.e., effect sizes) for articles reporting on the association of number of army deployments (depicting the effect of being deployed more than once, as compared to being deployed once; upper panel) and combat exposure (lower panel) with PTSD. Individual study as well as pooled effects are presented. SE = standard error; CI = confidence interval; IV = Inverse variance.

Figure 3. Study findings (i.e., effect sizes) for articles reporting on the association of deployments status (depicting the effect of being deployed, as compared to not being deployed; upper panel) and confrontation with death (lower panel) with PTSD. Individual study as well as pooled effects are presented. SE = standard error; CI = confidence interval; IV = Inverse variance.



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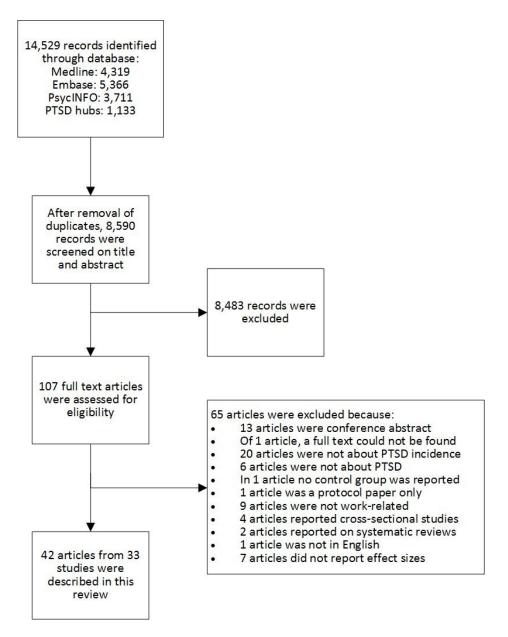
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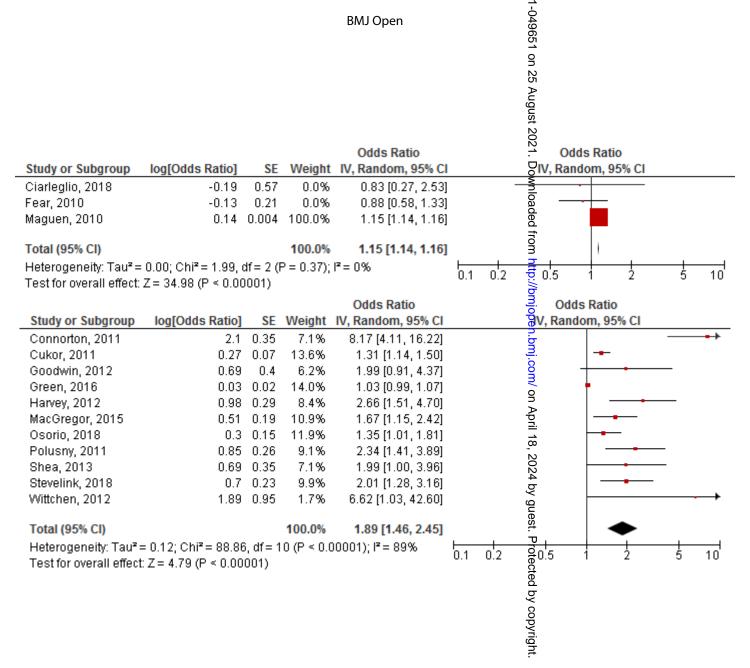
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- 58. Shea MT, Reddy MK, Tyrka AR, Sevin E. Risk factors for post-deployment post traumatic stress disorder in national guard/reserve service members. *Psychiatry Res* 2013;210:1042–48.
- 59. Soo J, Webber MP, Gustave J, Lee R, Hall CB, Cohen HW, Kelly KJ, Prezant DK. Trends in probable PTSD in firefighters exposed to the World Trade Center disaster, 2001–2010. Disaster Med Public Health Preparedness 2011;5:S197-S203.
- Stevelink SA, Jones M, Hull L, Pernet D, MacCrimmon S, Goodwin L, MacManus D, Murphy D, Jones N, Greenberg N, Rona RJ, Fear NT, Wessely S. Mental health outcomes at the end of the British involvement in the Iraq and Afghanistan conflicts: a cohort study. *Br J Psychiatry* 2018;213:690–97. doi: 10.1192/bjp.2018.175
- 61. Wittchen HU, Schönfeld S, Kirschbaum C, Thurau C, Trautmann S, Steudte S, Klotsche J, Höfler M, Hauffa R, Zimmermann P. Traumatic experiences and posttraumatic stress disorder in soldiers following deployment abroad: how big is the hidden problem? *Dtsch Arztebl Int* 2012;109(35–36):559–68. doi: 10.3238/arztebl.2012.0559
- 62. Goldmann E, Calabrese JR, Prescott MR, Tamburrino M, Liberzon I, Slembarski R, Shirley E, Fine T, Goto T, Wilson K, Ganocy S, Chan P, Serrano MB, Sizemore J, Galea S. Potentially modifiable pre-, peri-, and postdeployment characteristics associated with deployment-related posttraumatic stress disorder among ohio army national guard soldiers. *Ann Epidemiol* 2012;22(2):71-8. doi: 10.1016/j.annepidem.2011.11.003





Flow chart depicting the search for literature.

101x130mm (200 x 200 DPI)



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Supplementary file 1

Sup	olementary file 1. Ovid MEDLINE(R) ALL <1946 to September 09, 2019>. Search date: 10 September 2019	
#	Search	Results
1	stress disorders, post-traumatic/ or stress disorders, traumatic, acute/	30925
2	(acute stress or (asd and stress) or ptsd or ptss or posttraumatic stress or post traumatic stress or acute stress disorder or posttraumatic symptom? or post traumatic symptom? or traumatic stress).ab,kf,ti,sh.	42697
3	(htsq or trauma screen* or (trauma screen* and stress)).ab,kf,ti. [trauma screening zoals de Harvard Trauma Screening Questionnaire - htsq]	160
4	or/1-3 [ptsd]	51153
5	exp Occupations/ or Workload/ or exp Work/ or Workplace/ or exp Occupational Diseases/ or Rehabilitation, Vocational/ or Occupational Health/ or Sick Leave/ or Absenteeism/ or Retirement/ or workers' compensation/ or exp Employment/ or exp Occupational Exposure/ or Volunteers/	361332
6	(worka* or worke* or workg* or worki* or workl* or workp* or work capacity or work disabilit* or work abilit* or at work or work exposure or work related or workers or job* or employee or staff or personnel or occupation or occupations or occupational or outdoor work* or day shift* or night shift* or shift work* or vocational rehabilitation or sick leave or absenteeism or sickness absen* or absente* or presente* or "return to work" or vocational reintegration or retirement or pension or employment or unemployed or unemployment or work status or industries or industrial sector or volunteer* or voluntary worker* or repetitive work).ab,kf,ti.	2038626
7	exp "personnel, hospital"/ or exp emergency responders/	100417
8	(residents or emergency responder? or first responder? or firefighter? or fire fighter? or Police officer? or emergency medicals or Armed forces or paramedics or veterans or Journalist?).ab,kf,ti.	147998
9	or/5-8 [work]	2360997
10	Epidemiologic studies/	8073
11	exp case control studies/	1016792
12	exp cohort studies/	1894888
13	Case control.tw.	118051
14	(cohort adj (study or studies)).tw.	183886
15	Cohort analy\$.tw.	7241
16	(Follow up adj (study or studies)).tw.	47481
17	(observational adj (study or studies)).tw.	95892
18	Longitudinal.tw.	227916
19	or/10-17 [observationele- en longitudinale studies]	2269321
20	(risk or predict*).mp.	3563653
21	19 or 20	4936872
22	and/4,9,21	6387
23	limit 22 to yr="2010-current"	4319

	Ovid Embase Classic+Embase <1947 to 2019 September 09>. Search date: 10 September 2019		
#	Search	Results	
1	*posttraumatic stress disorder/ or *acute stress disorder/	30071	
2	(acute stress or (asd and stress) or ptsd or ptss or posttraumatic stress or post traumatic stress or acute stress disorder or posttraumatic symptom? or post traumatic symptom? or	56167	

	traumatic stress).ab,kw,ti.	
3	(htsq or trauma screen* or (trauma screen* and stress)).ab,kw,ti.	199
4	or/1-3 [ptsd]	60673
5	exp *Occupation/ or exp *occupational health/ or exp *work/ or *Volunteer/ or exp *named groups by occupation/	907358
6	(worka* or worke* or workg* or worki* or workl* or workp* or work capacity or work disabilit* or work abilit* or at work or work exposure or work related or workers or job* or employee or staff or personnel or occupation or occupations or occupational or outdoor work* or day shift* or night shift* or shift work* or vocational rehabilitation or sick leave or absenteeism or sickness absen* or absente* or presente* or "return to work" or vocational reintegration or retirement or pension or employment or unemployed or unemployment or work status or industries or industrial sector or volunteer* or voluntary worker* or repetitive work).ab,kw,ti.	3266921
7	exp *hospital personnel/ or rescue personnel/	46527
8	(residents or emergency responder? or first responder? or firefighter? or fire fighter? or Police officer? or emergency medicals or Armed forces or paramedics or veterans or Journalist?).ab,kw,ti.	195059
9	or/5-8 [work]	3981638
10	*Clinical study/	56379
11	*Case control study/	6905
12	*Family study/	2834
13	*Longitudinal study/	7151
14	*Retrospective study/	19751
15	*Prospective study/	21494
16	Randomized controlled trials/	168154
17	15 not 16	21378
18	*Cohort analysis/	26124
19	(Cohort adj (study or studies)).mp.	275760
20	(Case control adj (study or studies)).tw.	126673
21	(follow up adj (study or studies)).tw.	66352
22	(observational adj (study or studies)).tw.	151582
23	(epidemiologic\$ adj (study or studies)).tw.	106051
24	or/10-15,17-23	799536
25	(risk or predict*).mp.	5152294
26	24 or 25	5545704
27	and/4,9,26	7053
28	limit 27 to yr="2010-current"	5366

	Ovid PsycINFO <1806 to September Week 1 2019>. Search date: 10 September 2019	
#	Search	Results
1	posttraumatic stress disorder/ or acute stress disorder/	31361
2	(acute stress or (asd and stress) or ptsd or ptss or posttraumatic stress or post traumatic stress or acute stress disorder or posttraumatic symptom? or post traumatic symptom? or traumatic stress).ab,id,ti.	49013
3	(htsq or trauma screen* or (trauma screen* and stress)).ab,id,ti,tm.	292
4	or/1-3 [ptsd]	50242

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5	exp occupations/ or exp occupational health/ or occupational status/	59891
6	(worka* or worke* or workg* or worki* or workl* or workp* or work capacity or work disabilit* or work abilit* or at work or work exposure or work related or workers or job* or employee or staff or personnel or occupation or occupations or occupational or outdoor work* or day shift* or night shift* or shift work* or vocational rehabilitation or sick leave or absenteeism or sickness absen* or absente* or presente* or "return to work" or vocational reintegration or retirement or pension or employment or unemployed or unemployment or work status or industries or industrial sector or volunteer* or voluntary worker* or repetitive work).ab,id,ti.	866191
7	exp medical personnel/ or exp emergency personnel/	89105
8	(residents or emergency responder? or first responder? or firefighter? or fire fighter? or Police officer? or emergency medicals or Armed forces or paramedics or veterans or Journalist?).ab,id,ti.	68300
9	or/5-8 [work]	972972
10	(Clinical stud* or Case control stud* or Longitudinal stud* or Retrospective stud* or (Prospective stud* not (Randomized controlled trials or rct)) or Cohort analysis or (Cohort adj (study or studies)) or (Case control adj (study or studies)) or (follow up adj (study or studies)) or (observational adj (study or studies)) or (epidemiologic\$ adj (study or studies))).ab,id,ti.	136663
11	(risk or predict*).mp.	730689
12	10 or 11	808563
13	and/4,9,12	5417
14	limit 13 to yr="2010-current"	3711

	ProQuest PTSDhubs. Search date: 10 September 2019	
#	Search	Results
1	(su((worka* OR worke* OR workg* OR worki* OR workl* OR workp* OR work capacity OR work disabilit* OR work abilit* OR at work OR work exposure OR work related OR workers OR job* OR employee OR staff OR personnel OR occupation OR occupations OR occupational OR outdoor work* OR day shift* OR night shift* OR shift work* OR vocational rehabilitation OR sick leave OR absenteeism OR sickness absen* OR absente* OR presente* OR "return to work" OR vocational reintegration OR retirement OR pension OR employment OR unemployed OR unemployment OR work status OR industries OR industrial sector OR volunteer* OR voluntary worker* OR repetitive work)) OR su((residents OR emergency responder? OR first responder? OR firefighter? OR fire fighter? OR Police officer? OR emergency medicals OR Armed forces OR paramedics OR veterans OR Journalist?))) AND (su(risk OR predict*) OR su((Clinical stud* OR Case control stud* OR Longitudinal stud* OR Retrospective stud* OR (Prospective stud* NOT (Randomized controlled trials OR rct)) OR Cohort analysis OR Cohort stud* OR Case control stud* OR observational stud* OR epidemiologic stud*)))	1849
2	Limit 1 to publication date = 2010-01-01 / 2019-09-10	1133

Supplementary file 2. Excluded articles

Jup	prementary file 2. Excluded difficies	Reason for	No
Art	icle	exclusion	papers
1.	Amiri T. Occupational posttraumatic stress disorder: Latent structure and risk pathways. 2019, Dissertation Abstracts International, 80(4).	Conference abstract	1
2.	Chin WS, Shiao JSC, Liao SC, Kuo CY, Chen CC, Guo YL. Psychiatric diseases at six years after occupational injuries. 2016. Occupational and Environmental Medicine, 73: A175.	Conference abstract	2
3.	Connorton E, Miller M, Perry MJ, Hemenway D. Mental health and combat, peacekeeping, or relief work: Results from the National Comorbidity Survey Replication. 2011. Comprehensive Psychiatry, 52: E4.	Conference abstract	3
4.	Geronazzo AL, Shen S, Duarte CS, Wu P, Lord E, Amsel L, Musa GJ, Wicks J, Yip J, Fan B, Guffanti G, Hoven CW. Cumulative exposure to work-related incidents and current posttraumatic stress disorder in new york city's first responders. 2013. European Psychiatry Conference.	Conference abstract	4
5.	Goldmann E, Tamburrino M, Liberzon I, Slembarski R, Prescott MR, Calabrese J Galea S. Pre-, peri-, and post-deployment characteristics and risk of posttraumatic stress disorder among ohio national guard soldiers. 2010. American Journal of Epidemiology, 11: S90.	Conference abstract	5
6.	Goodwin L, Jones M, Sundin J, Wessely S, Rona RJ, Fear NT. Prevalence and predictors of delayed onset PTSD in military personnel: Is there evidence for this disorder? Results of a prospective UK cohort study. 2011. Occupational and Environmental Medicine,1351-0711,1,A100.	Conference abstract	6
7.	Herrell R, Wilk J, Bliese P, Hoge C. Combat intensity, psychopathology, and suicidal ideation in a population of soldiers after deployment to Iraq. 2011. Comprehensive Psychiatry, 52: E8.	Conference abstract	7
8.	Herrell RK, Bliese PA, Hoge CW. Effect of combat intensity, depression, alcohol misuse, and family history of depression and alcohol misuse on PTSD in a sample of post-deployment US Soldiers. 2013. Comprehensive Psychiatry, 54: E4-E5.	Conference abstract	8
9.	Herrell RK, Bliese PB, Hoge CW. Number of deployments and total months of deployment as predictors of post-traumatic stress disorder in active duty soldiers. 2011. American Journal of Epidemiology, 11: S289.	Conference abstract	9
10.	Horesh D, Solomon Z, Ein-Dor T. Delayed-onset PTSD following combat: The role of social resources. 2013. Comprehensive Psychiatry, 54: e24.	Conference abstract	10
11.	Kim AR, Sung JH, Cho SW, Jeong KS, Ahn YS. The relationship between the post-traumatic stress syndrome and the occupational stress among the firefighters in Korea. 2018. Occupational and Environmental Medicine, 75: A380.	Conference abstract	11
12.	Pierce MD, Wood MD, Reddy M, Sevin E, Shea MT. A prospective examination of posttraumatic stress and alcohol use disorders among returning veterans. 2012. Alcoholism: Clinical and Experimental Research, 1: 303A.	Conference abstract	12
	Subramaney U. Personality, trauma exposure, PTSD and depression in a cohort of SA metro policemen: A longitudinal study. 2010. South African Journal of Psychiatry, 16: 97-98.	Conference abstract	13
	Huang, D, Wang X, Kung WW. The impact of job loss on posttraumatic stress disorder among Asian Americans: 11-12 years after the World Trade Center attack. 2019. Traumatology,1085-9373.	Full text could not be found	1
	Andersen SB, Karstoft KI, Bertelsen M, Madsen T. Latent trajectories of trauma symptoms and resilience: the 3-year longitudinal prospective USPER study of Danish veterans deployed in Afghanistan. 2014. Journal of Clinical Psychiatry, 75(9): 1001-1008.	No PTSD incidence	1
16.	Armstrong D, Shakespeare-Finch J, Shochet I. Predicting post-traumatic growth and post-traumatic stress in firefighters. 2014. Australian Journal of Psychology, 66(1): 38-46.	No PTSD incidence	2
17.	Boasso AM, Steenkamp MM, Nash, WP, Larson JL, Litz BT. The relationship between course of PTSD symptoms in deployed U.S. Marines and degree of combat exposure. 2015. Journal of Traumatic Stress, 28(1): 73-78.	No PTSD incidence	3
18.	Bowler RM, Harris M, Li J, Gocheva V, Stellman SD, Wilson K, Alper H, Schwarzer R,	No PTSD	4

	Cone JE.Longitudinal mental health impact among police responders to the 9/11 terrorist attack. 2012. American Journal of Industrial Medicine, 55(4): 297-312.	incidence	
19.	Chin WD, Shiao JS, Liao SC, Kuo CY, Chen CC, Guo YL. Depressive, anxiety and post-traumatic stress disorders at six years after occupational injuries. 2017. European Archives of Psychiatry & Clinical Neuroscience, 267(6): 507-516.	No PTSD incidence	5
20.	Eriksson CB, Lopes Cardozo B, Foy DW, Sabin M, Ager A, Snider L, Scholte WF, Kaiser R, Olff M, Rijnen B, Crawford CG, Zhu J, Simon W. Predeployment mental health and trauma exposure of expatriate humanitarian aid workers: Risk and resilience factors.	No PTSD incidence	6
	2013. Traumatology, 19(1): 41-48.		
21.	Garcia FE, Vazquez C, Inostroza C. Predictors of post-traumatic stress symptoms following occupational accidents: A longitudinal study. 2019. Anxiety, Stress, & Coping, 32(2): 168-178.	No PTSD incidence	7
22.	Hartley TA, Violanti JM, Sarkisian K, Andrew ME, Burchfiel CM. PTSD symptoms among police officers: associations with frequency, recency, and types of traumatic	No PTSD incidence	8
23.	events. 2013. International Journal of Emergency Mental Health, 15(4): 241-253. Huang H, Kashubeck-West S. Exposure, agency, perceived threat, and guilt as predictors of posttraumatic stress disorder in veterans. 2015. Journal of Counseling & Development, 93(1): 3-13.	No PTSD incidence	9
24	Jaegers LA, Matthieu MM, Vaughn MG, Werth P, Katz IM, Ahmad SO. Posttraumatic	No PTSD	10
24.	Stress Disorder and Job Burnout Among Jail Officers. 2019. Journal of Occupational & Environmental Medicine, 61(6): 505-510.	incidence	10
25.	Mac Donald CL, Johnson AM, Wierzechowski L, Kassner E, Stewart T, Nelson EC, Werner NJ, Zonies D, Oh J, Fang R, Brody DL. Prospectively assessed clinical	No PTSD incidence	11
	outcomes in concussive blast vs nonblast traumatic brain injury among evacuated US		
26	military personnel. 2014. JAMA Neurology, 71(8): 994-1002. Magruder KM, Goldberg J, Forsberg CW, Friedman MJ, Litz BT, Vaccarino V, Heagerty	No PTSD	12
20.	PJ, Gleason TC, Huang GD, Smith NL. Long-Term Trajectories of PTSD in Vietnam-Era Veterans: The Course and Consequences of PTSD in Twins. 2016. Journal of Traumatic Stress, 29(1): 5-16.	incidence	12
27	Marchand A, Nadeau C, Beaulieu-Prevost D, Boyer R, Martin M. Predictors of	No PTSD	13
	posttraumatic stress disorder among police officers: A prospective study. 2015. Psychological Trauma: Theory, Pesearch, Practice and Policy, 7(3): 212-221.	incidence	13
28.	Nash WP, Boasso AM, Steenkamp MM, Larson JL, Lubin RE, Litz BT. Posttraumatic stress in deployed marines: Prospective trajectories of early adaptation. 2015. Journal of Abnormal Psychology, 124(1): 155-171.	No PTSD incidence	14
29.	Polusny MA, Kumpula MJ, Meis LA, Erbes CR, Arbisi PA, Murdoch M, Thuras P, Kehle-Forbes SM, Johnson AK. Gender differences in the effects of deployment-related stressors and pre-deployment risk factors on the development of PTSD symptoms in	No PTSD incidence	15
	National Guard Soldiers deployed to Iraq and Afghanistan. 2014. Journal of Psychiatric Research, 49(1): 1-9.		
30.	Rona RJ, Jones M, Sundin J, Goodwin L, Hull L, Wessely S, Fear NT. Predicting persistent posttraumatic stress disorder (PTSD) in UK military personnel who served	No PTSD incidence	16
24	in Iraq: a longitudinal study. 2012. Journal of Psychiatric Research, 46(9): 1191-1198.	No DTCD	17
31.	Ryan-Gonzalez C, Kimbrel N, Meyer EC, Gordon EM, DeBeer BB, Gulliver SB, Elliott TR, Mosissette S. Differences in PTSD symptoms among post-9/11 veterans with blast- and non-blast mild TBI. 2019. Journal of Neurotrauma, 0897-7151.	No PTSD incidence	17
32.	Steenkamp MM, Schlenger WE, Corry N, Henn-Haase C, Qian M, Li M, Horesh D, Karstoft KI, Williams C, Ho CL, Shalev A, Kulka R, Marmar C. Predictors of PTSD 40 years after combat: Findings from the National Vietnam Veterans longitudinal study.	No PTSD incidence	18
33.	2017. Depression & Anxiety, 34(8): 711-722. Wolf E, Mitchell K, Koenen K, Miller M. Combat exposure severity as a moderator of genetic and environmental liability to post-traumatic stress disorder. 2014.	No PTSD incidence	19
. .	Psychological Medicine, 44(7): 1499-1509.	N 0707	2.5
34.	Yuan C, Wang Z, Inslicht SS, McCaslin SE, Metzler TJ, Henn-Haase C, Apfel BA, Tong H, Neylan TC, Fang Y, Marmar CR. Protective factors for posttraumatic stress disorder symptoms in a prospective study of police officers. 2011. Psychiatry Research,	No PTSD incidence	20
	188(1): 45-50.		

35.	Amster ED, Fertig SS, Green M, Carel R. Occupational exposures and psychological symptoms among fire fighters and police during a major wildfire: The carmel cohort study. 2018. Occupational and Environmental Medicine, 75: A590-A591	Not about PTSD	1
36.	Cavanaugh CE, Campbell JC, Messing JT. A longitudinal study of the impact of cumulative violence victimization on comorbid posttraumatic stress and depression among female nurses and nursing personnel. 2014. Workplace Health and Safety, 62 (6): 224-232.	Not about PTSD	2
37.	Han M, Park S, Park JH, Hwang SS, Kim I. Do police officers and firefighters have a higher risk of disease than other public officers? A 13-year nationwide cohort study in South Korea. 2018, BMJ Open; 8(1):e019987.	Not about PTSD	3
38.	Jacobson IG, Horton JL, Leardmann CA, Ryan MA, Boyko EJ, Wells TS, Smith B, Smith TC. Posttraumatic stress disorder and depression among U.S. military health care professionals deployed in support of operations in Iraq and Afghanistan. 2012, J Trauma Stress;25(6):616-23.	Not about PTSD	4
39.	Tvaryanas AP, Maupin GM. Risk of incident mental health conditions among critical care air transport team members. 2014. Aviation Space & Environmental Medicine, 85(1): 30-38.	Not about PTSD	5
40.	Vasterling JJ, Brailey K, Proctor SP, Kane RL, Heeren T, Franz, Molly R. Neuropsychological outcomes of mild traumatic brain injury, post-traumatic stress disorder and depression in Iraq-deployed US Army soldiers. 2012. British Journal of Psychiatry, 201(3): 186-192.	Not about PTSD	6
41.	Bandelow BB, Koch M, Zimmermann P, Biesold KH, Wedekind D, Falkai P. Posttraumatic stress disorder (PTSD) in the German Armed Forces: a retrospective study in inpatients of a German army hospital. 2012. European Archives of Psychiatry & Clinical Neuroscience, 262(6): 459-467.	No control group	1
42.	Aslan M, Concato J, Peduzzi PN, Proctor SP, Schnurr PP, Marx BP, McFall ME, Gleason TC, Huang GD, Vasterling JJ. Design of 'Neuropsychological and mental health outcomes of Operation Iraqi Freedom: a longitudinal cohort study'. 2013. Journal of Investigative Medicine, 61(3):569-577.	Protocol paper only	1
43.	Dinenberg RE, McCaslin SE, Bates MN, Cohen BE. Social support may protect against development of posttraumatic stress disorder: findings from the Heart and Soul Study. 2014. American Journal of Health Promotion, 28(5): 294-297.	Not work- related	1
44.	Erbes CR, Polusny MA, Arbisi PA, Koffel E. PTSD symptoms in a cohort of National Guard soldiers deployed to Iraq: Evidence for nonspecific and specific components. 2012. Journal of Affective Disorders, 142(1): 269-274.	Not work- related	2
45.	Eskridge SL, Macera CA, Galarneau MR, Holbrook TL, Woodruff SI, MacGregor AJ, Morton DJ, Shaffer RA. Influence of combat blast-related mild traumatic brain injury acute symptoms on mental health and service discharge outcomes. 2013. Journal of Neurotrauma, 30(16): 1391-1397.	Not work- related	3
46.	Eskridge SL, Macera CA, Galarneau MR, Holbrook, TL, Woodruff SI, Macgregor AJ, Morton DJ, Shaffer RA. Combat blast injuries: Injury severity and posttraumatic stress disorder interaction on career outcomes in male servicemembers. 2013. Journal of Rehabilitation Research and Development, 50(1): 7-16.	Not work- related	4
47.	Fink DS, Gradus JL, Keyes KM, Calabrese JR, Liberzon I, Tamburrino MB, Cohen GH, Sampson L, Galea S. Subthreshold PTSD and PTSD in a prospective-longitudinal cohort of military personnel: Potential targets for preventive interventions. 2018. Depression & Anxiety, 35(11): 1048-1055.	Not work- related	5
48.	Fitch TJ, Yu X, Chien LC, Karim MM, Alamgir H. Traumatic life events and development of post-traumatic stress disorder among female factory workers in a developing country. 2018. International Journal of Social Psychiatry, 64(4): 351-358.	Not work- related	6
49.	Gilbertson MW, McFarlane AC, Weathers FW, Keane TM, Yehuda R, Shalev AY, Lasko NB, Goetz JM, Pitman RK, Harvard VA. Is trauma a causal agent of psychopathologic symptoms in posttraumatic stress disorder? Findings from identical twins discordant for combat exposure. 2010. Journal of Clinical Psychiatry, 71(10): 1324-1330.	Not work- related	7
50.	Horesh D, Solomon Z, Keinan G, Ein-Dor T. The clinical picture of late-onset PTSD: a 20-year longitudinal study of Israeli war veterans. 2013. Psychiatry Research, 208(3): 265-273.	Not work- related	8

51.	Goldmann E, Calabrese JR, Prescott MR, Tamburrino M, Liberzon I, Slembarski R, Shirley E, Fine T, Goto T, Wilson K, Ganocy S, Chan P, Serrano MB, Sizemore J, Galea S. Potentially modifiable pre-, peri-, and postdeployment characteristics associated with deployment-related posttraumatic stress disorder among ohio army national guard soldiers. Ann Epidemiol. 2012;22(2): 71-78.	No work- related exposure	1
52.	Banducci AN, McCaughey VK, Gradus JL, Street AE. The associations between deployment experiences, PTSD, and alcohol use among male and female veterans. 2019. Addictive Behaviors, 98: 106032,	Cross- sectional	1
53.	Huang, J. and Liu, Q. and Li, J. and Li, X. and You, J. and Zhang, L. and Tian, C. and Luan, R. Post-traumatic stress disorder status in a rescue group after the Wenchuan earthquake relief. 2013. Neural Regeneration Research, 8(20): 1898-1906.	Cross- sectional	2
54.	Jones M, Sundin J, Goodwin G, Hull L, Fear NT, Wessely S, Rona RJ. 2013. What Explains Post-Traumatic Stress Disorder (PTSD) in UK Service Personnel: Deployment or Something Else? Psychological Medicine, 43(8):1703-12.	Cross- sectional	3
55.	Rybojad B, Aftyka A, Baran M, Rzonca P. Risk Factors for Posttraumatic Stress Disorder in Polish Paramedics: A Pilot Study. 2016. Journal of Emergency Medicine, 50(2): 270-276.	Cross- sectional	4
56.	Liu B, Tarigan LH, Bromet EJ, Kim H. World Trade Center disaster exposure-related probable posttraumatic stress disorder among responders and civilians: a meta-analysis. 2014. PLoS ONE, 9(7): e101491.	Systematic review	1
57.	Schutte N, Bar O, Weiss U, Heuft G. Prediction of PTSD in police officers after six monthsa prospective study. 2012. Spanish Journal of Psychology, 15(3): 1339-1348.	Systematic review	2
58.	Milosavljevic M, Drakulic B, Crnobaric C, Perunicic I, Tosevski DL. Risk factor	Not in	1
	assessment for posttraumatic stress disorder in war veterans in former Yugoslavia. 2011. Psihijatrija Danas, 43(2): 141-153.	English	
59.	Giupponi G, Thoma H, Lamis D, Forte A, Pompili M, Kapfhammer HP. Posttraumatic stress reactions of underground drivers after suicides by jumping to arriving trains; feasibility of an early stepped care outpatient intervention. J Trauma Dissociation. 2019; 20(5):495-510.	No effect sizes	1
60.	Osofsky HJ, Osofsky JD, Arey J, Kronenberg ME, Hansel TC, Many MM. Hurricane Katrina's first responders: the struggle to protect and serve in the aftermath of the disaster. 2011. Disaster Medicine and Public Health Preparedness, 5: S214-S219.	No effect sizes	2
61.	Rosenblatt AS, Li R, Fortier C, Liu X, Fonda JR, Villalon A, McGlinchey RE, Jorge RE. Latent factor structure of PTSD symptoms in veterans with a history of mild traumatic brain injury and close-range blast exposure. 2018. Psychological Trauma: Theory, Research, Practice, and Policy, 442-450.	No effect sizes	3
62.	Sheffler JL, Rushing NC, Stanley IH, Sachs-Ericsson NJ. The long-term impact of combat exposure on health, interpersonal, and economic domains of functioning. 2016. Aging and Mental Health, 20(11): 1202-1212.	No effect sizes	4
63.	Solberg O, Birkeland MS, Blix I, Hansen MB, Heir T. Towards an exposure-dependent model of post-traumatic stress: longitudinal course of post-traumatic stress symptomatology and functional impairment after the 2011 Oslo bombing. 2016. Psychological Medicine, 46(15): 3241-3254.	No effect sizes	5
64.	Taymur I, Sargin AE, Ozdel K, Turkcapar HM, Calisgan L, Zamki E, Demirel B. Possible Risk Factors for Acute Stress Disorder and Post-Traumatic Stress Disorder After an Industrial Explosion. 2014. Noropsikiyatri Arsivi, 51(1): 23-29.	No effect sizes	6
65.	Wisnivesky JP, Teitelbaum S, Todd AC, Boffetta P, Crane M, Crowley L, De la Hoz RE, Dellenbaugh C, Harrison DJ, Herbert R, Kim H, Jeon Y, Kaplan J, Katz CL, Levin SM, Luft BJ, Markowitz S, Moline JM, Ozbay F, Pietrzak RH, Shapiro M, Sharma V, Skloot G, Southwick SM, Stevenson LA, Udasin IG, Wallenstein S, Landrigan PJ. Persistence of multiple illnesses in World Trade Center rescue and recovery workers: a cohort study. 2011. Lancet, 378(9794): 888-897.	No effect sizes	7

27				BMJ Open		/bmjopen-2021-0496	
Sup	plementary file	e 3. Data extraction o	f included studies.			2021-0496	
Firs		Study (name,	Sample description (n,	Description of exposure	Description of	(1)	Effect estimates (e.g., HR, RR
Yea	r;	design and	Country, Type of	to screen work (way	outcome (type of	, on	or OR with 95% confidence
	,	follow-up period)	job/company, relevant	and year of baseline	symptoms, way of	25	interval). Super scripts refer
			inclusion/exclusion	exposure assessment	assessment, and	≥	to the models specified in the
			criteria, %Female, Age)	and description of	incidence over the	gu	ʻadjustment' column
				categories)	follow-up period)	25 August 2	
		Name: Armed	<u>n</u> =1,344,668	Exposure assessment:	Type of symptoms:	No 21.	PTSD incidence was in
		forces health		Self-reported	PTSD		general higher after the
		surveillance	Country=USA	•		Jo _w	second, third and fourth
				Year of assessment:	Way of assessment:	'nlo	deployment, compared to the
		Design:	<u>%Female</u> = 11%	between Oct 2001 and	Mental disorders	ad de	first and fifth.
		Prospective		Dec 2010	assessed with ICD-9-	ed :	
		longitudinal	Age = The majority was		CM (309.81), reported	ron	PTSD incidence was in
			<25, with lower numbers	Exposure categories: %	in military or civilian	<u> </u>	general higher among males,
		Follow-up period:	of participants in the 25-	PTSD diagnosis were	hospitals	ļ. ∰	those in lowest age group,
		12 months post	29 and 30+ categories.	compared between		//br	health care workers and
		deployment		deployment number,	<u>Incidence</u> : -	Downloaded from http://bmjopen.bmj.com/ on Apri	those with longer dwelling
			Type of job/company=	gender, age group,		per	time between the
1.	Armed		Active components of	military occupation		l.br	deployments.
	Forces		the forces (on	(combat, health care	\mathbf{O}_{i}	<u>j.</u>	
	Health		Afghanistan and Iran	and other) and	\\/\.	Ö	No effect estimates were
	Surveillance		missions).	'dwelling time' between		Q	reported (only incidences).
	Center,			employments.		<u>≯</u>	
	2011 21		Inclusion/exclusion= -				
		Name: -	<u>n</u> = 2,678	Exposure assessment:	Type of symptoms:	Unadjusted (model	Work-related threats
				Self-reported	PTSD	1), adjusted for	All four sectors
		Design:	Country= Denmark			gender, gge,	PTSD at 2011
		Prospective		Year of assessment:	Way of assessment:	bullyingesexual	OR: 1.11 [1.07 1.14] ¹
		longitudinal (with	<u>%Female</u> = 66%	2011	Self-reported with the	harassm <u>e</u> nt,	OR: 1.10 [1.05 1.15] ²
		cross-sectional			Impact of Event Scale-	conflict at work,	PTSD at 2015
		and longitudinal	Age = 45.1(10.1) years	Exposure categories:	Revised	negative acts,	OR: 1.10 [1.07 1.13] ¹
		analyses)		Work-related violence		private Paumas and	OR: 1.11 [1.07 1.5] ²
			Type of job/company=	and threats on a 5 point	Incidence:14% (2	sector (prodel 2),	OR: 1.10 [1.04 1.15] ³
2.	Andersen,	Follow-up period:	Employees working in	likert scale with 0=never	incidences)	addition lly	
	2019 19	4 years	psychiatric wards, in the	to 4=almost daily, with		adjusted for	Elder care

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				6	
elde	r sector, at special	summary scores 0-24		baselin⊕TSD	PTSD at 2011
scho	ools and in the prison	and 0-44, respectively.		(model 🔄	OR: 0.99 [0.88 1.23] ¹
and	probation service.	, ,		on on	OR: 0.98 [0.82 1.18] ²
				25	PTSD at 2015
Inclu	usion/exclusion=-			₽	OR: 1.12 [1.00 1.25] ¹
				gu	OR: 1.12 [0.94 1.33] ²
				st 2	OR: 1.22 [0.95 1.56] ³
				02	
					Prison and probation service
				Ον	PTSD at 2011
				'n	OR: 1.21 [1.14 1.28] ¹
)ad	OR: 1.18 [1.08 1.27] ²
				ed.	PTSD at 2015
				fror	OR: 1.73 [1.20 1.35] ¹
		Per rev		ਤ ਤ	OR: 1.25 [1.17 1.34] ²
		(C)		#	OR: 1.22 [1.13 1.31] ³
				//br	
		10.		njo	Psychiatry
				per	PTSD at 2011
				h.br	OR: 1.14 [1.06 1.12] ¹
			\mathbf{O}_{i}	<u>j</u> .	OR: 1.19 [1.09 1.32] ²
			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	ŏ	PTSD at 2015
				0	OR: 1.06 [0.99 1.13] ¹
				> >	OR: 1.06 [0.97 1.17] ²
				pr <u>ii</u>	OR: 0.94 [0.83 1.07] ³
				18	
				, 20	Special schools
)24	PTSD at 2011
				by	OR: 1.01 [0.93 1.09] ¹
				gu	OR: 0.95 [0.85 1.05] ²
				est.	PTSD at 2015
				P	OR: 1.08 [1.01 1.15] ¹
				ote	OR: 1.06 [0.98 1.14] ²
				统 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyrie	OR: 1.07 [0.95 1.12] ³
				y by	PTSD at 2011
				8	Males
					THATES

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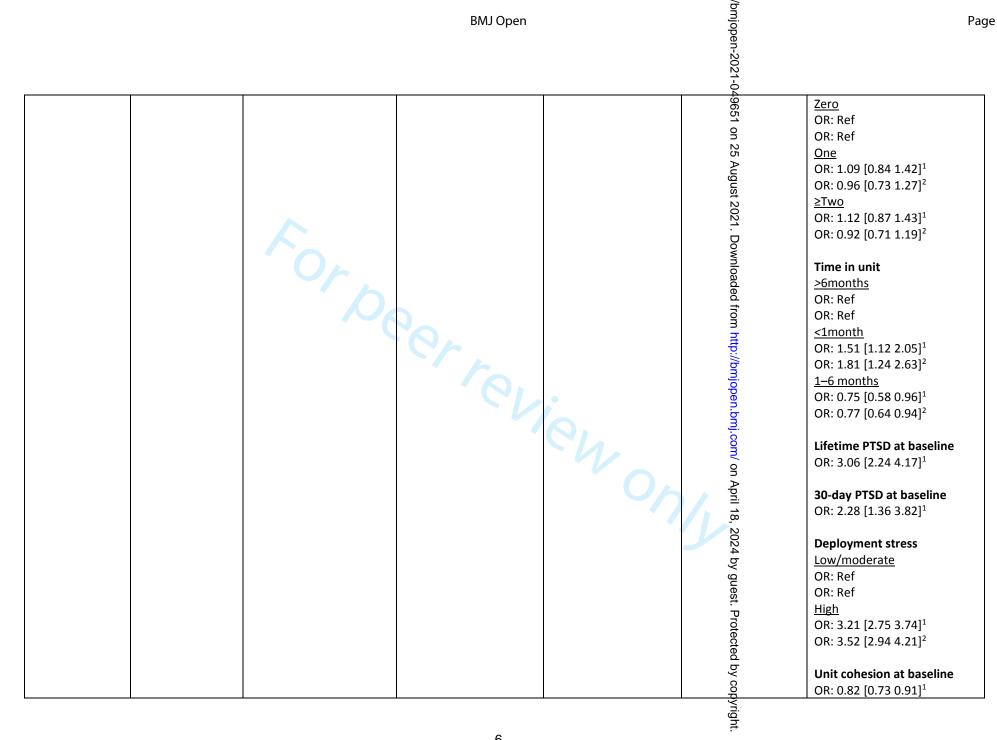
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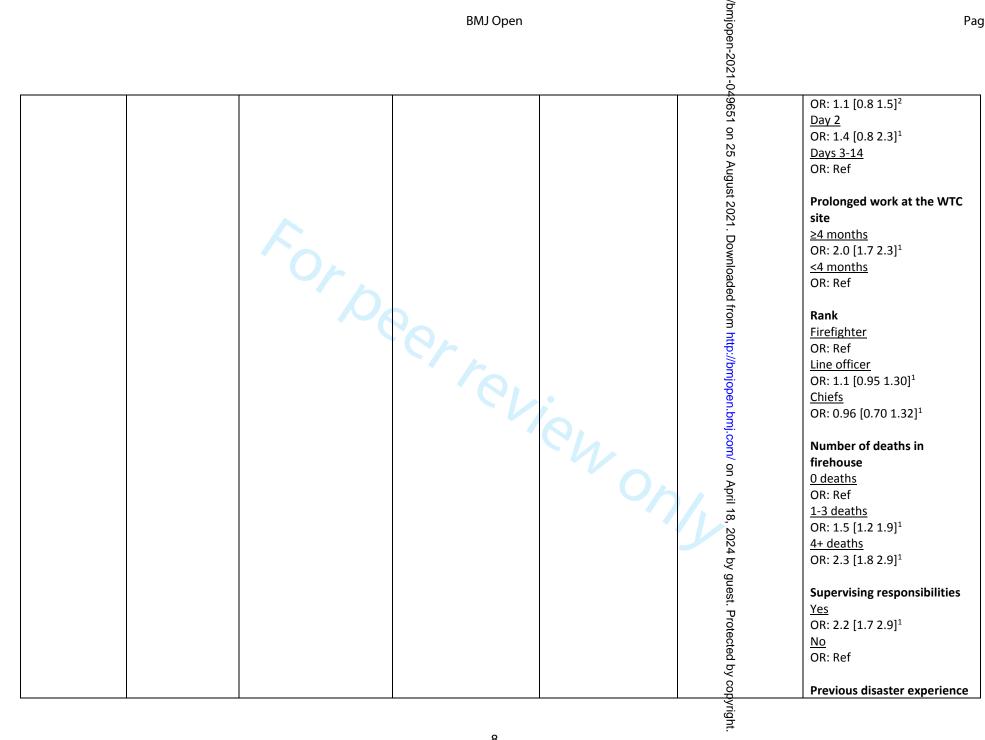
					Ģ	
					49651 on	Psychiatry PTSD at 2011 OR: 1.08 [1.01 1.15] ¹
					25	OR: 1.13 [1.03 1.24] ²
					≥	PTSD at 2015
					īgu	OR: 1.04 [0.98 1.10] ¹
					St 2	OR: 1.05 [0.96 1.14] ²
					02	OR: 0.98 [0.88 1.10] ³
		FO _F O ₆	Perter	ien on	1-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 202	Special schools PTSD at 2011 OR: 1.04 [0.98 1.09] ¹ OR: 1.03 [0.97 1.10] ² PTSD at 2015 OR: 1.02 [0.97 1.07] ¹ OR: 1.02 [0.97 1.07] ² OR: 1.01 [0.42 1.08] ³ PTSD at 2011 Males OR: 1.06 [0.99 1.12] ² Females OR: 1.03 [0.99 1.07] ² PTSD at 2015 Males OR: 1.07 [0.99 1.14] ³ Females
			_		4	OR: 0.99 [0.95 1.05] ³
	Name: Army	<u>n</u> =4,645	Exposure assessment:	Type of symptoms:	Modelsowere	Age
	STARRS study	Country 11CA	Self-reported	PTSD (30 days)	adjuste@for all	OR: 1.00 [0.99 1.02] ¹
	Daniera	<u>Country</u> =USA	Vanuations and	May of accommodate	other exposures	OR: 1.00 [0.99 1.02] ²
	Design:	0/Famala_F0/	Year of assessment:	Way of assessment:	(model 4) and for	Cav
	Prospective	<u>%Female</u> =5%	2012	Composite International	lifetime ହିTSD at baselin ପ୍ର(model 2).	Sex
	longitudinal (with baseline	Ago=26 0/0 2\ yoorg	Evnosuro catagorios:		baseline (model 2).	Female OR: Ref
3. Anderson,	measurements 1-	Age=26.9(0.2) years	Exposure categories: Unit cohesion, stressful	Diagnostic Interview	y by	OR: Ref
3. Anderson, 2019 ²⁰	2 months before	Type of job/company=	employment	screening scales (CIDI- SC) and a six-item	00 / 00	Male
2013	2 months before	Type or Job/company	_ employment	SCI and a SIX-ILEM	by copyright.	IVILIE

		BMJ Open		/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyright.	
				021-049	00.070 (0.464.44)
	Soldiers from three	characteristics and	screening version of)65	OR: 0.73 [0.46 1.14] ¹
	combat teams employed	sociodemographic were	the PTSD Checklist	2	OR: 0.88 [0.51 1.51] ²
<u>Follow-up period</u> : 9 months post-	in Afghanistan	assessed	(PCL) to assess lifetime DSM-4 mental	າ 2:	Race
	Inclusion/exclusion= -		disorders	≥	White
employment	inclusion/exclusion-		disorders	ngr	OR: Ref
			Incidence: 11.9%	is ;	OR: Ref
			(lifetime)	202	Black
			(meeme)		OR: 0.99 [0.67 1.48] ¹
				Oov	OR: 1.04 [0.72 1.49] ²
				vnlo	<u>Asian</u>
				ad	OR: 1.28 [0.77 2.12] ¹
				ed -	OR: 1.38 [0.80 2.39] ²
				fror	<u>Other</u>
				<u> </u>	OR: 1.49 [1.04 2.15] ¹
				ttp://k	OR: 1.25 [0.86 1.82] ²
		· /_		<u>m</u> .	Ethnicity
		· (V)		ope	Non-Hispanic
				ň.b	OR: Ref
				<u>.</u>	OR: Ref
			C/A	cor	Hispanic
				η/ 0	OR: 1.15 [0.83 1.59] ¹
				n ≱	OR: 1.22 [0.87 1.73] ²
				pril 1	Brigade Combat Team
				, œ	Fort #1
				202	OR: Ref
				.4 b	OR: Ref
				ý 9	Fort #2
				ues	OR: 1.15 [0.90 1.47] ¹
				"	OR: 1.31 [0.97 1.77] ²
				γot	Fort #3
				ect	OR: 1.00 [0.80 1.24] ¹
				ed b	OR: 1.09 [0.82 1.45] ²
				у сор	Number of deployments



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			BMJ Open		/bmjopen-2021-0	
					en-2	
					021-	
			T		-0496	OR: 0.74 [0.65 0.84] ²
	Name: FDNY-	<u>n</u> =5,656	Exposure assessment:	Type of symptoms:	Univariate (model	Age
	WTC-MMP	<u></u>	Demographic and	Probable PTSD	1) and multivariate	20-29 years
		Country= USA	retirement from	110000161100	adjusting for all	OR: Ref
	Design:	<u> </u>	employee databases, all	Way of assessment:	other exposures	30-39 years
	Prospective	%Female= 0%	other information from	Self-reported using	that congributed	OR: 1.0 [0.8 1.3] ¹
	longitudinal with		self-reports.	PTSD checklist (PCL-m)	statistically	40-49 years
	baseline	Age= -	'	, ,	significant in the	OR: 1.0 [0.8 1.3] ¹
	measurement		Year of assessment:	Incidence:16%	univaria te model	<u>50-59 years</u>
	within 6 months	Type of job/company=	2001		(model 🛐).	OR: 0.6 [0.4 1.1] ¹
	from the disaster.	New York fire				<u>60+ years</u>
		department rescue	Exposure categories: -		ade	OR: -
	Follow-up period:	workers who were			94	Continuous
	2.9 years	involved in the 9/11 WTC			rom	OR: 0.98 [0.97 1.00] ²
		disaster			n ht	
					tp://	Education
		Inclusion/exclusion= Fire			/bm	High School
		fighters who retired	10.) Jop	OR: Ref
		during the study, who			e n	Some College
		arrived at the disaster			bm	OR: 1.1 [0.9 1.3] ¹
		site >14 days after the		\mathcal{O}_{I}	j.cc	College
		recue, and females;)m	OR: 1.1 [0.9 1.3] ¹
		firefighters			9 S	Post-College
				()4	₽p	OR: 1.2 [0.8 1.8] ¹
					<u> </u>	Living with a partner
					,œ	Yes
				•	202	OR: Ref
					4 0	No. No.
) y g	OR: 1.06 [0.89 1.27] ¹
					ueg	O.W. 2.00 [0.03 2.27]
						Arrival Group
					rot	Morning of 9/11
					ect	OR: 4.8 [3.0 7.5] ¹
					ed	OR: 2.0 [1.3 2.9] ²
Berning	ger,				lloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyri	Afternoon of 9/11
2010 22					COP	OR: 2.3 [1.5 3.5] ¹



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021-049651 on 2	
Name: Army STARSS study 1	Yes OR: 1.4 [1.2 1.6]¹ No OR: Ref Duration of work at WTC site (per month) OR: 1.1 [1.1 1.2]² Reported increase in alcohologram of the probable PTSD OR: 1.3 [1.0 1.7]² Baseline probable PTSD OR: 5.6 [4.4 7.0]² Diversity of Deployment-Related Traumatic Stress Score [0-15] 30-day PTSD OR: 1.15 [1.13 1.16] (AAS) Lifetime PTSD OR: 1.17 [1.16 1.18] (AAS) Cumulative Deployment-Related Traumatic Stress Score [0 60] 30-day PTSD OR: 1.03 [1.03 1.04] (AAS) Lifetime PTSD OR: 1.00 [0.99 1.00] (AAS) Diversity of Lifetime Traumatic Stress Score 30-day PTSD OR: 1.14 [1.13 1.16] (AAS) OR: 1.34 [1.30 1.38] (NSS) Lifetime PTSD OR: 1.16 [1.15 1.17] (AAS)

			BMJ Open		bmjopen-	Pag
	Name: Defense Medical Surveillance System (DMSS) Design: Prospective longitudinal Follow-up period: 36 months post-	n= 2,020,340 (Iraq/Afghanistan) and 529,609 (Korea/Japan) Country= USA %Female= - Age= - Type of job/company=	Exposure assessment: Deployment administration Year of assessment: 2003-2014 Exposure categories: Iraq/Afghanistan vs Korea/Japan, and occupation. Also other	Type of symptoms: PTSD Way of assessment: Diagnosis using ICD-9 criteria. Incidence: -	bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18,	Cumulative Lifetime Traumatic Stress Score 30-day PTSD OR: 1.02 [1.02 1.03] (AAS) OR: 0.99 [0.98 1.01] (NSS) Lifetime PTSD OR: 1.02 [1.01 1.02] (AAS) OR: 1.00 [0.99 1.01] (NSS) There were 4.85 diagnoses per 100 deployments among those who served in Iraq/Afghanistan, this was 1.04 among those who went to Japan/Korea (with a 4.66 ratio between the two groups). Diagnosis per 100 deployments were highest
 6. Brundage, 2015 ²⁴ 7. Cameron, 2019 ²⁵ 	Name: Defence Manpower Data Center (DMDC) Database and Defense Medical	Individuals who served in army, air force, navy and marine. Those who were deployed in Iraq and Afghanistan were compared with a reference group who returned from assignments in Korea and Japan. Inclusion/exclusion= - n= 1.35 million Country = USA %Female= 12%	factors were assessed but where not considered for this review. Exposure assessment: Deployment administration Year of assessment:	Type of symptoms: PTSD Way of assessment: Data from the	Unadjusted (model 1) and applies the model other (model by	among combat specific (5.62) and health care (8.52) occupations who went to Iraq/Afghanistan, compared to others (4.17). Sex Female RR: 1.65 [1.54 1.77] ¹ RR: 1.92 [1.84 2.00] ² Male

27		BMJ Open		/bmjopen-2	
Syster Design Retro:	eillance em (DMSS) Age = - Type of job/company = Active duty service tudinal members between 1999 and 2008.	1999-2008 Exposure categories: Rank and service type.	Defence Medical Surveillance System (DMSS), with ICD-9- CM coded diagnoses, were used. Incidence: 52,771	2021-049651 on 25 August 2	RR: Ref. RR: Ref. Age < 20 RR: Ref. RR: Ref. RR: Ref.
Follov -	w-up period: Inclusion/exclusion= -	Perter,	incident cases (~4%)	/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyrig	RR: 1.41 [1.25 1.60] ¹ RR: 1.36 [1.27 1.46] ² 25–29 RR: 1.36 [1.20 1.54] ¹ RR: 1.52 [1.41 1.65] ² 30–34 RR: 1.00 [0.87 1.15] ¹ RR: 1.37 [1.25 1.50] ² 35–39 RR: 0.88 [0.76 1.02] ¹ RR: 1.37 [1.24 1.52] ² > 39 RR: 0.93 [0.80 1.08] ¹ RR: 1.68 [1.51 1.87] ² Race Black RR: Ref. RR: Ref. Qther RR: 1.32 [1.18 1.47] ¹ RR: 1.45 [1.36 1.54] ² White RR: 1.35 [1.25 1.47] ¹ RR: 1.58 [1.51 1.66] ² Marital Status Married RR: 1.13 [1.06 1.20] ¹

8. Ciliu, 2011 26	pension database	<u>II</u> = 1,915	Exposure assessment: Deployment	PTSD symptoms	1) and Ajusted for	morning of 9/11
8. Chiu, 2011	Name: FDNY	<u>n</u> = 1,915	Evnosuro assessment:	Type of symptoms:	Unadjusted (model	RR: 1.51 [1.41 1.61] ² Exposure group
					cteo	RR: 1.38 [1.25 1.52] ¹
					rote	Navy
					:· _D	RR: 2.92 [2.73 3.12] ²
					Jest	RR: 2.90 [2.63 3.19] ¹
					y 9c	<u>Marines</u>
					4 b	RR: 3.80 [3.59 4.02] ²
				·	202	RR: 3.80 [3.50 4.12] ¹
					18,	RR: Ref. <u>Army</u>
					oril	RR: Ref.
					n Ar	Air Force
) v	Service
					com	
					j.	RR: Ref.
					en.b	RR: Ref.
			10		jope	RR: 1.17 [1.00 1.36] ² 04-09
					//bm	RR: 1.08 [0.84 1.38] ¹
					ttp:/	<u>01-03</u>
		Forpo	Y 0		т В	RR: 3.42 [3.02 3.89] ²
					fro	RR: 3.02 [2.47 3.70] ¹
		- / h			īd ed	RR: 4.93 [4.31 5.63] ² <u>E5-E9</u>
		Uh			าloa	RR: 3.90 [3.19 4.77] ¹
					owr	<u>E1-E4</u>
					1. D	Rank
					202	Title Note
					-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protectec	RR: Ref.
					\ugu	Single RR: Ref.
					25 A	RR: 1.72 [1.59 1.86] ²
					On N	RR: 1.59 [1.40 1.80] ¹
					551	<u>Other</u>
					196	RR: 1.38 [1.32 1.44] ²

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					1-2021-04	
		Country= USA	administration		all remaining	OR: 4.9 [3.0 7.9] ¹
	Design:			Way of assessment:	exposures in the	OR: 4.0 [2.5 6.6] ²
	Prospective	<u>%Female</u> = 0%	Year of assessment:	Self-reported using	model (model 2).	afternoon of 9/11
	longitudinal		2001	the PTSD checklist	25	OR: 2.4 [1.5 3.7] ¹
		Age= 47.0 (6.9) years		(PCL-17), using a cut-	Au	OR: 2.1 [1.3 3.3] ²
	Follow-up period:		Exposure categories:	off >= 39 (range 17-	gus	<u>day 2</u>
	4 years post-	Type of job/company=	Retirement status, rank,	85).	2	OR: 1.7 [1.0 2.8] ¹
	attack.	New York fire	and exposure.		021	OR: 1.4 [0.9 2.4] ²
		department firefighters		Incidence: 22%		day 3 to day 14
		who were involved in the			o w	OR: Ref.
		9/11 WTC attacks.			n ola	OR: Ref.
					ade	
		Inclusion/exclusion= Fire			ed :	Retirement status
		marshals, females, those			ron	<u>Disability</u>
		who retired due to			<u> </u>	OR: 1.9 [1.5 2.4] ¹
		mental health disability			t t p:	OR: 1.7 [1.4 2.2] ²
		and those who did not	- / h		//br	Non-disability
		first arrive at the disaster			nj _o	OR: Ref.
		site were excluded.			pen.	OR: Ref.
				O ,	2). el ob 0E/25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, mo	AUDIT score
				V1/1.	Com	≥8
					0	OR: 2.0 [1.5 2.5] ¹
					n ▶	OR: 1.9 [1.5 2.4] ²
					pri	<u><8</u>
					1 18	OR: Ref.
					202	OR: Ref.
					2024 by guest.	Age on 9/11 [in years]
					9 9	<u><55</u>
					Jes	OR: 2.0 [1.4 3.0] ¹
					*	OR: 1.5 [1.0 3.0] ²
					rot	<u>≥55</u>
					ect	OR: Ref.
					e d	OR: Ref.
					by	
					Protected by copyric	Age on 9/11 - in years
	L	•	•	ı	<u> </u>	

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					1-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Pro	Continuous OR: 1.0 [1.0 1.0] ¹
					1 25	Marital status
					Aug	<u>Married</u>
					Just	OR: 0.8 [0.6 1.2] ¹
					20	Living with a partner
					21	OR: 1.1 [0.6 2.1] ¹ <u>Never married</u>
					Do	OR: 0.9 [0.5 1.6] ¹
					vnlo	Separated/widowed/divorced
					bade	OR: Ref.
)d ±	
					m on	Marital status change since
			NA		http	9/11 Status change
		FO _F O ₆	1 k		o://br	OR: 1.3 [0.9 1.9] ¹
					njo	No change
				•	pen	OR: Ref.
					.bm	Bussiana musfassian
				C 1.	j.co	Previous profession No other profession
					m/	OR: 1.2 [0.9 1.4] ¹
					on /	Other professions
				UA	. ↓ pri	OR: Ref.
					1 18	
					20	Rank
)24	Chiefs
					by .	OR: 0.5 [0.3 0.9] ¹
					gue	Captains and lieutenants OR: 0.8 [0.6 1.0] ¹
					st.	Firefighters
					Prot	OR: Ref.
	Name: VU	<u>n</u> = 375	Exposure assessment:	Type of symptoms:	Multivanate models	Age in years
	Cooperative		Self-reported	PTSD	adjusting for all	OR: 1.04 [0.99 1.09]
9. Ciarleglio,	Studies Program	<u>Country</u> = USA			other exposures.	
2018 27	Study, combined		Year of assessment:	Way of assessment:	<u>р</u>	Gender
					=3.	

7			BMJ Open		ɔmjopen	
	with data from Neurocognition Deployment Health Study (NDHS). Design:	%Female = 5% Age = 35.1 (5.9) years Type of job/company = Army soldiers who were deployed in Iraq	2003-2005 Exposure categories: Deployment history and stress exposure.	Using a clinically administered PTSD scale. Incidence: 24% (prevalence)	en-2021-049651 on 25 August	Male OR: Ref. Female OR: 0.31 [0.07 1.53] Number of deployments Single deployment
	Retrospective longitudinal Follow-up period: Between 5.7 months (baseline) and 7.5 months post-deployment (long-term follow-up).	Inclusion/exclusion= -	Perter,		/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyright.	OR: Ref. Multiple deployments OR: 0.83 [0.27 2.57] Months since most recent deployment OR: 1.00 [0.98 1.02] Composite emotional health factor post-deployment OR: 1.09 [0.79 1.50]
				en on	.bmj.com/ on April 18, 2024 by gu	Mental health treatment received post-deployment No OR: Ref. Yes OR: 4.12 [2.18 7.80] Early life events summary score OR: 0.92 [0.84 1.00]
					uest. Protected by copyrig	Combat and post-battle experiences OR: 0.99 [0.95 1.03] Deployment concerns summary score OR: 1.01 [0.98 1.04]

			BMJ Open		/bmjopen-20	Pag
10. Cone, 2015	Name: World Trade Center Health Registry Design: Prospective longitudinal Follow-up period: 10 years	n= 2,204 Country= USA %Female= 13% Age= 38 (median) Type of job/company= Police responders to the 9/11 WTC attacks Inclusion/exclusion= Those with at least one shift at the disaster site, those without pre-9/11 PTSD and with follow-up measurements.	Exposure assessment: Self-reported Year of assessment: 2001 Exposure categories: Demographic, injury, stressors, life threatening event, support.	Type of symptoms: Probable PTSD Way of assessment: Self-reported using a combination of the PCL checklist and DSM-4 criteria. Incidence: 11% (prevalence)	all s. for our complete process of the second strip of the second	Life and family concerns OR: 0.99 [0.94 1.03] Post-deployment life events summary score OR: 1.07 [0.96 1.19] Post-war-zone social support OR: 0.92 [0.89 0.95] Age group at 9/11 18-44 OR: Ref. 45-69 OR: 0.6 [0.3 1.3] Gender Male OR: Ref. Female OR: 1.3 [0.7 2.5] Hispanic No OR: Ref. Yes OR: 1.2 [0.7 2.0] Household gross income at wave 3 ≥75K OR: Ref. <75K OR: Ref. <75K OR: 2.0 [1.2 3.4] Having social support
28					l	All of the time

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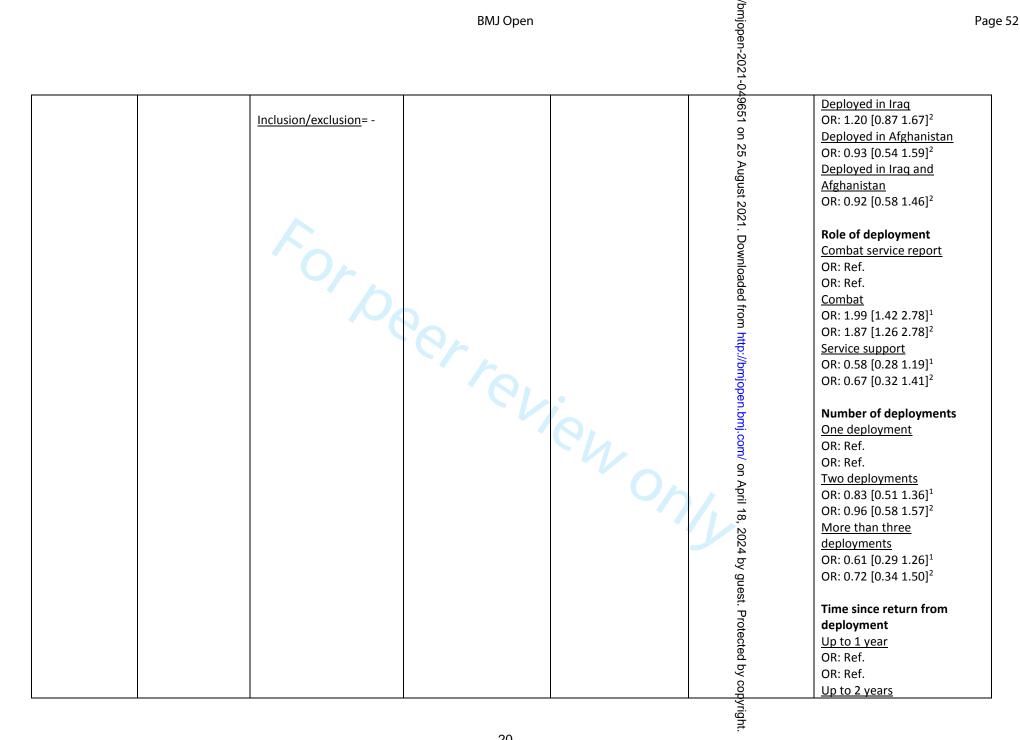
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			BMJ Open		/bmjopen-20:	Pag
					21-049651	OR: 3.3 [1.9 5.6]
		FOLDE			/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://b	Number of injuries sustained during the 9/11 attacks None OR: Ref. One OR: 1.1 [0.6 2.0] Two or more OR: 1.4 [0.6 3.4] Report of unmet mental health care needs at wave 3
			19/ h		http://br	OR: Ref. <u>Yes</u> OR: 9.5 [5.3 16.9]
	Name: National Comorbidity Survey	<u>n</u> = 217 exposed and 2,110 unexposed.	Exposure assessment: Self-reported	Type of symptoms: PTSD (according to DSM-4 criteria)	Univariate and multivariate analysesadjusting	Exposure No exposure OR: Ref
	Replication (NCS-R)	<u>Country</u> =USA <u>%Female</u> = 0%	Year of assessment: 2001-2002	Way of assessment: Self-reported (no	for age of exposure, age of of set diagnoses, race	Exposure to peacekeeping/relieve work
	<u>Design:</u> Retrospective longitudinal	Age= 55.0(0.9) for exposed workers, 43.8	Exposure categories: Participants who were exposed to combat and	specific questionnaire mentioned)	on April 18,	and combat OR: 11.2 [2.9 43.2]
	Follow-up period:	(0.9) for non-exposed workers	peacekeeping/relieve work or combat only vs non-exposed	Incidence: 29/(217+2110)=1%	8, 2024 by	Exposure to combat only OR: 7.3 [3.3 15.8]
		Type of job/company= Participants employed in combat or service as	participants.		2024 by guest. Protected by copyrig	According to the authors the results remained the same in multivariate analyses (data
44. 6-11		peacekeeper or relief worker.			otected by	not reported)
11. Connorton, 2011 ²⁹		Inclusion/exclusion= Females were excluded			у соруг	

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	Name: Weill	<u>n</u> = 2,960	Exposure assessment:	Type of symptoms:	Adjusting for	Occupational exposure
	Cornell 9/11		Self-reported	PTSD	baseline TSD and	<u>No</u>
	Screening	<u>Country</u> = USA			demographic	OR: Ref.
	Program		Year of assessment:	Way of assessment:	variables	<u>Yes</u>
		<u>%Female</u> = -	2002-2004	Using the CAPS) Ag	OR: 1.31 [1.13 1.51]
	Design:			standardized clinical	gus	
	Prospective	<u>Age</u> = -	Exposure categories:	interview and using	2	
	longitudinal		Occupational exposure	the PCL-C	August 2021. Downloaded from http://bmjopen.bmj.cc	
		Type of job/company=		questionnaire using		
	Follow-up period:	9/11 WTC disaster		DSM-4 criteria. CAPS	W	
	Up to 4 years.	recovery workers.		data were used for	nlo	
				exposure-outcome	ade	
		Inclusion/exclusion= -		assessment.	d 1	
					ron	
				Incidence: 9%, 5% and) H	
				2% had probable self-	₽ ₽	
			Crro	reported PTSD at T1,	//br	
			10.	T2 and T3,	njo	
				respectively. 15%, 8%	per	
				and 6% had diagnosed	n.br	
12. Cukor, 2011				PTSD at T1, T2 and T3,	nj.c	
30				respectively.	Ř	
	Name: HERRICK	<u>n</u> = 3600	Exposure assessment:	Type of symptoms:	Unadjusted (model	Deployment
	cohort (and other		Deployment	PTSD symptoms	1) and adjusted for	Not deployed
	samples)	<u>Country</u> = UK	administration		age, sex <mark>≧</mark> marital	OR: Ref.
				Way of assessment:	status, education	OR: Ref.
	<u>Design:</u>	<u>%Female</u> = -	Year of assessment:	Self-reporting using	and rank (model 2)	<u>Regulars</u>
	Prospective		2003	the PCL-C	024	OR: 1.03 [0.79 1.36] ¹
	longitudinal	<u>Age</u> = -		questionnaire.	by	OR: 1.13 [0.82 1.54] ²
			Exposure categories:		ng '	<u>Reservists</u>
	Follow-up period:	Type of job/company=	Deployment, rank,	<u>Incidence</u> : 4%	lest	OR: 2.90 [1.37 6.12] ¹
	-	Armed forces who were	number of deployments		יי ס	OR: 2.83 [1.23 6.51] ²
		deployed in Iraq and	and time since		rote	
		Afghanistan, who were	deployment.		024 by guest. Protected by copyri	Location of deployment
		compared to armed			be to	Not deployed in
13. Fear, 2010		forces who were not			у с	<u>Iraq/Afghanistan</u>
31		deployed.			ا م	OR: Ref.



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					ò	
					1 96	OR: 1.19 [0.76 1.86] ¹
					1-049651	OR: 1.18 [0.75 1.86] ²
					o _n	Up to 3 years
					25	OR: 1.95 [1.16 3.27] ¹
					≥ ≥	OR: 1.80 [1.05 3.10] ²
					on 25 August 2021. Downloaded fro	Up to 4 years
					īst :	OR: 1.98 [1.08 3.65] ¹
					202	OR: 1.88 [0.98 3.62] ²
					: -	Up to 5 years
					Do	OR: 1.59 [0.99 2.57] ¹
					<u>\$</u>	OR: 1.53 [0.92 2.57] OR: 1.53 [0.92 2.55] ²
					oa	
					dec	Up to 6.5 years
					d fr	OR: 1.79 [0.98 3.26] ¹
	1	120		- .		OR: 1.89 [0.99 3.60] ²
	Name: -	<u>n</u> = 120	Exposure assessment:	Type of symptoms:	Unadjusted	Combat exposure scale [1 5]
			Self-reported.	PTSD symptoms	þ://	OR: 1.98 [1.50, 2,62]
	Design:	<u>Country</u> = Portugal			m bm	
	Retrospective		Year of assessment: -	Way of assessment:	jop	Sense of coherence
	longitudinal	<u>%Female</u> = 0%		Self-reported using	en.	OR: -5.08 [-3.32, -7.78]
	1		Exposure categories:	the Impact of Event	bm	
	Follow-up period:	<u>Age</u> = 64 [59-72]	Combat exposure,	Scale Revised (with a	j.co	Observation of abusive
	-		abusive violence, sense	cut-off score: >=33)) M	violence
		Type of job/company=	of coherence.		o _r	<u>No</u>
		Colonial war veterans		Incidence: 41%	<u>≯</u>	OR: Ref.
				(prevalence)) Pri	<u>Yes</u>
		Inclusion/exclusion=			18,	OR: 8.36 [4.56, 15.35]
		Participants who			20	
		received psychiatric and			024	Participation in abusive
		psychological treatment			by	violence
		during the last 5 years,			p://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected	<u>No</u>
		and no history of			est	OR: Ref.
		traumatic brain injury,			יי. ס	<u>Yes</u>
		neurological disorders or			rote	OR: 3.32 [1.81, 6.08]
14. Ferrajao,		physical disability were			ecte	
2016 ³²		included.			<u> </u>	
15. Fichera,	Name: -	<u>n</u> = 383	Exposure assessment:	Type of symptoms:	Adjusting for all	Number of robberies during
					<u>6</u>	

					-02	
2015 33			Self-reported	PTSD	other exposures	working life
	Design:	Country= Italy	(questionnaires and		(model 🖺, when	OR: 1.25 [1.07 1.44] ¹
	Prospective		interviews)	Way of assessment:	addition fally	OR: 1.15 [0.97 1.36] ²
	longitudinal, with	<u>%Female</u> = 52%		Self-reported using	adjusting for	OR: 1.27 [1.07 1.51] ³
	baseline 7-15		Year of assessment:	the Impact of Events	baselin∉PTSD	OR: 1.18 [0.97 1.44] ⁴
	days post-	Age= 43 (9) years	2010-2012	Scale (IES).	(model हू), and the	
	robbery				latter two models in	Gender
		Type of job/company=	Exposure categories:	Incidence: 14%	which random	<u>Males</u>
	Follow-up period:	Employees of a large	Personal characteristics		intercepts were	OR: Ref ¹
	45 days after the	bank who were victims	and characteristics of		adopteæ(model 3	OR: Ref ²
	first session	of robberies.	the robberies		and 4). o	OR: Ref ³
					ade	OR: Ref ⁴
		Inclusion/exclusion=			d f	<u>Females</u>
		Participants who had			ron	OR: 0.63 [0.31 1.29] ¹
		voluntarily joined and) <u> </u>	OR: 0.72 [0.33 1.58] ²
		employer sponsored			₽.	OR: 0.77 [0.34 1.78] ³
		post-robbery support	- h		//br	OR: 0.85 [0.33 2.13] ⁴
		program.	10.		njo	
			Perter		per	Being cashier
					n.br	<u>No</u>
				\mathbf{O}_{i}	<u>n</u> j. c	OR: Ref ¹
					On	OR: Ref ²
					0	OR: Ref ³
					D →	OR: Ref ⁴
				Uh	pri	<u>Yes</u>
					18	OR: 0.52 [0.22 122] ¹
					Ŋ	OR: 0.94 [0.36 2.42] ²
					022	OR: 0.40 [0.14 1.07] ³
					Çd 1	OR: 0.76 [0.25 2.25] ⁴
					, gr	
					les	Physical contacts with
					,	robbers
					rote	<u>No</u>
					ecte	OR: Ref ¹
					ed_	OR: Ref ²
					by a	OR: Ref ³
					ided from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyri	OR: Ref ⁴
-					<u> </u>	

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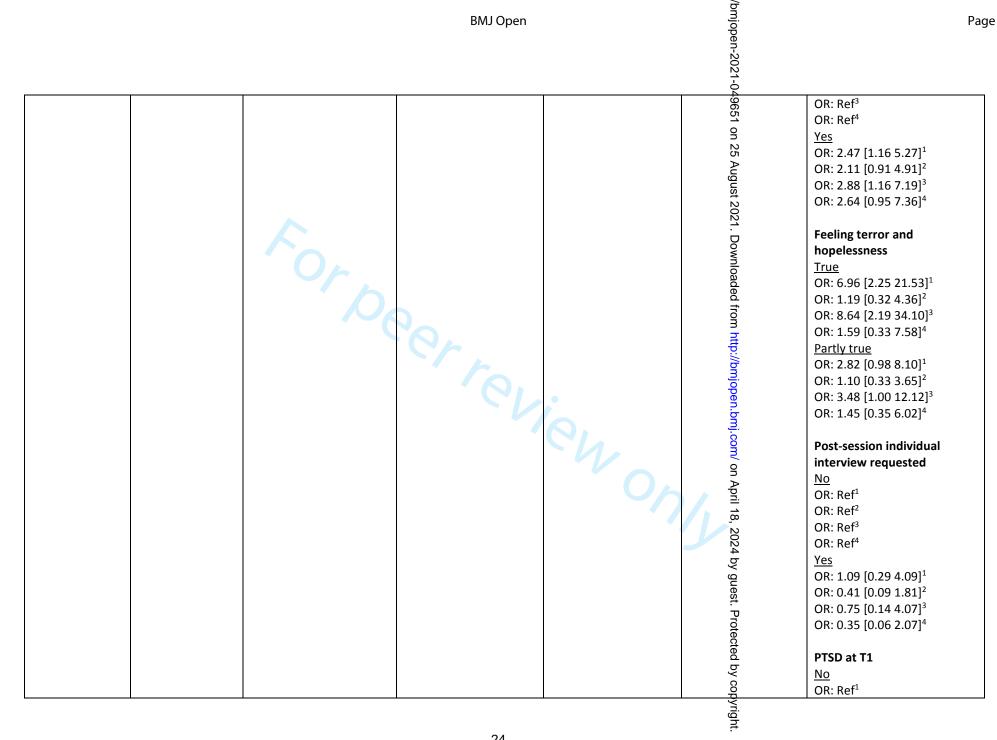
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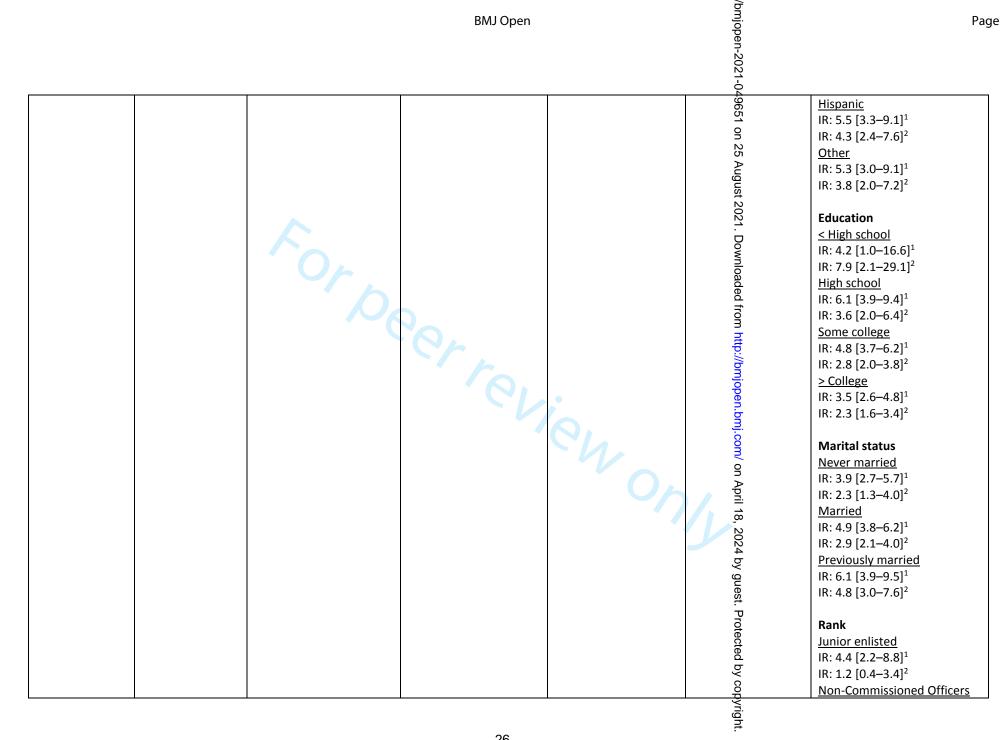
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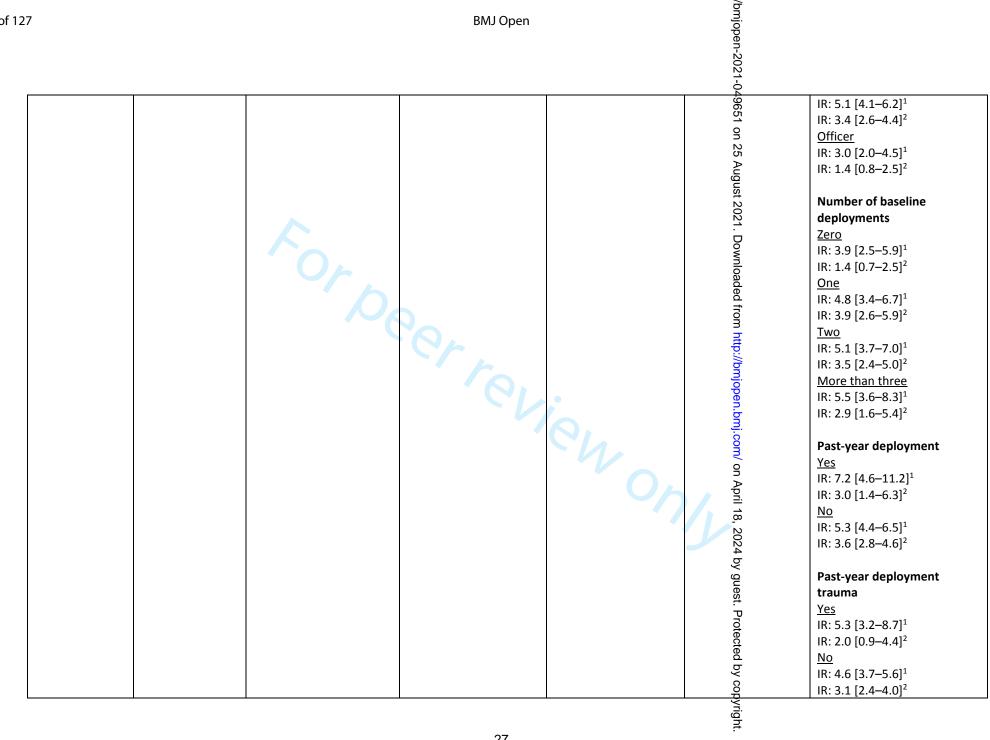
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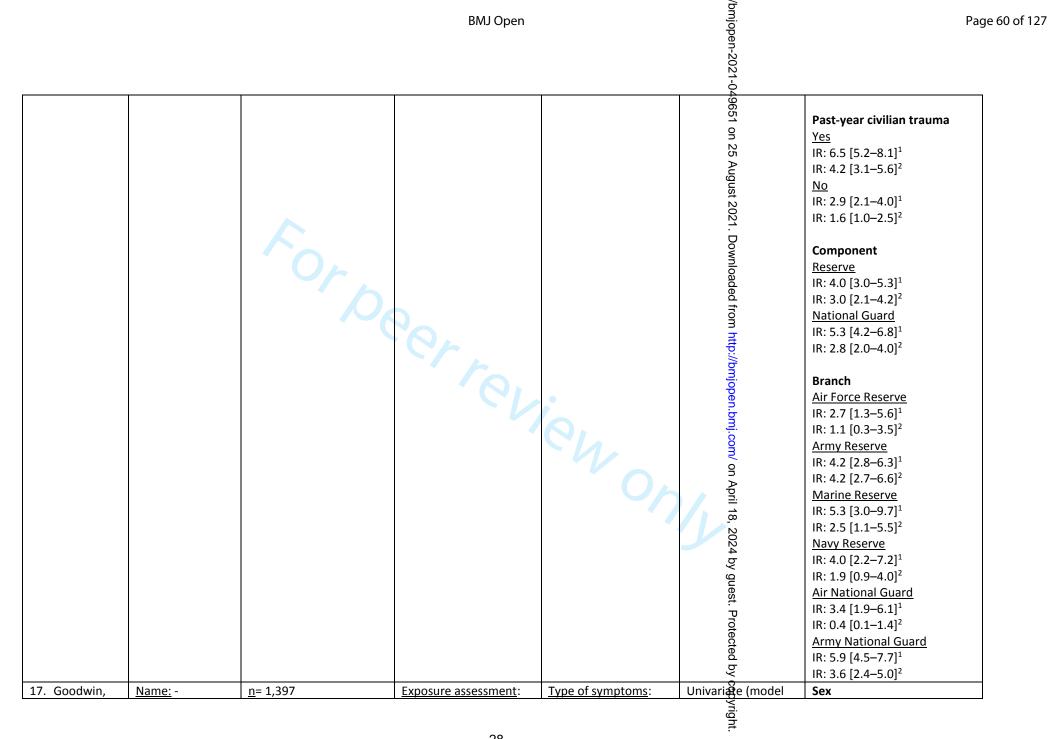
Name: Reserve and National Guard (RNG) study. Name: Reserve and National Guard (RNG) study. Name: Reserve and National Guard (RNG) study. Name: Reserve and National Self-reported					1-0	
Non-Hispanic, black	and National Guard (RNG) study. Design: Prospective longitudinal Follow-up period:	Country= USA %Female= 18% Age= - Type of job/company= Army reservists	Self-reported Year of assessment: 2010 Exposure categories: Personal characteristics, deployment history and	PTSD Way of assessment: Self-reported using the PCL-C checklist, based on DSM-4 criteria. Criteria that sensitive and specific were used leading to two different PTSD definitions. Incidence: 4.7 and 2.9 per 100 person-year for sensitive and specific definition,	using the sensitive (model s) and specific model 2)	OR: Ref ³ OR: Ref ⁴ Yes OR: - OR: 1.11 [1.07 1.15] ² OR: - OR: 1.11 [1.07 1.16] ⁴ Effects in incidence rate (IR) per 100/per-years Age 18-24 years IR: 4.8 [3.0-7.5] ¹ IR: 1.9 [0.8-4.3] ² 25-34 years IR: 4.4 [3.2-6.1] ¹ IR: 2.9 [1.9-4.4] ² >35 years IR: 4.9 [3.8-6.3] ¹ IR: 3.4 [2.5-4.7] ² Sex Male IR: 4.6 [3.8-5.7] ¹ IR: 3.2 [2.5-4.2] ² Female IR: 4.9 [3.2-7.4] ¹ IR: 1.4 [0.7-2.8] ² Race/ethnicity Non-Hispanic, white IR: 4.3 [3.4-5.3] ¹ IR: 2.4 [1.8-3.3] ² Non-Hispanic, black



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27	BMJ Open	/bmjopen-2021-0	
Design: Prospective longitudinal. Follow-up period: 40.3 months (median) Type of job/o Military pers were and we deployed in t Inclusion/exc	Year of assessment: 2004-2006. Exposure categories: Personal characteristics, service, rank and deployment history. May of assessment: Self-reported using the PCL-C checklist. Incidence: 3.5% Incidence: 3.5%	1) and resultivariate (model 2) adjusting for service, rank, deployment characteristics, depression, anxiety, foanic disorder childhood adversity, and general sealth, alcohologisuse, commod mental	Male OR: Ref. Female OR: 1.46 [0.64 3.36]¹ Age <35

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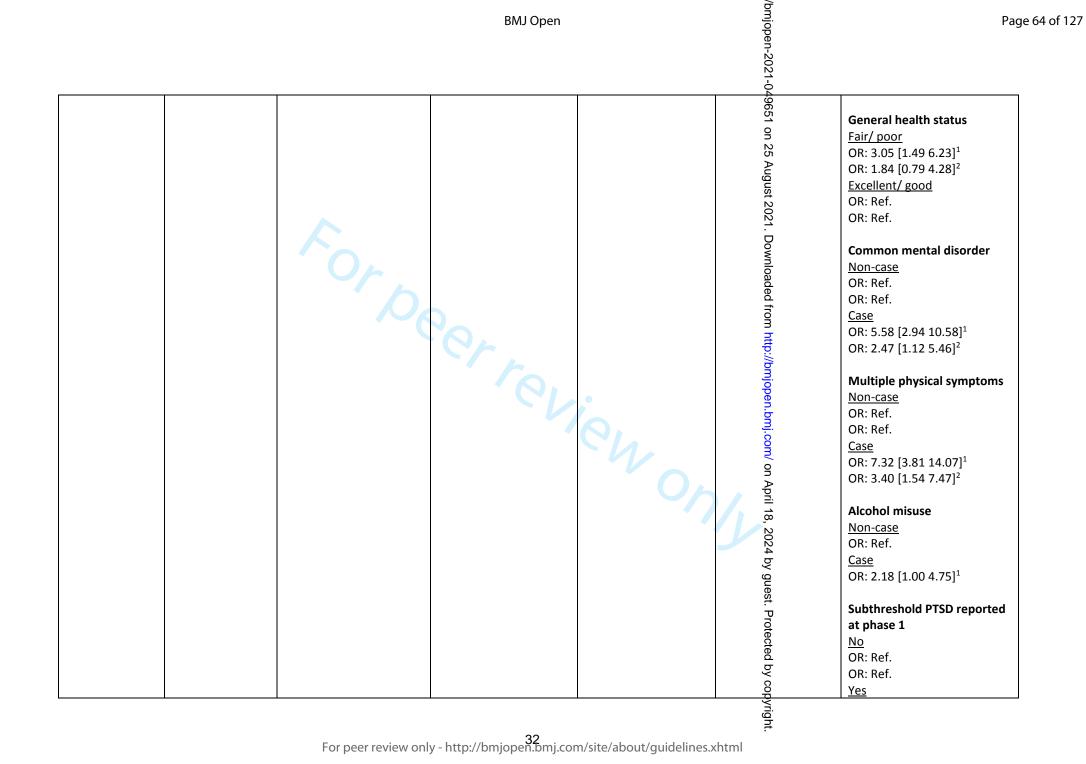
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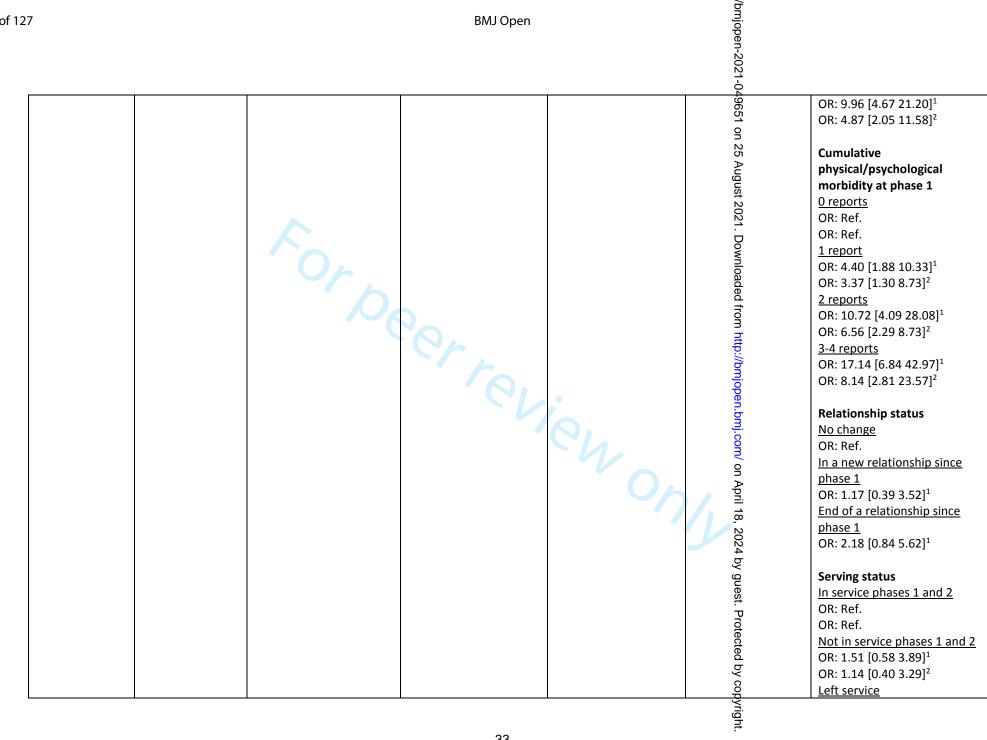
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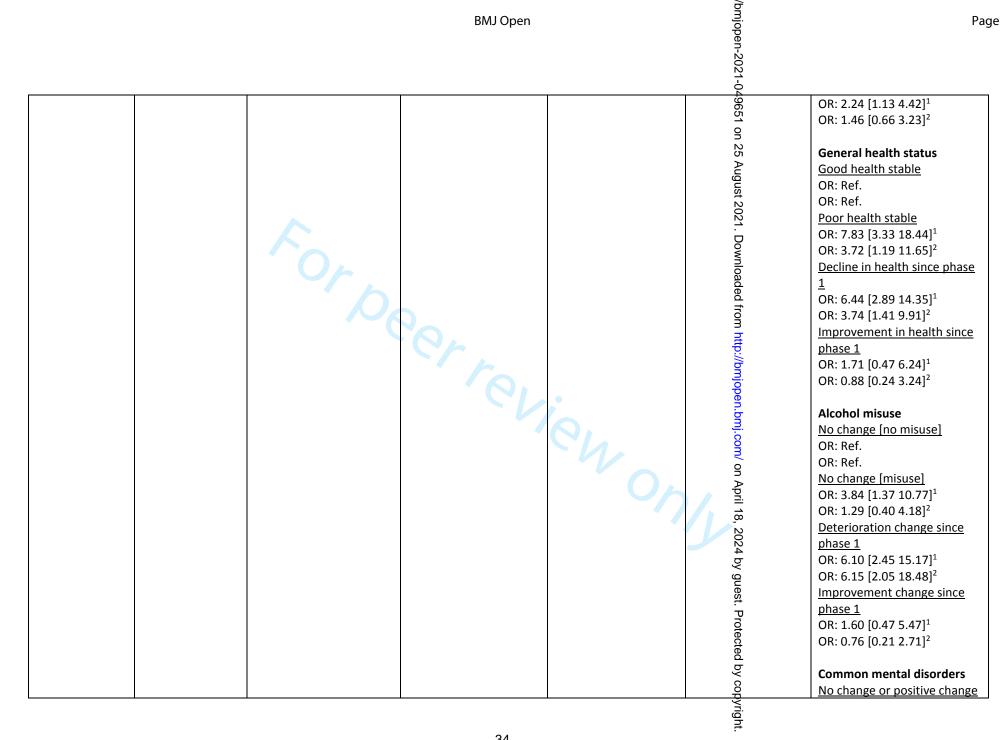
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			BMJ Open		bmjopen-2021-049651 on 25 August 2021. Downloaded from	
					2021-04	
					1965	OR: Ref.
					51 0	OR: Ref.
) S	Negative change since phase
					.55 /	1
					l	OR: 6.29 [3.24 12.21] ¹
					ust	OR: 7.12 [3.07 16.52] ²
					202	Multiple physical symptoms
					-	No change or improvement
					ow W	OR: Ref.
		() 4			'nlo	OR: Ref.
					ade	Decline in health since phase
					ed 1	<u>1</u>
					rom	OR: 9.73 [4.56 20.76] ¹
					<u> </u>	OR: 7.85 [2.86 21.52] ²
	Name: Project	<u>n</u> = 738	Exposure assessment:	Type of symptoms:	Unadjusted	Age
	VALOR		Self-reported	PTSD	/bm	OR: 1.01 [0.81 1.03]
		<u>Country</u> = USA	· · · · · · · · · · · · · · · · · · ·		jop	_
	Design:	0/5-22-1- 540/	Year of assessment: -	Way of assessment:	en.	Race
	Retrospective	<u>%Female</u> = 51%	Functions and annual and	Using a structured	bm	White OR: Ref.
	longitudinal	Ago- 27.7 (0.0) years	Exposure categories:	clinical interview with	000	
	Follow-up period:	<u>Age</u> = 37.7 (9.9) years.	Deployment risk and resilience.	DSM-4 criteria.	Ď	Black OR: 1.83 [0.76 4.41]
	rollow-up periou.	Type of job/company=	resilience.	Incidence: 73% and	9n	Other
	-	Iraq and Afghanistan		68% for females and	Αp	OR: 0.46 [0.19 1.11]
		army and marine corps		males, respectively.	≟:	OK. 0.40 [0.13 1.11]
		veterans.		maies, respectively.	,00 ,N	Combat experiences
		Teterans.			202	OR: 1.03 [1.00 1.07]
		Inclusion/exclusion=			4 b	
		Participants who had			y g	Aftermath of battle
		undergone mental health			ues	OR: 1.03 [1.00 1.06]
		evaluation at a veterans			;	
		facility were included.			rot	Social support
		Participants with			/bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyrig	OR: 0.96 [0.93 0.98]
		probable PTSD and			ed t	
18. Green, 2016		females were			у с	Length of deployment
36		oversampled to get a			бор	OR: 0.97 [0.92 1.03]

			BMJ Open		/bmjopen-2021	Pago
19. Hansen,	Name: Mental Health and Work Environment Factors in the Aftermath of the Oslo Terrorist Attack Design: Prospective longitudinal Follow-up period: 10, 22 and 34 months after the attack	good representation of these groups in the final sample. Only participants with one deployment were included. n= 1,933 Country= Norway %Female= 58% Age= 45.4(10.9) years Type of job/company= Employees of the ministries at the moment of the Oslo terrorist attack. Inclusion/exclusion= -	Exposure assessment: Deployment administration Year of assessment: 2011 Exposure categories: Mental health, exposure, work, perceived safety and psychosocial variables.	Type of symptoms: PTS symptoms Way of assessment: Self-reported using a Norwegian version of the Posttraumatic Stress Disorder Checklist – Specific (PCL-C), using DSM-4 criteria. Incidence: 6%, 4%, and 4% during the three follow-up periods, respectively.	Unadjusted (model 1) and remarks experied and leaders by guest 2021 by guest 2022 by guest 2021 by guest 2022 by g	Deployment phase Insurgency OR: Ref. Invasion OR: 0.38 [0.16 0.91] Surge OR: 0.44 [0.21 0.93] Presence during attack Not present during attack 10 months OR: Ref.¹ OR: Ref.² 22 months OR: Ref.² OR: Ref.² 34 months OR: Ref.² OR: Ref.² OR: Ref.² 34 months OR: Ref.² OR: Ref.² OR: Ref.² OR: Ref.² OR: Ref.² 34 months OR: Ref.²
2017 ³⁷ 20. Harvey, 2012 ³⁸	Name: - Design: Prospective longitudinal	n= 552 in combat group, 391 in control group Country= UK %Female= 17% in	Exposure assessment: Deployment administration Year of assessment: 2003	Type of symptoms: PTSD symptoms (using a cut-off >=50) Way of assessment: 17-item National	Univariate (model 1) and adjusted for gender, age, rank and service (model 2).	OR: 10.0 [5.4 18.6] ² Combat status Control group Short-term OR: Ref OR: Ref Long-term

7			BMJ Open		/bmjopen-2021-0	
	Follow-up period: 16 months and 4.8 year post- deployment	combat group, 19% in control group Age= 39.4(7.9) in combat group, 42.0(8.9) in control group Type of job/company= Military personnel that were and were not	Exposure categories: Combat versus control group	Centre for PTSD Checklist (PCL-C) Incidence: Short term: 2.2% in control group and 6.3% in the combat group. Long- term: 2.0% in the control group and 5.1 in the combat group.	2021-049651 on 25 August 2021. Downloaded	OR: Ref OR: Ref Combat group Short-term OR: 3.01 [1.36 6.64] ¹ OR: 2.91 [1.34 6.31] ² Long-term OR: 2.62 [1.12 6.16] ¹ OR: 2.42 [1.04 5.62] ²
	Name: -	deployed in the Iraq war Inclusion/exclusion= - n= 675	Exposure assessment:	Type of symptoms:	_	64.5% of the participants in
	Design: Prospective longitudinal Follow-up period: 1, 2 and 20 years post-war	Country= Israel %Female= - Age= - Type of job/company= War veterans from the Lebanon war Inclusion/exclusion= -	Self-reported Year of assessment: 1983 Exposure categories: Combat exposure was self-reported.	PTSD, grouped into four groups: no-PTSD, 1983 PTSD, 1984 delayed onset PTSD and 2002 delayed onset PTSD. Way of assessment: Self-reported using the PTSD inventory, using DSM-3 criteria. Incidence: 16.5%	rom http://bmjopen.bmj.com/ on April 18, 2024 by guest.	the 1983 PTSD group reported extreme exposure to danger, compared to 24.5% of the no-PTSD group, 35.8% of the 2002 delayed onset PTSD group and 41.4% of the 1984 delayed onset PTSD group. Whereas 27.9% of the participants in the no-PTSD group reported extreme battles severity, 48.2% of the participants in the 1983 PTSD group reported extreme battles severity. In comparison, 39.6% of the participants in the 2002 delayed onset PTSD group
21. Horesh, 2011 ³⁹ 22. Hourani,	Name: -	<u>n</u> = 2116	Exposure assessment:	Type of symptoms:	st. Protected by cop	and 34.5% of the participants in the 1984 delayed onset PTSD group reported extreme battles severity. Those with PTSD symptoms

			BMJ Open		bmjopen-2021-0	Pa
					021-04	
2012 40	<u>Design:</u> Prospective	<u>Country</u> = USA	Self-reported Year of assessment:	PTSD symptoms Way of assessment:	149651 on 2	also were more likely to report a previous trauma during their lifetime at
	longitudinal	<u>%Female</u> = -	2010	Self-reported using the National Centre	25 Aug	baseline. High combat exposure scale scores were
	Follow-up period: 6 months	<u>Age</u> = -	Exposure categories: Exposures like number	for PTSD Checklist (PCL-C) of the	gust 20	associated with PTSD. Baseline social support was
		<u>Type of job/company</u> = Marines	of deployments and stress were used.	Department of Veterans Affairs –	on 25 August 2021. Downloaded from http://b	associated with PTSD.
		Inclusion/exclusion=		Civilian Version.	ownloa	
		Participants who transitioned from active		Incidence: Baseline prevalence 28%,	aded fr	
		military duty to civilian life were for a minimum	20	follow-up incidence 10%	rd mo	
		of 2 months were included.	C/F		ttp://br	
	Name: Fukushima	<u>n</u> = 1,417	Exposure assessment:	Type of symptoms:	Adjusted for age,	Experience of life-
	Nuclear Energy		Self-reported	PTSD symptoms (using	gender and job	threatening danger
	Worker's Support	<u>Country</u> = Japan		a cut-off >=25)	location	<u>No</u>
	(NEWS) Project.		Year of assessment:	\sim	بر O.زر	OR: Ref. (2011)
		<u>%Female</u> = 5%	2011	Way of assessment:	o m	OR: Ref. (2012)
	<u>Design:</u>			Self-reported using	or	OR: Ref. (2013)
	Prospective	<u>Age</u> = 39.3 years	Exposure categories:	the Japanese version	≥	OR: Ref. (2014)
	longitudinal		Sociodemographic,	of the Impact of Event	or <u>i</u>	<u>Yes</u>
		Type of job/company=	disaster-related	Scale-Revisited (IES-R),	nj.com/ on April 18,	OR: 4.32 [2.89 6.48] (2011)
	Follow-up period:	Employers of the Tokyo	experiences and	using DSM-4 criteria.	20	OR: 3.47 [2.43 4.95] (2012)
	Baseline at 2-3	Electric Power Company	psychological distress.		24	OR: 2.78 [1.87 4.14] (2013)
	months post-	in Fukushima.		Incidence: 26%	by	OR: 2.23 [1.34 3.72] (2014)
	disaster, with follow-up 3 years	Inclusion/exclusion= -			2024 by guest. Protected by copyrig	Major property loss
	after that.					<u>No</u>
					Ote	OR: Ref. (2011)
					cte	OR: Ref. (2012)
					D D	OR: Ref. (2013)
23. Ikeda, 2017) V C	OR: Ref. (2014)
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	1- ₀	
Name: - Design: Country= USA Retrospective longitudinal - Follow-up period: - Type of symptoms: Self-reported Year of assessment: Exposure at sessment: Exposure categories: Personal characteristics, and exposure at work. Type of symptoms and diagnosed PTSD - on diagnosed PTSD on diagnosed PTSD was extracted for this review) Type of iob/company= Traumatic surgeons Inclusion/exclusion = Inclusion/exclusion = 24. Joseph, 2014 42	all othemexposure (model micom/ on April 18	No OR: Ref. (2011) Yes OR: 1.60 [0.80 3.19] (2011) Colleague deaths No OR: Ref. (2011) Yes OR: 2.08 [1.33 3.26] (2011) Home evacuation No OR: Ref. (2011) Yes OR: 1.49 [1.03 2.15] (2011) Age <51 years OR: Ref.² ≥51 years OR: 1.8 [0.7 3.4]¹ Gender Female OR: Ref.² Male OR: 2.1 [1.4 4.6]¹ OR: 1.8 [0.9 5.3]² Marital status Other OR: Ref.¹ Single OR: 1.2 [0.4 2.8]¹

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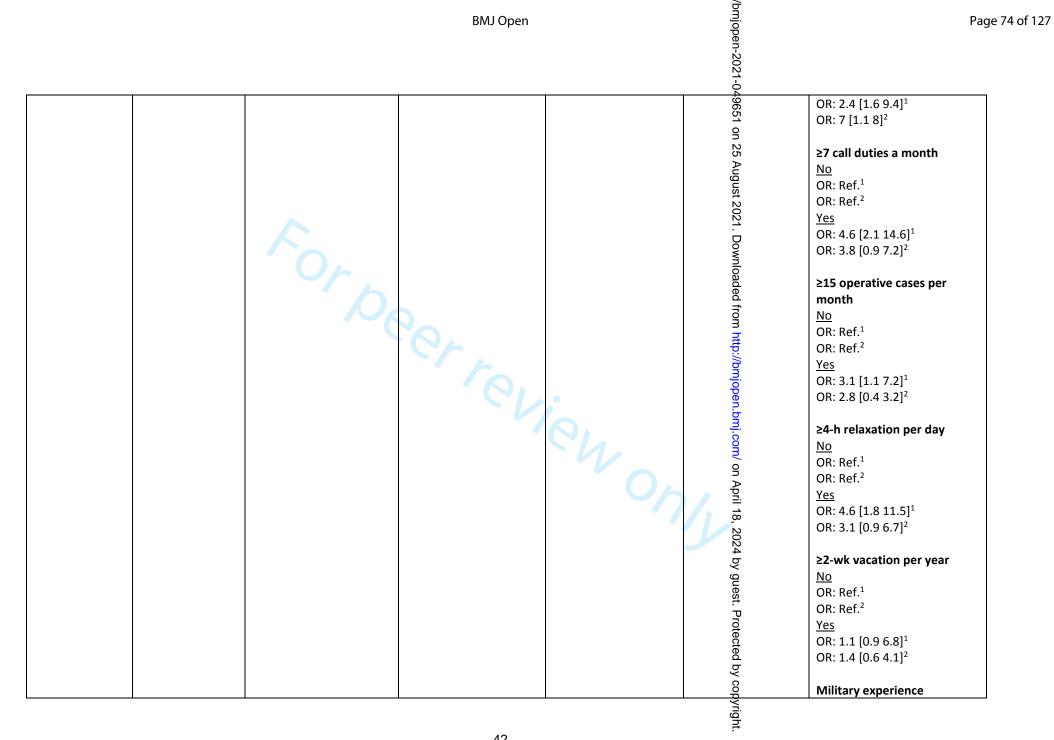
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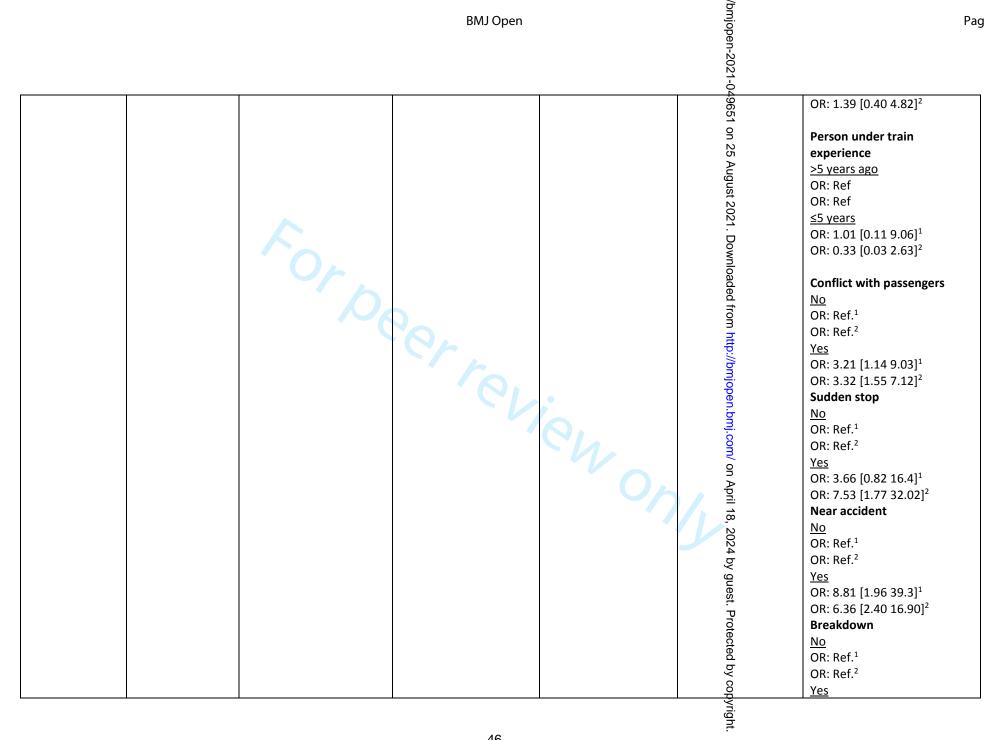
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BMJ Open

			BMJ Open		/bmjopen-2021-0	Pa
					2021-02	
		Country= Israel		the PTSD inventory,	49651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest.	
	Follow-up period:		Exposure categories:	using DSM-3 criteria.	51	Life threatening war
	1, 2 and 20 years	<u>%Female</u> = 0%	Exposures such as the	Latent growth	on .	OR: 1.90 [1.08 3.35] (combat
	post-war.		severity of battles, life	modelling was used to	25 ,	stress reaction)
		<u>Age</u> = 25.8(4.7)	threatening war, unit	identify PTSD	Aug	OR: 0.95 [0.64 1.43] (no
			atmosphere and social	subgroups. For the	snƙ	combat stress reaction)
		Type of job/company=	support were assessed.	current review we	t 20	
		Combat veterans who		only assessed the	021	Unit atmosphere
		were on active duty in		'delayed onset' PTSD		OR: 1.08 [1.00 1.17] (combat
		the Lebanon war.		group, as this reflects	OW	stress reaction)
				incidence of PTSD.		OR: 1.02 [0.96 1.09] (no
		Inclusion/exclusion= -			ade	combat stress reaction)
				<u>Incidence</u> : -	ă Ť	
					rom	Social support
					h H	OR: 0.58 [0.25 1.31] (combat
					tp:/	stress reaction)
					/bm	OR: 0.66 [0.29 1.53] (no
			/ ()		Jjog	combat stress reaction)
	Name: -	<u>n</u> = 675 (369 who were	Exposure assessment:	Type of symptoms:	- en	Severity of battles
		diagnosed with a combat	Self-reported	PTSD	.bn	OR: 1.01 [0.67 1.35] (combat
	<u>Design:</u>	stress reaction and 306		\sim .	بر م.زد	stress reaction)
	Prospective	without)	Year of assessment:	Way of assessment:	o m	OR: 0.87 [0.57 1.32] (no
	longitudinal		1983	Self-reported using	or O	combat stress reaction)
		<u>Country</u> = Israel		the PTSD inventory,	> ≥	
	Follow-up period:		Exposure categories:	using DSM-3 criteria.	pr <u>ii</u>	Life threatening war
	1, 2 and 20 years	%Female= 0%	Exposures such as the	Latent growth	18	OR: 1.91 [1.07 3.24] (combat
	post-war.		severity of battles, life	modelling was used to	, 20	stress reaction)
		<u>Age</u> = 25.8(4.7)	threatening war, coping	identify PTSD)24	OR: 1.01 [0.68 1.50] (no
			were assessed.	subgroups. For the	by	combat stress reaction)
		Type of job/company=		current review we	gu	
		Combat veterans who		only assessed the	est	Locus of control
		were on active duty in		'delayed onset' PTSD		OR: 1.12 [0.93 1.35] (combat
		the Lebanon war.		group, as this reflects	ote	stress reaction)
				incidence of PTSD.	cte	OR: 0.88 [0.73 1.05] (no
		Inclusion/exclusion= -) b	combat stress reaction)
26. Karstoft,				<u>Incidence</u> : -	Protected by copyri	
2015 44					l ŏp	Problem-focused coping

/bmjopen-2021

					Ó	
					1-049651	OR: 1.72 [0.80 3.73] (combat stress reaction)
						OR: 3.11 [1.16 8.38] (no
					20	combat stress reaction)
					≥ ≥	compact stress reaction,
					on 25 August 2021.	Emotion-focused coping
					<u>s</u>	OR: 0.60 [0.26–1.35] (combar
					202	stress reaction)
						OR: 0.28 [0.09–0.93] (no
					Do	combat stress reaction)
	Name: -	n= 980	Exposure assessment:	Type of symptoms:	Multi-variate	Person under train
	<u>ivaille.</u> -	11- 980	·		analyses with all	experience
	Dosigna	Country - Koron	Self-reported	PTSD (1 year and	other exposures	I -
	Design:	<u>Country</u> = Korea	V	lifetime prevalence).		No OR: Ref
	Retrospective	0/5	Year of assessment: -	\\\	and age For 1 year	
	longitudinal	<u>%Female</u> = 0%	<u>, [</u> X]	Way of assessment:	prevalence (model	OR: Ref
			Exposure categories:	The Korean version of	1) and lifetime	Yes
	Follow-up period:	Age= Most participants	Person under train	the Composite	prevalence (model	OR: 1.54 [0.52 4.55] ¹
	-	were in their 40s.	experiences and other	International	2).	OR: 2.06 [0.94 4.55] ²
			work-related exposures	Diagnostic Interview	oen .	
		Type of job/company=	were assessed.	(K-CIDI) was	.bn	Number of person under
		Subway drivers		administered to	Jj.c	train experiences
		employed by a public		diagnose PTSD, using	om M	<u>0 experiences</u>
		company in Seoul		DSM-4 criteria.	Q	OR: Ref
					> ≻	OR: Ref
		<u>Inclusion/exclusion</u> =		Incidence: 1.6% (one	pr <u>ii</u>	1 experience
		Participants currently on		year prevalence)	1 20	OR: 1.77 [0.31 4.47] ¹
		sick leave and female			Ŋ	OR: 1.45 [0.55 3.85] ²
		drivers were excluded.			022	≥2 experiences
					(d 1	OR: 2.36 [0.57 9.70] ¹
					/ <u>g</u>	OR: 3.57 [1.32 3.65] ²
					Jes	
					;*	Severity of victim's injury
					rot	Alive
					:ect	OR: Ref
					ie d	OR: Ref
					by	Death
27. Kim, 2014 ⁴⁵					jopen.bmj.com/ on April 18, 2024 by guest. Protected by copyrig	OR: 2.49 [0.27 23.27] ¹
		<u> </u>	<u> </u>		<u> </u>	5 2.45 [0.27 25.27]



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7			BMJ Open		bmjopen-2021-0	
					1-2021-0	
	Name: Defence Manpower Data Center (DMDC),	<u>n</u> = 332,093 (marine) and 773,359 (army)	Exposure assessment: Military databases	Type of symptoms: PTSD	Adjusting for clusteried	OR: 1.71 [0.48 6.14] ¹ OR: 1.89 [0.75 4.75] ² Person under train experience of colleague No OR: Ref. ¹ OR: Ref. ² Yes OR: 0.55 [0.12 2.47] ² OR: 2.84 [1.32 6.12] ² Sex Female HR: Ref. (marine)
	Career History and Archival Medical Personnel System (CHAMPS), and the Expeditionary	Country= USA <u>%Female</u> = 7% (marine) and 17% (army) Age= 20.0 (3.9) (marine)	Year of assessment: 2001-2011 Exposure categories: Personal and deployment	Way of assessment: Diagnosed PTSD obtained from military records. Incidence: 4.3%	from http://bmjoper	HR: Ref. (army) Male HR: 0.40 [0.36 0.44] (marine) HR: 0.57 [0.55 0.59] (army) Age at accession
	Medical Encounter Database (EMED) Design:	and 21.7 (2.1) (army) Type of job/company= All service members who went into the army or	characteristics.	(marine); 7.6% (army).	http://bmjopen.bmj.com/ on April 18,	HR: 0.99 [0.98 1.00] (marine) HR: 1.01 [1.00 1.01] (army) Race White
	Prospective longitudinal Follow-up period: 35-43 months.	navy between 2001 and 2011. Inclusion/exclusion= -		97	April 18, 2024 by	HR: Ref. (marine) HR: Ref. (army) Non-white HR: 0.95 [0.91 1.00] (marine) HR: 0.96 [0.94 0.98] (army)
28. Levin- Rector, 2018 ⁴⁶					2024 by guest. Protected by copyrig	Ethnicity Non-Hispanic HR: Ref. (marine) HR: Ref. (army) Hispanic HR: 0.80 [0.75 0.84] (marine) HR: 0.86 [0.84 0.89] (army)

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7		BMJ Open		/bmjope	
				n-2021-0	
		Perteu	ie won	/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by gues	Combat specialist HR: Ref. (marine) HR: Ref. (army) Communications/intelligence HR: 0.54 [0.48 0.62] (marine) HR: 0.73 [0.70 0.77] (army) Craft/repair specialist HR: 0.46 [0.40 0.54] (marine) HR: 0.62 [0.60 0.65] (army) Functional support/other HR: 0.46 [0.41 0.51] (marine) HR: 0.56 [0.53 0.59] (army) Service and supply HR: 0.77 [0.68 0.87] (marine) HR: 0.84 [0.80 0.88] (army) Healthcare specialist HR: 1.03 [0.98 1.08] (army) Cumulative years deployed HR: 2.04 [1.93 2.15] (marine) HR: 1.74 [1.71 1.76] (army) Unit cumulative high deployment stress rate (per 100) HR: 1.04 [1.03 1.05] (marine) HR: 1.05 [1.04 1.06] (army) Unit stability HR: 1.11 [0.92 1.33] (marine) HR: 0.69 [0.64 0.74] (army)
Name: Defence Manpower Data	<u>n</u> = 8,064 (3,416 health care profession, 4,648 no	Exposure assessment: Self-reported.	Type of symptoms: PTSD	Univariate (model 1) and raultivariate	Health Care Occupation
29. MacGregor, Design: Prospective	health care profession) Country= USA	Year of assessment: 2001-2008	Way of assessment: Diagnosed, according to ICD-9-CM criteria,	(model 🗓) adjusting for all remaining exposures	OR: Ref. (1 deployment) OR: Ref. (2 deployments) OR: Ref. (3 deployments) Yes
				opyright.	

		<u></u>		04	
longitudinal	<u>%Female</u> = 0%	Exposure categories:	from inpatient and	965	OR: 2.02 [1.45 2.80] ¹ (1
		military occupation,	outpatient databased.	51	deployment)
Follow-up period:	Age = Ranging from 27.9	combat rank,		on .	OR: 2.27 [1.26 4.08] ¹ (2
Up to 60 days.	(5.7) to 30.2 (7.0) in	deployment specific	Incidence: Ranging	25	deployments)
	various participating	variables	from 1.9% to 17.9%	Au	OR: 4.37 [1.25 15.28] ¹ (3
	groups.		for various	gus	deployments)
			participating groups.	# 2	
	Type of job/company=			021	Age
	Navy personnel with one,				OR: 0.97 [0.94 0.99] ¹ (1
	two or three			0 V	deployment)
	deployments in Iraq			/nlc	OR: 0.97 [0.93 1.02] ¹ (2
	and/or Afghanistan.			bad	deployments)
				ed	OR: 0.94 [0.86 1.03] ¹ (3
	Inclusion/exclusion=			fro	deployments)
	Participants who		ien on	3	, , ,
	completed a health	' (Vb		n tt p	Rank
	assessment within 60	-/ -		d//:	Enlisted
	days post-deployment			<u>j</u> .	OR: Ref.
	were included. Women	· (V)		эре	OR: Ref.
	were excluded			n.t	Officer
	Were excluded			<u>3</u> .	OR: 0.35 [0.18 0.65] ¹ (1
				.8	deployment)
				Ð,	OR: 0.54 [0.12 2.47] ¹ (2
				on	deployments)
			()4	Αp	иерюутента)
				⊒.	Married
				, ,	No
			•	202	OR: Ref. (1 deployment)
				24	
				by .	OR: Ref. (2 deployments)
				gue	OR: Ref. (3 deployments)
				t.	<u>Yes</u>
				P	OR: 0.93 [0.67 1.30] ¹ (1
				ote	deployment)
				Cte	OR: 0.54 [0.32 0.89] ¹ (2
				ρ Δ	deployments)
				1-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyri	OR: 0.96 [0.36 2.56] ¹ (3
				ဝင္ပ	deployments)

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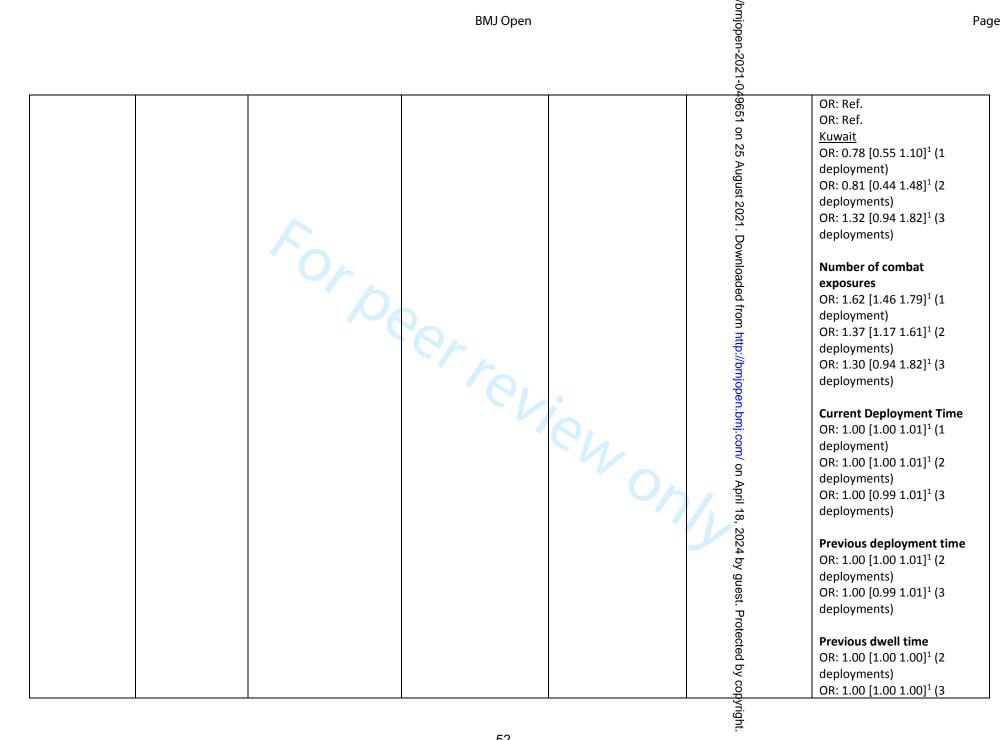
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Name: Defence Manpower Data Center (DMDC) Country= USA Count				BMJ Open		/bmjopen-2021-0	Pag
Name: Department of Veterans Affairsn= 968Exposure assessment: Department of Veterans Affairs administrativeType of symptoms: PTSDUnivariate (model 1) and resultivariate (model 2), adjustingNumber of exposures None OR: Ref.		Manpower Data Center (DMDC) Design: Prospective longitudinal Follow-up period:	Country= USA %Female= - Age= 22 (19-53) Type of job/company= Marine corps personnel deployed to Iraq or Kuwait. Inclusion/exclusion= Deployments between 4 and 8 months were considered. Special forces and participants with earlier mental health issues were excluded. Only those	Deployment adminstration Year of assessment: 2003-2007 Exposure categories: Dwell-to-deployment ratios were categorised	PTSD Way of assessment: Diagnosed PTSD with ICD-9-CM criteria were obtained from impatient and outpatient registers	and military rank	No OR: Ref.¹ Yes OR: 1.79 [1.38 2.34]¹ Dwell to deployment ratio ≤1:1 OR: Ref. 1:1 OR: 0.83 [0.60 1.13] 2:1
Department of Veterans Affairs Ocuntry USA Department of Veterans PTSD 1) and raultivariate (model 2), adjusting OR: Ref.			deployment were			y gues	
31. Maguen, (VA) database data (including self- Way of assessment: for age, ex, race, OR: Ref. O	31. Maguen, 2012 ⁴⁹	Department of	Country= USA	Department of Veterans Affairs administrative data (including self-	PTSD Way of assessment:	1) and raultivariate (model 2), adjusting for age, ex, race,	None OR: Ref. OR: Ref.

			BMJ Open		ʻbmjopen-	
					n-2021-04	
	Design:			reported Primary Care	branch 🕳 service,	OR: 4.93 [3.3 7.3] ¹
	Retrospective	Age= 30.3(8.4) years	Year of assessment:	PTSD Screen (PC-	rank and number of	OR: 4.67 [3.1 7.1] ²
	longitudinal		2007-2010	PTSD) screening	deployments.	Two +
		Type of job/company=		instrument	25	OR: 6.96 [5.1 9.6] ¹
	Follow-up period:	War veterans who have	Exposure categories:		Au	OR: 6.15 [4.4 8.7] ²
	11 days	been deployed in Iran	Exposure to traumatic	<u>Incidence</u> : -	gus	
	•	and Afghanistan.	brain injury		51 2	Type of exposure
			mechanisms		02	None .
		Inclusion/exclusion=				OR: Ref.
		Participants with either			August 2021. Downloaded from http://bmjopen.bmj.cc	OR: Ref.
		no head injury or a head) NC	Blast only
		injury with traumatic)ad	OR: 5.13 [3.2 8.2] ¹
		brain injury were			ed	OR: 4.72 [2.9 7.7] ²
		included, but not those			fror	Blast plus
		with head injury without			<u> </u>	OR: 7.45 [5.4 10.3] ¹
		brain damage.			I t	OR: 6.52 [4.6 9.3] ²
			- / h		//b	1 Non blast
					nj _o	OR: 4.53 [2.4 8.6] ¹
					p e <u>r</u>	OR: 4.60 [2.4 8.8] ²
					1.b	2+ Non blast
				$\mathbf{O}_{\mathbf{i}}$	<u>⊐</u> .	OR: 2.94 [1.17 7.4] ¹
				4/1	com	OR: 3.36 [1.32 8.6] ²
	Name:	<u>n</u> = 329,049	Exposure assessment:	Type of symptoms:	Univariate models	Age
	Department of		Deployment data	PTSD	were conducted for	<u>16–24</u>
	Veterans Affairs	Country= USA			females ∰model 1)	RR: Ref.
	(VA) database		Year of assessment:	Way of assessment:	and males (model 2)	RR: Ref.
		<u>%Female</u> = 12%	2001	PTSD obtained from	separately.	<u>25–29</u>
	Design:			medical health	022	RR: 1.05 [0.99 1.11] ¹
	Retrospective	Age= 31.2(9.0)	Exposure categories:	records of those who	(a t	RR: 0.96 [0.94 0.97] ²
	longitudinal		Demographic and	visited veteran	by guest.	<u>30–39</u>
		Type of job/company=	military service data.	facilities from 2002 to	lest	RR: 1.24 [1.17 1.32] ¹
	Follow-up period:	War veterans who have		2008. Diagnosis was	:· D	RR: 0.98 [0.96 0.99] ²
	-	been deployed in Iran		done with ICD-9-CM	rote	<u>40–71</u>
		and Afghanistan.		criteria.	ecte	RR: 1.21 [1.13 1.30] ¹
					t be	RR: 0.79 [0.77 0.81] ²
32. Maguen,		Inclusion/exclusion= -		Incidence: 17% among	Protected by copyri	
2010 ⁵⁰		_		females, 22% among	дос	Race/Ethnicity

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	2021-0.	
	196	RR: 0.94 [0.85 1.05] ¹
	351	RR: 0.95 [0.93 0.97] ²
	9	Navy
	25	RR: 0.45 [0.41 0.49] ¹
	≥ ≥	RR: 0.33 [0.32 0.34] ²
	ngu	Air Force
	ıst	RR: 0.45 [0.41 0.49] ¹
	202	RR: 0.26 [0.25 0.27] ²
	.21	KK. 0.26 [0.25 0.27]
	Do	Rank
	<u>wn</u>	<u>Enlisted</u>
	oa	RR: Ref.
	dec	RR: Ref.
	l fro	Officer
) M	
	htt	RR: 0.69 [0.63 0.77] ¹
	p://k	RR: 0.51 [0.49 0.54] ²
	l ă	
	<u>_</u>	Number of deployments
	jope	Number of deployments One
•	jopen.b	<u>One</u>
,	jopen.bmj.	One RR: Ref.
; (0),	jopen.bmj.co	One RR: Ref. RR: Ref.
ieh,	jopen.bmj.com/	One RR: Ref. RR: Ref. More than one
ien o	jopen.bmj.com/ on	One RR: Ref. RR: Ref. More than one RR: 1.14 [1.09 1.19] ¹
Type of symptoms:	jopen.bmj.com/ on Apı	One RR: Ref. RR: Ref. More than one RR: 1.14 [1.09 1.19] ¹ RR: 1.15 [1.13 1.16] ²
Type of symptoms:	jopen.bmj.com/ on April 1	One RR: Ref. RR: Ref. More than one RR: 1.14 [1.09 1.19] ¹ RR: 1.15 [1.13 1.16] ² Only individual participant
Type of symptoms: PTSD	jopen.bmj.com/ on April 18,	One RR: Ref. RR: Ref. More than one RR: 1.14 [1.09 1.19]¹ RR: 1.15 [1.13 1.16]² Only individual participant data were presented,
PTSD	jopen.bmj.com/ on April 18, 202	One RR: Ref. RR: Ref. More than one RR: 1.14 [1.09 1.19]¹ RR: 1.15 [1.13 1.16]² Only individual participant data were presented, showing associations
PTSD Way of assessment:	jopen.bmj.com/ on April 18, 2024 b	One RR: Ref. RR: Ref. More than one RR: 1.14 [1.09 1.19]¹ RR: 1.15 [1.13 1.16]² Only individual participant data were presented, showing associations between the exposures and
PTSD Way of assessment: Via a structured	jopen.bmj.com/ on April 18, 2024 by (One RR: Ref. RR: Ref. More than one RR: 1.14 [1.09 1.19]¹ RR: 1.15 [1.13 1.16]² Only individual participant data were presented, showing associations
PTSD Way of assessment: Via a structured interview, the	jopen.bmj.com/ on April 18, 2024 by gue	One RR: Ref. RR: Ref. More than one RR: 1.14 [1.09 1.19]¹ RR: 1.15 [1.13 1.16]² Only individual participant data were presented, showing associations between the exposures and
PTSD Way of assessment: Via a structured interview, the Structured Clinical	jopen.bmj.com/ on April 18, 2024 by guest.	One RR: Ref. RR: Ref. More than one RR: 1.14 [1.09 1.19]¹ RR: 1.15 [1.13 1.16]² Only individual participant data were presented, showing associations between the exposures and
PTSD Way of assessment: Via a structured interview, the Structured Clinical Interview for DSM-4	jopen.bmj.com/ on April 18, 2024 by guest. Pro	One RR: Ref. RR: Ref. More than one RR: 1.14 [1.09 1.19]¹ RR: 1.15 [1.13 1.16]² Only individual participant data were presented, showing associations between the exposures and
PTSD Way of assessment: Via a structured interview, the Structured Clinical	jopen.bmj.com/ on April 18, 2024 by guest. Protec	One RR: Ref. RR: Ref. More than one RR: 1.14 [1.09 1.19]¹ RR: 1.15 [1.13 1.16]² Only individual participant data were presented, showing associations between the exposures and
PTSD Way of assessment: Via a structured interview, the Structured Clinical Interview for DSM-4 Axis I Disorders (SCID	jopen.bmj.com/ on April 18, 2024 by guest. Protected	One RR: Ref. RR: Ref. More than one RR: 1.14 [1.09 1.19]¹ RR: 1.15 [1.13 1.16]² Only individual participant data were presented, showing associations between the exposures and
PTSD Way of assessment: Via a structured interview, the Structured Clinical Interview for DSM-4	2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by	One RR: Ref. RR: Ref. More than one RR: 1.14 [1.09 1.19]¹ RR: 1.15 [1.13 1.16]² Only individual participant data were presented, showing associations between the exposures and

Exposure assessment:

Year of assessment:

Exposure categories:

traumatic brain injury

and re-deployment

Blast exposure,

were assessed.

at T1 and T2,

Self-reported

2007-2010

n= 19

Country= USA

%Female= 16%

Age= 39.0(9.4) years.

Type of job/company=

deployed in Afghanistan

Military personnel

or Iraq

Name: -

Design:

years.

33. Martindale,

2018 51

Prospective

longitudinal

Follow-up period:

Between 6 and 9

			BMJ Open		njopen:	
					/bmjopen-2021-049651	
		Inclusion/exclusion=		respectively.	496	
		Participants with a			51	
		history in traumatic brain			on 25 Augu	
		injury or other			25	
		neurological or mental			Aug	
		disorders were excluded.			<u> </u>	
	Name: -	<u>n</u> = 56,753	Exposure assessment:	Type of symptoms:	Multivakiate model	Age
			Self-reported	PTSD symptoms (using)21	OR: 1.39 [1.27 1.52]
	Design:	<u>Country</u> = Japan		a cut-off: >- 25)	•	
	Prospective		Year of assessment: -		JWr	Sex
	longitudinal, with	%Female= 3%		Way of assessment:	Josef	<u>Male</u>
	baseline	-/ -	Exposure categories:	Self-reported with the)de	OR: Ref.
	measurements	<u>Age</u> =-	Information on personal	Impact of Event Scale-	d fr	<u>Female</u>
	one month post-		attributes and mission	Revised (IES-R).	o'm	OR: 1.61 [1.29 2.00]
	deployment.	Type of job/company=	duties.		ht	
		Members of the ground		<u>Incidence</u> :	tp://	Rank
	Follow-up period:	defence force at 2011		2283/56753=4%	md'	Enlisted/private
	6 and 12 months	Great East Japan	10.		Jjop P	OR: Ref.
	post-deployment.	Earthquake.			en.	<u>Officer</u>
					.bm	OR: 0.77 [0.67 0.88]
		<u>Inclusion/exclusion</u> = -		\mathbf{C}_{I})j. cc	Administrative official
				\ \(\mu_{\sigma} \)	om/	OR: 1.24 [0.82 1.87]
					Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest.	Deployment length
					pri	< 1 month
					18	OR: Ref.
),i N	1-3 months
					024	OR: 1.53 [1.37 1.70]
					by	≥ 3 months
					gue	OR: 2.64 [2.33 2.99]
					est.	Personally affected
					Pro	<u> </u>
					řec	No OR: Ref.
					ted	Yes
. Nagamine,					by	OR: 2.19 [1.95 2.44]
2018 ⁵²					Protected by copyright.	0.11. 2.13 [1.33 2.77]

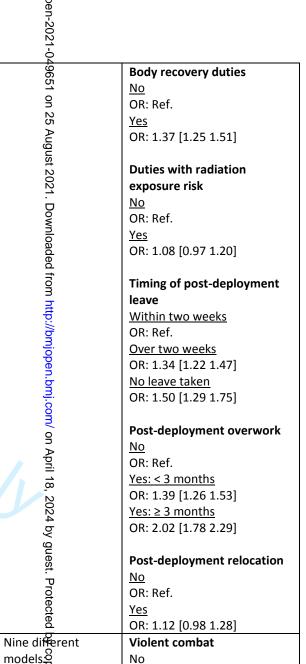
 35. Osorio,

2018 53

Name: Secondary

analyses on the

n= 1,635



/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected

models &

Exposure assessment:

Self-reported

Type of symptoms:

PTSD symptoms (re-

		BMJ Open		/bmjopen-2021-C	Page
Battlemind RCT. Design: Prospective longitudinal Follow-up period: 4-6 months post deployment.	Country= UK %Female= 2% Age= 39% was younger than 25 years. Type of job/company= Members of three branches of the army forces, returning from deployment in Afghanistan. Inclusion/exclusion= -	Year of assessment: 2009 Exposure categories: Violent combat situations, proximity to wounding or death and encountering explosive devices.	experience is extracted for this review - in the paper also: avoidance, numbing, arousal and anxious is reported) Way of assessment: Using the National Center for Posttraumatic Stress Disorders Checklist – Civilian Version (PCL-C). PTSD in general, but also avoiding, numbing and arousal behaviour were reported. For this review we only extracted PTSD. Incidence: 34%	Model 186 Unadjusted Model 22 Adjusted for proximity to wounding or death. Model 23 Adjusted for proximity to wounding or death. Model 23 Adjusted for encountering explosive devices. Model 24 Adjusted for PTSIS re- experies on adjusted for PTSIS re- experies on adjusted for distress. Model 36 Adjusted for distress. Model 36 Adjusted for alcohol. Model 36 Adjusted for violent combat, proximity to wounding or death, encountering explosive devices, PTSD rep experies on, avoidance, numbinity arousal, distress on a consumption, rank, gender, bear of the consumption o	RR: Ref. ¹ RR: Ref. ² RR: Ref. ³ RR: Ref. ⁴ RR: Ref. ⁵ RR: Ref. ⁶ RR: Ref. ⁷ RR: Ref. ⁸ RR: Ref. ⁹ Yes RR: 2.43 [1.95 3.02] ¹ RR: - ² RR: 1.56 [1.21 2.01] ³ RR: 2.04 [1.62 2.58] ⁴ RR: 1.81 [1.43 2.29] ⁵ RR: 2.32 [1.85 2.89] ⁷ RR: 2.36 [1.89 2.95] ⁸ RR: 1.35 [1.01 1.81] ⁹ Proximity to wounding or death NO RR: Ref. ² RR: Ref. ³ RR: Ref. ⁴ RR: Ref. ⁵ RR: Ref. ⁶ RR: Ref. ⁷ RR: Ref. ⁸ RR: 2.42 [1.89 3.11] ² RR: - ³ RR: 2.62 [2.08 3.31] ⁴

		BMJ Open		bmjope	
				/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 202	
				496	RR: 2.02 [1.59 2.56] ⁵
				51	RR: 3.03 [2.42 3.80] ⁶
				On .	RR: 2.94 [2.36 3.67] ⁷
				25	RR: 3.01 [2.41 3.75] ⁸
				Augu	RR: 1.67 [1.25 2.23] ⁹
				ust 2	Encountering explosive
				021	devices
				D	<u>No</u>
				JWC	RR: Ref. ¹
				ıloa	RR: Ref. ²
				dec	RR: Ref. ³ RR: Ref. ⁴
				d fro	RR: Ref. ⁵
		V) H	RR: Ref. ⁶
		NA		http	RR: Ref. ⁷
)://b	RR: Ref. ⁸
				mj.	RR: Ref. ⁹
		Perter		ope	Yes
				າ.br	RR: 2.14 [1.71 2.67] ¹
			\mathbf{O}_{i}	<u>ا</u>	RR: 1.66 [1.30 2.10] ²
				mö	RR: 1.54 [1.21 1.95] ³
				or	RR: — ⁴
				<u>≯</u>	RR: 1.70 [1.33 2.16] ⁵
) Si	RR: 2.17 [1.72 2.73] ⁶
				18,	RR: 2.01 [1.60 2.52] ⁷
				202	RR: 2.06 [1.65 2.59] ⁸ RR: 1.26 [0.95 1.66] ⁹
Name: Everyday	<u>n</u> = 1,763	Exposure assessment:	Type of symptoms:	Crude neodel	Frequency of violence
violence project		Self-reported.	PTSD	adjusting for age	No violence
	<u>Country</u> = Denmark			and genger (model	OR: Ref.
Design:	0/Famala 700/	Year of assessment:	Way of assessment:	1), additionally	OR: Ref.
Prospective longitudinal	<u>%Female</u> = 78%	2016-2017	Self-reported using the International	adjusting for BMI, alcohol, years of	OR: Ref.
_	Age= 48.7 (9.4) years.	Exposure categories:	Trauma	experience, critical	Low frequency OR: 4.4 [1.3 14.8] ¹
Thingvad, <u>Follow-up period</u> :	<u>nge</u> - 40.7 (3.4) years.	Patient-initiated	Questionnaire, with	incidents outside of	OR: 4.4 [1.5 14.8] OR: 3.0 [0.90 10.4] ²
2019 ⁵⁴ 12 months	Type of job/company=	violence.	ICD-11 criteria.	work, pesttraumatic	OR: 4.0 [1.0 16.3] ³
		1		1 - 17 1- 0- 111 1111 1111	[]

					-02	
		Social educators working			stress d	Medium frequency
		with disabled adults.		Incidence: 3.5%	symptom level at	OR: 6.3 [1.8 22.9] ¹
					baseline trauma	OR: 3.7 [1.0 13.8] ²
		Inclusion/exclusion=			coping self-efficacy,	OR: 5.9 [1.4 24.2] ³
		Participants in leadership			workpla∉e social	High frequency
		position and with PTSD			capital king, and	OR: 10.2 [2.9 36.3] ¹
		at baseline were			training (model 2).	OR: 4.2 [1.1 15.9] ²
		excluded.			In mode \$\frac{1}{2}3,	OR: 6.5 [1.6 25.6] ³
					additional for	
					frequeney and	Severity of violence
					severity of violence	No violence
					was done.	OR: Ref.
					e <u>e</u>	OR: Ref.
					fror	OR: Ref.
					ם ה	Max. mild violence
					ttp:	OR: 2.3 [0.2 22.8] ¹
					//br	OR: 2.3 [0.2 24.4] ²
			Pertev		from http://bmjopen.bmj.com/ on April 18, 2024 by g	OR: 3.8 [0.3 46.2] ³
					per	Max. threats of violence
					n.br	OR: 5.1 [1.5 17.5] ¹
				$\mathbf{O}_{\mathbf{i}}$	nj. c	OR: 3.6 [1.0 12.4] ²
				\\/\.	ροπ	OR: 5.4 [1.2 24.2] ³
					0	Max. moderate violence
						OR: 4.1 [1.1 14.5] ¹
				Uh	pri	OR: 2.1 [0.6 8.1] ²
					18	OR: 2.6 [0.6 10.8] ³
					N	Max. severe violence
					024	OR: 13.7 [3.1 37.1] ¹
					by	OR: 5.3 [1.5 19.5] ²
						OR: 6.5 [1.6 26.0] ³
	Name: Readiness	<u>n</u> = 426	Exposure assessment:	Type of symptoms:	Adjustin for all	Baseline PTSD symptoms
	and Resilience in		Self-reported	Probable PTSD (new	other pre-	<u>No</u>
	National Guard	Country= USA		onset)	deployneent factors	OR: Ref. ¹
	Soldiers.		Year of assessment:		(model ∯),	OR: Ref. ²
		<u>%Female</u> = 12%	2006	Way of assessment:	addition Ily	OR: Ref. ³
37. Polusny,	<u>Design:</u>			Self-reported using	adjusting for	<u>Yes</u>
2011 55	Prospective	Age = Mostly younger	Exposure categories:	the PCL checklist, with	deployngent	OR: 0.73 [0.34 1.58] ¹
					y _{ri.}	

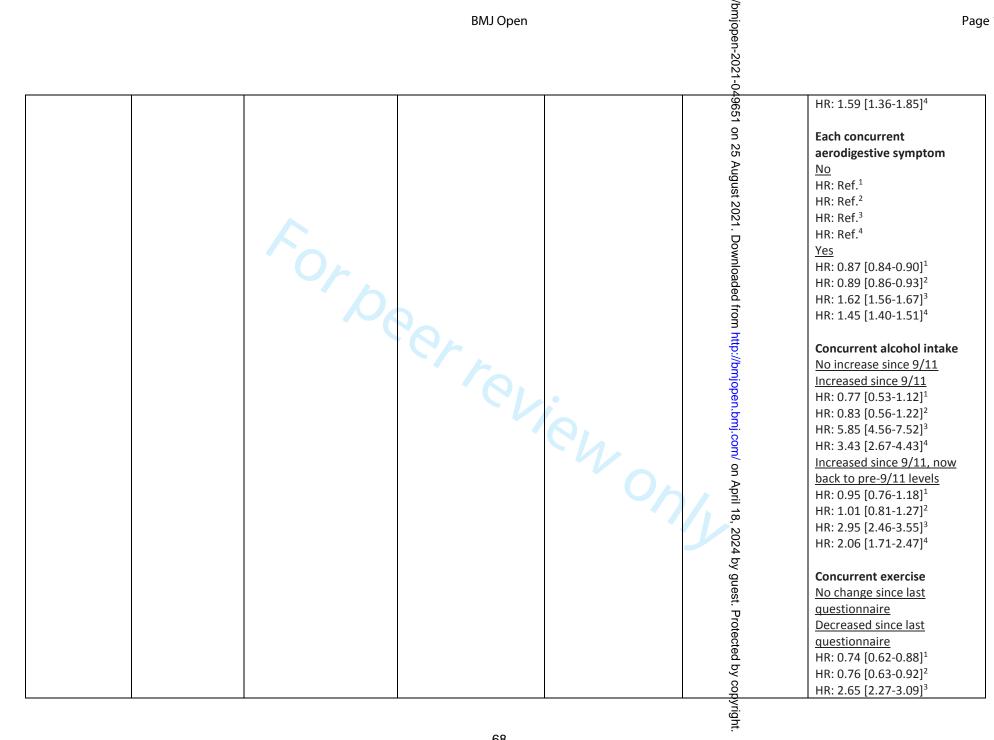
127			BMJ Open		/bmjopen-2021-0	
	longitudinal Follow-up period: 2 months	than 30. Type of job/company= National Guard soldiers	Psychosocial risk, protective factors and deployment exposures.	DSM-4 criteria. Incidence: 14%	exposures (model 2) and additionally adjusting for post- deployment factors (model 2).	OR: 0.79 [0.34 1.85] ² OR: 0.69 [0.27 1.79] ³ Military preparedness No
		Inclusion/exclusion= Those with PTSD at baseline were excluded.			igust 2021. Downlo	OR: Ref. ¹ OR: Ref. ² OR: Ref. ³ Yes OR: 0.58 [0.39 0.87] ¹ OR: 0.62 [0.40 0.95] ²
		D	Pertev		ust 2021. Downloaded from http://bmjopen.bmj.com/ on April 18,	OR: 0.77 [0.48 1.25] ³ Concerns about life/family disruptions No OR: Ref. ¹ OR: Ref. ²
			· GL	ien o	open.bmj.com/ on A	OR: Ref. ³ <u>Yes</u> OR: 1.38 [0.97 1.97] ¹ OR: 1.31 [0.88 1.95] ² OR: 1.12 [0.71 1.77] ³
						Unit support No OR: Ref.¹ OR: Ref.² OR: Ref.³ Yes
					2024 by guest. Protected by copyric	OR: 1.43 [0.95 2.15] ¹ OR: 1.15 [0.73 1.79] ² OR: 1.15 [0.70 1.89] ³ Combat experiences No OR: Ref. ²

			Deertev		-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected	OR: Ref. ³ Yes OR: 2.19 [1.40 3.41] ² OR: 2.35 [1.41 3.92] ³ Exposure to aftermath of battle NO OR: Ref. ² OR: Ref. ³ Yes OR: 1.62 [1.04 2.53] ² OR: 1.81 [1.08 3.06] ³ Perceived life threat NO OR: Ref. ² OR: Ref. ³ Yes OR: 1.21 [0.81 1.81] ² OR: 1.01 [0.63 1.64] ³ Post-deployment social support NO OR: Ref. ³ Yes OR: 0.31 [0.19 0.50] ³ Post-deployment life stressors
						OR: 0.31 [0.19 0.50] ³ Post-deployment life
8. Reijnen,	Name: -	<u>n</u> = 994	Exposure assessment:	Type of symptoms:	у соругіс	Deployment
2015 ⁵⁶			Self-reported	PTSD symptoms	8	Pre-deployment

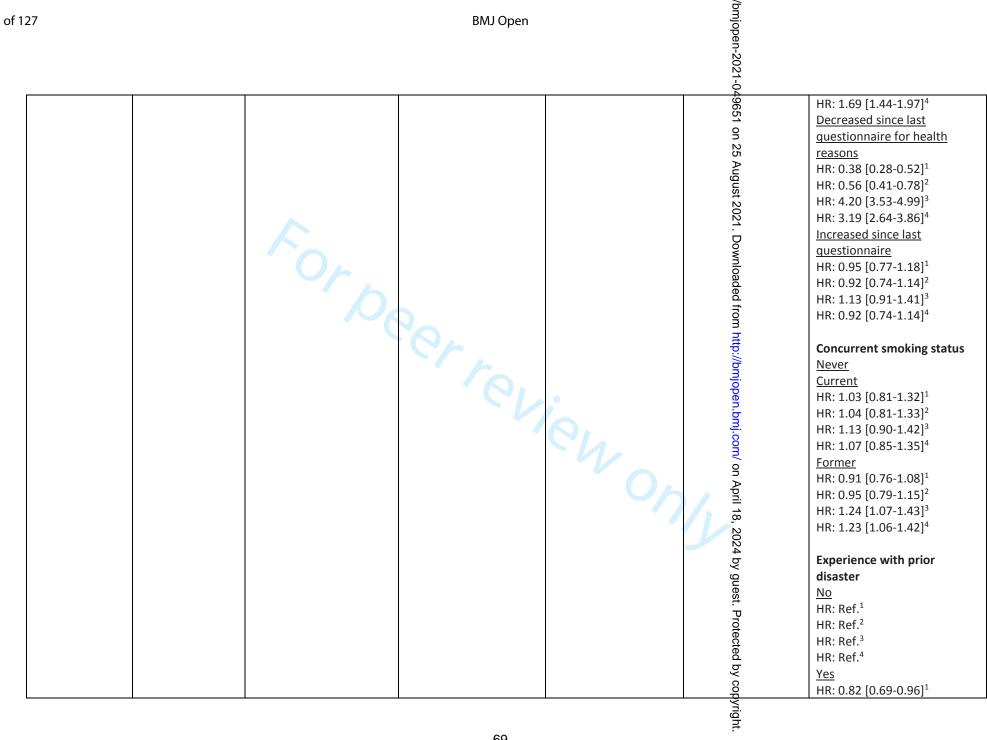
			BMJ Open		/bmjopen-2021-049651 on 25 August 2021. Downloa	
					en-20	
)21-0	
	Design:	Country= Netherlands			496:	OR: Ref
	Prospective		Year of assessment:	Way of assessment:	51	1 month post-deployment
	longitudinal with	<u>%Female</u> = 9%	2005-2008	Self-reported with the	9	OR: 2.12 [1.4 3.3]
	baseline			Dutch Self-Rating	25	6 months post-deploymen
	measurements 1	Age= 28.5 (9.0)	Exposure categories:	Inventory for PTSD,	Aug	OR: 2.18 [1.4 3.4]
	month prior to		Different categories of	using DSM-4 cut-off	snf	1 year post-deployment
	deployment	Type of job/company=	time since deployment	values	t 20	OR: 1.62 [1.0 2.6]
		Dutch military personnel	(compared to pre-)21	2 years post-deployment
	Follow-up period:	who were deployed to	deployment)	Incidence: 8.9%	D	OR: 1.33 [2.8 5.8]
	2 years post	Afghanistan			O W	
	deployment.) jojn	
		Inclusion/exclusion=-			<u>a</u>	
	Name: -	<u>n</u> = 238	Exposure assessment:	Type of symptoms:	Adjustin <u></u> for	It is unclear what the
			Self-reported	PTSD	demographics	reference group is for the
	<u>Design:</u>	Country= USA			(model <u>1</u>),	below associations
	Prospective		Year of assessment:	Way of assessment:	additionally	
	longitudinal	<u>%Female</u> = 8%	2006-2009	Diagnosed during a	adjusting for pre-	Gender
			_ (A),	CAPS structured	deployreent	OR: 1.03 [0.12 8.89] ¹
	Follow-up period:	Age= 33.5 (9.5) years.	Exposure categories:	interview.	characteristics	OR: 0.46 [0.04 5.14] ²
	6 months post		Personal characteristics,		(model 2),	OR: 0.94 [0.03 28.56] ³
	deployment.	Type of job/company=	pre-deployment and	<u>Incidence</u> : 13%	additionally	OR: 1.12 [0.03 38.70] ⁴
		Members of the National	deployment		adjusting for	Pale of the c
		Guard units recently	characteristics.		deployment-related	Ethnicity
		returned from		()_	variables (model 3),	OR: 0.33 [0.04 2.64] ¹
		deployment to Iraq and			and additionally	OR: 0.17 [0.02 1.61] ² OR: 0.08 [0.00 1.45] ³
		Afghanistan.			adjusting for post- deployment	OR: 0.08 [0.00 1.45] ⁴
		Inclusion/exclusion= -				OR: 0.07 [0.00 1.18]
		inclusion/exclusion= -			characteristics	Ago
					(model 🍎).	Age OR: 1.09 [0.69 1.72] ¹
					guest.	OR: 1.09 [0.69 1.72] ² OR: 1.01 [0.60 1.72] ²
					st.	OR: 1.01 [0.60 1.72] OR: 0.7 [0.34 1.41] ³
					Protected by copyri	OR: 0.7 [0.34 1.41] OR: 1.12 [0.31 1.45] ⁴
					rtec	ON. 1.12 [0.31 1.43]
					it ed	Negative temperament
9. Shea, 2013	3				ьу	OR: 2.95 [1.66 5.23] ²
57 Silea, 201.	-				8	OR: 2.23 [1.18 4.22] ³

					-0	
					49651	OR: 1.46 [0.69 3.09] ⁴
		<i>F</i> ₀			1-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Prot	Pre-deployment life events OR: 1.92 [1.19 3.10] ² OR: 1.78 [1.00 3.19] ³ OR: 1.1 [0.56 2.18] ⁴ Preparation and training OR: 0.89 [0.52 1.55] ² OR: 1.41 [0.68 2.91] ³
		10/De	Perter		nloaded from http://bmjops	OR: 1.99 [0.83 4.62] ⁴ Life and family concerns OR: 2.77 [1.34 5.75] ³ OR: 2.77 [1.28 6.01] ⁴ Deployment environment OR: 1.44 [0.68 3.05] ³ OR: 1.31 [0.58 2.99] ⁴
				eh Or	n.bmj.com/ on Ap	Unit support OR: 1.03 [0.56 1.90] ³ OR: 1.15 [0.58 2.30] ⁴
					ril 18, 2024	OR: 1.88 [1.01 3.50] ³ OR: 2.00 [1.01 3.97] ⁴
					by guest.	Post-deployment support OR: 0.36 [0.15 0.87] ⁴
					Prot	Post-deployment life events OR: 1.82 [0.98 3.39] ⁴
	Name: FDNY-	<u>n</u> = 11,006	Exposure assessment:	Type of symptoms:	Univaria (model 1	Arrival group
	WTC-MMP	Country= USA	Demographics and work status and number of	Probable PTSD	& 3) and adjusted for all other	Group 3 and 4 HR: Ref ¹
40. Soo, 2011 ⁵⁸	<u>Design:</u>		colleagues who died	Way of assessment:	exposures (model 2	HR: Ref ²
					/ri.	

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Prospective longitudinal Follow-up period: 9 years, with follow-up measurements every 18 months.	%Female = 0% Age = 39.5 (7.4) years Type of job/company = New York firefighters involved in the 9/11 WTC attacks. Inclusion/exclusion = Firefighters who arrived at the site more than 14 days before the close of the WTC site were included. Women were excluded.	were obtained from databases. Other variables were self-reported. Year of assessment: 2002 Exposure categories: Exposure to the WTC sites	Self-reported using the PCL-C checklist. Incidence: 8% (after the first follow-up).	with with en-2021-04-95-baseline (model 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyr without 4).	HR: Ref³ HR: Ref⁴ Group 1 HR: 0.76 [0.58-1.00]¹ HR: 0.74 [0.56-0.99]² HR: 2.21 [1.80-2.70]³ HR: 1.38 [1.12-1.70]⁴ Group 2 HR: 0.97 [0.75-1.25]¹ HR: 0.85 [0.66-1.11]² HR: 0.85 [0.66-1.11]² HR: 0.90 [0.75-1.08]⁴ ≥1 death at firehouse on 9/11 No HR: Ref.² HR: Ref.³ HR: Ref.⁴ Yes HR: 0.84 [0.71-1.00]¹ HR: 0.87 [0.73-1.04]² HR: 1.31 [1.12-1.54]³ HR: 1.11 [0.95-1.31]⁴ Received counselling during year 1 No HR: Ref.⁴ Yes HR: Ref.⁴ Yes HR: Ref.³ HR: Ref.⁴ HR: Ref.³ HR: Ref.⁴ HR: Ref.³ HR: Ref.⁴ HR: Ref.⁴ HR: Ref.³ HR: Ref.⁴ Yes HR: 0.89 [0.76-1.04]¹ HR: 0.98 [0.83-1.15]² HR: 0.98 [0.83-1.15]² HR: 2.02 [1.74-2.35]³



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	/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjope		BMJ Open			
	021-049					
HR: 0.86 [0.73-1.02] ²	965					
HR: 1.29 [1.13-1.48] ³	0					
HR: 1.11 [0.96-1.27] ⁴	on 25					
Non-white race/ethnicity	5 Au					
No	gus					
HR: Ref. ¹	# 2					
HR: Ref. ²	021					
HR: Ref. ³	D					
HR: Ref. ⁴	OWI					
<u>Yes</u>	nlo			Uh		
HR: 0.98 [0.70-1.36] ¹	ade			- / h		
HR: 1.05 [0.75-1.46] ²	d fr					
HR: 1.20 [0.94-1.54] ³	om					
HR: 1.37 [1.07-1.75] ⁴	http					
Age on 9/11)://b					
HR: 1.02 [1.01-1.04] ²	<u>, j</u>					
HR: 1.00 [0.99-1.01] ⁴	эре		· (V).			
Deployment	Unadjusted (model	Type of symptoms:	Exposure assessment:	<u>n</u> =8,093	Name: HERRICK	
Regulars	1) and adjusted for	Probable PTSD	Deployment		cohort	
Not deployed	age, gendler, marital		administration	<u>Country</u> = UK		
OR: Ref ¹	status, education,	Way of assessment:			<u>Design:</u>	
OR: Ref ²	service and rank	Self-reported with the	Year of assessment:	<u>%Female</u> = 13% and 8%	Retrospective	
<u>Deployed</u>	(model <u>፮</u>).	PCL-C checklist.	2014-2016	for those who were	longitudinal	
OR: 1.34 [1.00 1.78] ¹	18,			deployed and not		
OR: 1.41 [1.04 1.90] ²	20	Incidence: 5.2% and	Exposure categories:	40.0/40.0\	Follow-up period:	
Dagamieta	24	6.9% for those who	Deployment and service	Age = 40.0 (13.0) and 40.2	-	
Reservists	by (were not deployed	status.	(9.4) for those who were		
Not deployed OR: Ref ¹	Jue	and deployed, respectively.		not and were deployed, respectively.		
OR: Ref ²	st.	respectively.		respectively.		
<u>Deployed</u>	Pro:			Type of job/company=		
OR: 2.25 [1.14 4.46] ¹	tect			Military personnel that		
OR: 2.48 [1.20 5.16] ²	[ed			were and were not		
	2024 by guest. Protected by copyright.			deployed in Iraq.		. Stevelink,
Serving status	СОР			·		2018 ⁵⁹

27			BMJ Open		ʻbmjopen-2021-0	
					-2021-0	
		Inclusion/exclusion= -			49651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/	Not serving OR: Ref¹ OR: Ref² Serving OR: 1.60 [1.25 2.06]¹ OR: 1.73 [1.25 2.40]² Role during last deployment Serving regulars No combat
		Dr. 00	Per L		nloaded from http://b	OR: Ref ¹ OR: Ref ² Combat OR: 1.70 [1.08 2.67] ¹ OR: 1.58 [0.98 2.55] ² Ex-serving regulars
			Con.	ieh,	0	No combat OR: Ref¹ OR: Ref² Combat OR: 3.39 [2.25 5.11]¹ OR: 2.53 [1.60 3.99]²
	Name: PIT-PTSD+ study Design: Retrospective	<u>n</u> = 1,483 <u>Country</u> = Germany <u>%Female</u> = -	Exposure assessment: Deployment administration Year of assessment:	Type of symptoms: PTSD Way of assessment: Diagnosed with a	Unadjusted Pril 18, 2024	Population Control group OR: Ref. (12 month diagnosis) OR: Ref. (12 month incidence) OR: Ref. (lifetime prevalence)
	Follow-up period: On average 12 months post- deployment.	Age= - Type of job/company= Soldiers deployed in Afghanistan, and those who have not been	Exposure categories: Deployment characteristics.	structured interview using DSM-4 criteria. Incidence: 12 month incidence: 2.1% and 0.2% in the deployed and non-deployed	d April 18, 2024 by guest. Protected by copyrig	Deployed soldiers OR: 2.5 [1.1 5.6] (12 month diagnosis) OR: 4.2 [0.7 24.5] (12 month incidence) OR: 1.7 [0.96 3.1] (lifetime prevalence)
42. Wittchen, 2012 ⁶⁰		deployed.		group ,respectively.	by соругі	Deployed soldiers

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Supplementary file 4. Risk of bias of included articles. The risk of bias (i.e. low, moderate and high risk of bias) in six domains (i.e. gludy participation, study attrition, prognostic factor (i.e. exposure), outcome, study confounding and statistical analysis) is depicted, while also sum scores are shown.

First author, year of publication	Participation	Attrition	Prognostic factor	Outcome	Confounding	Analysis/repo
1 Armed Forces Health Surveillance Center, 2011	Moderate	Moderate	Moderate	Low	High	High
2 Andersen, 2019	Moderate	Moderate	Moderate	Moderate	Low	Low
3 Anderson, 2019	Low	Moderate	Moderate	Moderate	Low	Low
4 Berninger, 2010	High	High	Low	Moderate	Low	Low
5 Brownlow, 2018	Moderate	Moderate	Moderate	Moderate	High	Low
6 Brundage, 2015	Low	Low	Low	Low	High	High
7 Cameron, 2019	Low	Low	Low	Low	Low	Low
8 Chiu, 2011	Low	Moderate	Moderate	Moderate	Low	Low
9 Ciarleglio, 2018	Low	Moderate	Moderate	Low	Low	Low
10 Cone, 2015	High	High	Moderate	Moderate	Low	Low
11 Connorton, 2011	Moderate	Moderate	High	High	Moderate	Low
12 Cukor, 2011	Low	Moderate	Moderate	Moderate	Low	Low
13 Fear, 2010	High	High	Low	Moderate	Low	Low
14 Ferrajao, 2016	High	High	Moderate	Moderate	High	Low
15 Fichera, 2015	High	High	Moderate	Moderate	Low	Low
16 Fink, 2016	High	High	Moderate	Moderate	High	Low
17 Goodwin, 2012	Low	Low	Moderate	Moderate	Low	Low
18 Green, 2016	Moderate	Moderate	Moderate	Low	High	Low
9 Hansen, 2017	High	Moderate	Moderate	Moderate	Low	Low
O Harvey, 2012	High	Moderate	Low	Moderate	Low	Low
1 Horesh, 2011	Moderate	Moderate	Moderate	Moderate	High	Moderate
2 Hourani, 2012	Moderate	High	Moderate	Moderate	High	High
3 Ikeda, 2017	Moderate	Moderate	Moderate	Moderate	Low	Low
24 Joseph, 2014	Moderate	Moderate	Moderate	Moderate	Low	Low
25 Karstoft, 2013	Moderate	Low	Moderate	Moderate	High	Low
26 Karstoft, 2015	Moderate	Low	Moderate	Moderate	High	Low
7 Kim, 2014	Low	Low	Moderate	Low	Low	Low
8 Levin-Rector, 2018	Low	Low	Low	Low	Moderate	Low
9 MacGregor, 2015	Moderate	Moderate	Low	Low	Low	Low
30 MacGregor, 2012	Low	Low	Low	Low	Low	Low
31 Maguen, 2012	Moderate	Moderate	Moderate	Moderate	Low	Low
32 Maguen, 2010	Moderate	Moderate	Low	Low	High	Low
33 Martindale, 2018	High	Moderate	Moderate	Low	High	High
34 Nagamine, 2018	Moderate	Moderate	Moderate	Moderate	High	Low
35 Osorio, 2018	High	High	Moderate	Moderate	Low	Low
36 Pihl-Thingvad, 2019	Low	Low	Moderate	Moderate	Low	Low
37 Polusny, 2011	Moderate	Moderate	Moderate	Moderate	Low	Low
8 Reijnen, 2015	High	High	Moderate	Moderate	High	Low
39 Shea, 2013	Moderate	Moderate	Moderate	Low	Low	Low
40 Soo, 2011	Moderate	Moderate	Moderate	Moderate	Low	Low
11 Stevelink, 2018	High	High	Moderate	Moderate	Low	Low
42 Wittchen, 2012	Moderate	Moderate	Moderate	Low	High	Low

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Supplementary file 5. Risk of bias of inclu	ided studies.		BMJ Open BMJ Open 2021-0496
First author, Year;	Item	Risk of bias	Reason 21
	Participation	Moderate	All armed forces were eligible, but no non-participant analysis has been presented by the authors.
	Attrition	Moderate	No loss to follow-up analyses were presented by the authors.
 Armed Forces Health Surveillance Center, 2011 ²¹ 	Prognostic factor	Moderate	Although prognostic factors were self-reported, no substantial bias can be expected from self-reports of the current prognostic factors
	Outcome	Low	Outcomes were diagnosed in a hospital
	Confounding	High	No confounding analysis has been conducted §
	Analysis/reporting	High	No proper analysis has been conducted, only descriptives were presented.
	Participation	Moderate	No non-participant analysis has been presented by the authors.
	Attrition	Moderate	No loss to follow-up analyses were presented by the authors.
2 4 - 1 2040 19	Prognostic factor	Moderate	Prognostic factors were self-reported
2. Andersen, 2019 ¹⁹	Outcome	Moderate	Outcomes were self-reported
	Confounding	Low	Multivariate analyses were done with all available exposures
	Analysis/reporting	Low	Adequate analyses were used
	Participation	Low	86% of eligible participants, participated at baseling.
	Attrition	Moderate	60% of the participants were filled out their follow-up questionnaires
2 4 - 1 2010 20	Prognostic factor	Moderate	Prognostic factors were self-reported 3
3. Anderson, 2019 ²⁰	Outcome	Moderate	Outcomes were self-reported 8
	Confounding	Low	Multivariate analyses were done with all available exposures
	Analysis/reporting	Low	Adequate analyses were used
	Participation	High	There were differences (e.g. in PTSD status) between participants and non-participants
	Attrition	High	Participants without follow-up data were excluded. The above therefore also holds for those lost at follow-up
4. Berninger, 2010 ²²	Prognostic factor	Low	Prognostic factors were self-reported and from regusters
-	Outcome	Moderate	Outcomes were self-reported
	Confounding	Low	Multivariate analyses were done with all available exposures
	Analysis/reporting	Low	Adequate analyses were used
	Participation	Moderate	No non-participant analysis has been presented by the authors.
	Attrition	Moderate	No loss to follow-up analyses were presented by the authors.
5. Brownlow, 2018 ²³	Prognostic factor	Moderate	Prognostic factors were self-reported
	Outcome	Moderate	Outcomes were self-reported
	Confounding	High	Only univariate analyses were reported

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		202
Analysis/reporting	Low	Adequate analyses were used
Participation	Low	It appears as if all eligible participants were analysed.
Attrition	Low	It appears as if all eligible participants were analysस्थ.
Prognostic factor	Low	Deployment records were used
Outcome	Low	Outcomes were diagnosed (it appears).
Confounding	High	No confounding adjustment were done
Analysis/reporting	High	Only descriptive statistics were provided
Participation	Low	It appears as if all eligible participants were analysed.
Attrition	Low	It appears as if all eligible participants were analysख्र.
Prognostic factor	Low	Deployment records were used
Outcome	Low	Outcomes were diagnosed
Confounding	Low	Multivariate analyses were done with all available exposures
Analysis/reporting	Low	Adequate analyses were used
Participation	Low	There were some differences between responders ₹and non-responders.
Attrition	Moderate	Since data were gathered retrospective, participation and attrition are similar.
Prognostic factor	Moderate	Both self-reports and employer data were used
Outcome	Moderate	Outcomes were self-reported using a validated quationnaire
Confounding	Low	Confounding adjustment was performed.
Analysis/reporting	Low	Adequate analyses were used
Participation	Low	11% non-response
Attrition	Moderate	Since data were gathered retrospective, participation and attrition are similar.
Prognostic factor	Moderate	Both self-reports and employer data were used
Outcome	Low	Outcome was diagnosed 5
Confounding	Low	Multivariate analyses were done with all available Exposures
Analysis/reporting	Low	Adequate analyses were used
Participation	High	There are substantial differences between responders and non-responders.
Attrition	High	There was substantial loss to follow-up
Prognostic factor	Moderate	Prognostic factors were self-reported
Outcome	Moderate	Outcomes were self-reported
Confounding	Low	Adjustment for confounding was performed.
Analysis/reporting	Low	Adequate analyses were conducted
Participation	Moderate	No non-participant analysis has been presented by the authors.
		No locate following analysis managed at the second
Attrition	Moderate	No loss to follow-up analyses were presented by the authors.
Attrition Prognostic factor	Moderate High	Prognostic factors were self-reported and it is unclear how
	Participation Attrition Prognostic factor Outcome Confounding Analysis/reporting	Participation Low Attrition Low Prognostic factor Low Outcome Low Confounding High Analysis/reporting High Participation Low Prognostic factor Low Outcome Low Confounding Low Attrition Low Prognostic factor Low Outcome Low Analysis/reporting Low Attrition Moderate Prognostic factor Moderate Outcome Moderate Confounding Low Analysis/reporting Low Participation Low Attrition Moderate Confounding Low Analysis/reporting Low Participation Low Attrition Moderate Prognostic factor Moderate Outcome Low Confounding Low Analysis/reporting Low Participation High Attrition High Prognostic factor Moderate Outcome Low Confounding Low Analysis/reporting Low Participation High Attrition High Prognostic factor Moderate Outcome Moderate Confounding Low Analysis/reporting Low Analysis/reporting Low

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	Confounding	Moderate	Multivariate analyses are not reported and it is un are what was done
	Analysis/reporting	Low	Adequate analyses were done.
	Participation	Low	There was 86% participation
	Attrition	Moderate	There was 67% participation at follow-up
	Prognostic factor	Moderate	Prognostic factors were self-reported.
12. Cukor, 2011 ³⁰	Outcome	Moderate	Outcomes were self-reported and obtained from ingerviews, with interview data used for exposure-outcome associations.
	Confounding	Low	Adjustment for confounding was performed.
 Cukor, 2011 ³⁰ Fear, 2010 ³¹ Ferrajao, 2016 ³² 	Analysis/reporting	Low	Adequate analyses were conducted
	Participation	High	There are substantial differences between responders and non-responders.
	Attrition	High	There was substantial loss to follow-up
10 5 0040 21	Prognostic factor	Low	Deployment administrative data were used
13. Fear, 2010 ³¹	Outcome	Moderate	
	Confounding	Low	Outcomes were self-reported Adjustment for confounding was performed.
	Analysis/reporting	Low	Adequate analyses were conducted
	Participation	High	Unclear but probably low participation rate
	Attrition	High	Since data were gathered retrospective, participation and attrition are similar.
14 F : 2046 ³⁷	Prognostic factor	Moderate	Prognostic factors were self-reported
14. Ferrajao, 2016 ³²	Outcome	Moderate	Outcomes were self-reported
	Confounding	High	No adjustment for confounding was performed.
	Analysis/reporting	Low	Adequate analyses were conducted
	Participation	High	There was substantial non-response
	Attrition	High	There was substantial loss to follow-up
15 Siehene 2015 33	Prognostic factor	Moderate	Prognostic factors were self-reported 9
15. Fichera, 2015 ³³	Outcome	Moderate	Outcomes were self-reported
	Confounding	Low	Adjustment for confounding was performed.
	Analysis/reporting	Low	Adequate analyses were conducted
	Participation	High	There was substantial non-response
	Attrition	High	There was substantial loss to follow-up
IC Find 2016 34	Prognostic factor	Moderate	Prognostic factors were self-reported
16. Fink, 2016 ³⁴	Outcome	Moderate	Outcomes were self-reported v
	Confounding	High	No adjustment for confounding was performed.
	Analysis/reporting	Low	Adequate analyses were conducted
17. Coodwin 2012 35	Participation	Low	There were no substantial differences between responders and non-responders.
17. Goodwin, 2012 ³⁵	Attrition	Low	There were no substantial differences between responders and non-responders (includ

27			BMJ Open Open-2021-0
			en-2
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			those lost to follow-up).
	Prognostic factor	Moderate	Prognostic factors were self-reported.
	Outcome	Moderate	Outcome was self-reported
	Confounding	Low	Confounding was properly adjusted for
	Analysis/reporting	Low	Appropriate analyses were used.
	Participation	Moderate	There was a substantial non-response (20%)
	Attrition	Moderate	There was a substantial loss to follow-up (39%) Prognostic factors were self-reported.
18. Green, 2016 ³⁶	Prognostic factor	Moderate	Prognostic factors were self-reported.
18. Green, 2016 **	Outcome	Low	Outcome was diagnosed in an interview
	Confounding	High	No confounding adjustment was conducted
	Analysis/reporting	Low	Appropriate analyses were used.
	Participation	High	There was a substantial amount of non-responder sand no non-responder analysis.
	Attrition	Moderate	There was a substantial amount of participants less to follow-up and no loss to follow-up analysis.
19. Hansen, 2017 ³⁷	Prognostic factor	Moderate	Prognostic factors were self-reported
	Outcome	Moderate	Outcomes were self-reported
	Confounding	Low	Confounding was properly adjusted for
	Analysis/reporting	Low	Appropriate analyses were used.
	Participation	High	There were substantial differences (e.g. in age and gender) between responders and non responders.
	Attrition	Moderate	No loss to follow-up analysis were reported
20. Harvey, 2012 ³⁸	Prognostic factor	Low	Prospective factors were determined based on deployment characteristics
	Outcome	Moderate	Outcome was self-reported
	Confounding	Low	Confounding was properly adjusted for
	Analysis/reporting	Low	Appropriate analyses were used.
	Participation	Moderate	No non responder analysis was performed
	Attrition	Moderate	No loss to follow-up analysis was performed
	Prognostic factor	Moderate	Prognostic factors were self-reported
21. Horesh, 2011 ³⁹	Outcome	Moderate	Outcome was self-reported ල
	Confounding	High	No confounding analyses were conducted g
	Analysis/reporting	Moderate	The description of the analysis is unclear
	Participation	Moderate	No non-responder analysis was performed
	Attrition	High	There was substantial loss to follow-up in this stud
22. Hourani, 2012 ⁴⁰	Prognostic factor	Moderate	Duramontic fortune wave celf reported
	Outcome	Moderate	Outcome was all more and all
	1		Outcome was seir-reported

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	Confounding	High	No confounding analyses were conducted (algebrases, not for the exposure associations)	
	Analysis/reporting	High	Only descriptive statistics were reported (at least, for the exposure-outcome associate	tions)
	Participation	Moderate	About 15% non-response.	
	Attrition	Moderate	There was substantial loss to follow-up with differences between those who were a not lost.	and wer
23. Ikeda, 2017 ⁴¹	Prognostic factor	Moderate	Prognostic factors were self-reported	
	Outcome	Moderate	Outcome was self-reported	
	Confounding	Low	Confounding was properly adjusted for	
	Analysis/reporting	Low	Appropriate analyses were used.	
	Participation	Moderate	There was a substantial non-response	
	Attrition	Moderate	There was a substantial loss to follow-up	
24. Joseph, 2014 ⁴²	Prognostic factor	Moderate	Prognostic factors were self-reported	
	Outcome	Moderate	Outcome was self-reported	
	Confounding	Low	Confounding was properly adjusted for	
	Analysis/reporting	Low	Appropriate analyses were used.	
	Participation	Moderate	No non-responder analyses were presented	
	Attrition	Low	Loss to follow-up analyses indicated no substantia differences between those who	remaine
			in the cohort or not.	
25. Karstoft, 2013 43	Prognostic factor	Moderate	Prognostic factors were self-reported 3	
	Outcome	Moderate	Outcome was self-reported 8	
	Confounding	High	No adjustment for confounding were performed	
25. Karstoft, 2013 ⁴³	Analysis/reporting	Low	Adequate statistical analyses were conducted	
	Participation	Moderate	No non-responder analyses were presented ੂ ਰ੍ਹ	
	Attrition	Low	Loss to follow-up analyses indicated no substantia Ldifferences between those who in the cohort or not.	remaine
26. Karstoft, 2015 44	Prognostic factor	Moderate	Prognostic factors were self-reported	
	Outcome	Moderate	Outcome was self-reported	
	Confounding	High	No adjustment for confounding were performed 👱	
	Analysis/reporting	Low	Adequate statistical analyses were conducted $\frac{\overline{0}}{2}$	
	Participation	Low	Very high >99% participation rate	
	Attrition	Low	Very high >99% participation rate in follow-up	
27. Kim, 2014 ⁴⁵	Prognostic factor	Moderate	Prognostic factors were self-reported	
	Outcome	Low	Outcome was diagnosed during an interview	
	Confounding	Low	Adjustment for confounding was performed	
	1	1 -	Very high >99% participation rate in follow-up Prognostic factors were self-reported Outcome was diagnosed during an interview Adjustment for confounding was performed Outcome was diagnosed for confounding was performed Outcome was diagnosed during an interview Adjustment for confounding was performed	

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	Analysis/reporting	Low	Adequate analyses were conducted 8
	1 1		Responders comprised >90% of the eligible population
	Participation Attrition	Low	<u> </u>
		Low	Participants during follow-up comprised >90% of the cohort
28. Levin-Rector, 2018 46	Prognostic factor	Low	Prognostic factors were obtained from database information
	Outcome	Low	Outcomes were obtained from diagnosed register formation
	Confounding	Moderate	Only adjustment for clustering within units was do fe
	Analysis/reporting	Low	Adequate statistical analyses were conducted 8
	Participation	Moderate	It is unclear what the non-response in this study was
	Attrition	Moderate	It is unclear what the loss to follow-up in this study was
29. MacGregor, 2015 ⁴⁷	Prognostic factor	Low	Prognostic factors were obtained from register data
	Outcome	Low	Outcomes were obtained from register data and ware diagnosed.
	Confounding	Low	Adjustment for confounding has been conducted টু
	Analysis/reporting	Low	Adequate statistical analyses were used.
30. MacGregor, 2012 ⁴⁸	Participation	Low	All eligible participants were analysed.
	Attrition	Low	All eligible participants were analysed.
	Prognostic factor	Low	Register data were used
	Outcome	Low	Diagnosed register data were used <u>3</u> .
	Confounding	Low	Adjustment for confounding has been conducted g
	Analysis/reporting	Low	Adequate statistical analyses were used.
	Participation	Moderate	No non-responder analyses were presented 3.
	Attrition	Moderate	No loss to follow-up analyses were presented
21 Maguan 2012 49	Prognostic factor	Moderate	Prognostic factors were self-reported
31. Maguen, 2012	Outcome	Moderate	Outcome was self-reported
	Confounding	Low	Adjustment for confounding was done
D. MacGregor, 2012 ⁴⁸ 1. Maguen, 2012 ⁴⁹	Analysis/reporting	Low	Adequate analyses were used
	Participation	Moderate	No non-responder analyses were presented
	Attrition	Moderate	No loss to follow-up analyses were presented
22.14	Prognostic factor	Low	Prognostic factors were obtained from company deta.
32. Maguen, 2010 ⁵⁰	Outcome	Low	
	Confounding	High	Outcome was diagnosed No adjustment for confounding was done
	Analysis/reporting	Low	Adequate analyses were used
33. Martindale, 2018 ⁵¹	Participation	High	No non-responder analyses were presented, with substantial non-response.
	Attrition	Moderate	No loss to follow-up analyses were presented $\frac{6}{6}$
	Prognostic factor	Moderate	Prognostic factors were obtained from an interview
	Outcome	Low	
	1	-	Outcome was diagnosed during an interview opyrigint.
			yrig

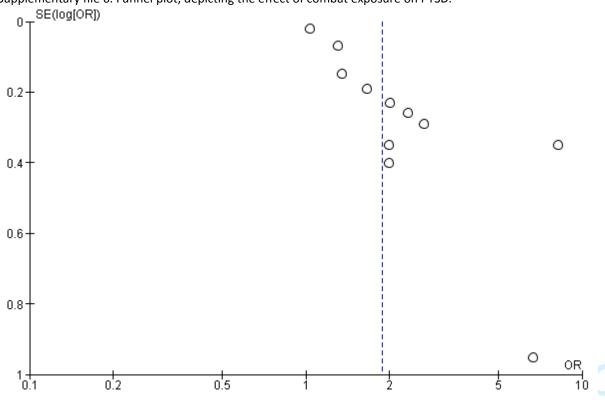
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	Confounding	High	No adjustment for confounding was done
	Analysis/reporting	High	No statistical analysis was done on the exposure-outcome association (only other analysis).
	Participation	Moderate	No non-responder analyses were presented
	Attrition	Moderate	No loss to follow-up analyses were presented
24 Nagamina 2019 52	Prognostic factor	Moderate	Prognostic factors were self-reported Outcome was self-reported
 4. Nagamine, 2018 ⁵² 5. Osorio, 2018 ⁵³ 6. Pihl-Thingvad, 2019 ⁵⁴ 7. Polusny, 2011 ⁵⁵ 	Outcome	Moderate	Outcome was self-reported
	Confounding	High	No adjustment for confounding was done
	Analysis/reporting	Low	Adequate analyses were used $\frac{N}{2}$
	Participation	High	A substantial amount of eligible participants did pt participate. No non responder analysi
			was conducted.
	Attrition	High	A substantial amount of participants were lost in 🛱 e follow-up. No loss to follow-up analys
2E Osorio 2019 53			was conducted. $\frac{\Omega}{\Phi}$
35. Osorio, 2018 ³³	Prognostic factor	Moderate	Prognostic factors were self-reported
	Outcome	Moderate	Outcome was self-reported
	Confounding	Low	Confounding analyses were conducted
	Analysis/reporting	Low	Adequate statistical analyses were performed.
	Participation	Low	Responders and non-responders did not differ substantially from one another (only in age)
	Attrition	Low	Variables that predicted loss to follow-up (e.g. baseline PTSD) were adjusted for
26 Dibl Thinguad 2010 54	Prognostic factor	Moderate	Prognostic factors were self-reported
36. Pihl-Thingvad, 2019 ⁵⁴	Outcome	Moderate	Outcome was self-reported 3.
	Confounding	Low	Confounding analyses were conducted
	Analysis/reporting	Low	Adequate statistical analyses were performed.
	Participation	Moderate	There were slight differences between responders and non-responders
	Attrition	Moderate	There were slight differences between those with and without follow-up data
27 Polyspy 2011 55	Prognostic factor	Moderate	Prognostic factors were self-reported $\frac{1}{2}$
37. Polusny, 2011 ³³	Outcome	Moderate	Outcome was self-reported
	Confounding	Low	Confounding analyses were conducted
	Analysis/reporting	Low	Adequate statistical analyses were performed.
	Participation	High	There were substantial differences (e.g. in mental health) between responders and nor
			responders.
	Attrition	High	Participants without follow-up data were excluded The above therefore also holds for those
38. Reijnen, 2015 ⁵⁶			lost at follow-up
	Prognostic factor	Moderate	Prospective factors were self-reported
	Outcome	Moderate	Outcome was self-reported
	Confounding	High	No confounding adjustment was conducted
			No confounding adjustment was conducted Population was defined by the confounding adjustment was conducted Population was defined by the confounding adjustment was conducted Population was defined by the confounding adjustment was conducted Population was defined by the confounding adjustment was conducted Population was defined by the confounding adjustment was conducted by the confounding adjustment was cond
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	Analysis/reporting	Low	Appropriate analyses were used.
	Participation	Moderate	It is unclear what the non-response in this study was
	Attrition	Moderate	It is unclear what the loss to follow-up in this study—was
20 Shan 2012 57	Prognostic factor	Moderate	Prognostic factors were self-reported
40. Soo, 2011 ⁵⁸ 41. Stevelink, 2018 ⁵⁹	Outcome	Low	Outcome was diagnosed during a structured intervew.
	Confounding	Low	Confounding analyses were conducted
	Analysis/reporting	Low	Adequate statistical analyses were performed.
40. Soo, 2011 ⁵⁸ 41. Stevelink, 2018 ⁵⁹	Participation	Moderate	It is unclear what the non-response in this study was
	Attrition	Moderate	It is unclear what the loss to follow-up in this study was
40 5 2011 58	Prognostic factor	Moderate	Prognostic factors were self-reported
39. Shea, 2013 ⁵⁷ 40. Soo, 2011 ⁵⁸ 41. Stevelink, 2018 ⁵⁹ 42. Wittchen, 2012 ⁶⁰	Outcome	Moderate	Outcome was self-reported
	Confounding	Low	Confounding analyses were conducted
	Analysis/reporting	Low	Adequate statistical analyses were performed.
	Participation	High	There was substantial non-response
	Attrition	High	There was substantial loss to follow-up
44 Shoughing 2019 59	Prognostic factor	Moderate	Prognostic factors were self-reported
41. Stevelink, 2018 ³³	Outcome	Moderate	Outcomes were self-reported 3
	Confounding	Low	Adjustment for confounding was performed.
	Analysis/reporting	Low	Adequate analyses were conducted
	Participation	Moderate	It is unclear what the non-response in this study was
	Attrition	Moderate	It is unclear what the loss to follow-up in this study was
43 With the are 2042 60	Prognostic factor	Moderate	Prognostic factors were self-reported
42. Wittchen, 2012 **	Outcome	Low	Outcomes was diagnosed during a structured interdiew
	Confounding	High	No adjustment for confounding was performed $\frac{9}{2}$.
	Analysis/reporting	Low	Adequate analyses were conducted
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Supplementary file 7. Forest plot depicting the effect of number of army deployments (one versus multiple) with PTSD, stratified for risk of bias.

, , , , , , , , , , , , , , , ,			Odds Ratio	Odds Ratio	551
Study or Subgroup	log[Odds Ratio] SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI	S
2.1.1 Low methodolo	gical quality				25
Fear, 2010 Subtotal (95% CI)	-0.13 0.21	0.0% 0.0%	0.88 [0.58, 1.33] 0.88 [0.58, 1.33]	•	Augus
Heterogeneity: Not ap Test for overall effect:					on 25 August 2021. Downloaded from http://bm/gben.bm/.com/ on April 18, 2024 by guest. Protected by copyright.
2.1.2 High methodolo	gical quality				Dον
Ciarleglio, 2018	-0.19 0.57	0.0%	0.83 [0.27, 2.53]		<u>N</u>
Maguen, 2010	0.14 0.004		1.15 [1.14, 1.16]) ade
Subtotal (95% CI)	0.00: 01:3 0.04 46 4	100.0%	1.15 [1.14, 1.16]		ğ fr
	0.00; Chi ² = 0.34 , df = 1 Z = 35.00 (P < 0.00001)	(P = 0.56);	I*= U%		MO.
reaction overall ellect.	2-30.00 (1 - 0.00001)				http
Total (95% CI)		100.0%	1.15 [1.14, 1.16]		://br
	0.00; Chi ² = 1.99, df = 2	(P = 0.37);	l² = 0%	0.01 0.1 1 10 10	蔵
	Z= 34.98 (P < 0.00001) erences: Chi² = 1.65, df=	1 (P = 0.2	n\ i≥= 30.5%		en.
restror subgroup unit	sielices. Olii = 1:05, ui-	. 1 (1 - 0.2	0),1 = 33.3 %		<u>m</u>
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Supplementary file 8.	Forest plot depicting the effect of	f combat exposure with PTSD, stratified for ris	k of bias.

Supplementary file 8. F	Supplementary file 8. Forest plot depicting the effect of combat exposure with PTSD, stratified for risk of bias. 8 Odds Ratio Odds Ratio										
Study or Subgroup	log[Odds Ratio]	SF	Weight	IV, Random, 95% CI	IV, Random, 95% CI						
2.2.1 Low methodolo		- OL	Worging	TV, Rundom, 00% Cr	25						
Connorton, 2011		0.35	7.1%	8.17 [4.11, 16.22]	→ Au						
Green, 2016		0.02	14.0%	1.03 [0.99, 1.07]	• gu						
Osorio, 2018	0.3	0.15	11.9%	1.35 [1.01, 1.81]	** 2						
Stevelink, 2018	0.7	0.23	9.9%	2.01 [1.28, 3.16]	021						
Wittchen, 2012	1.89	0.95	1.7%	6.62 [1.03, 42.60]	- :						
Subtotal (95% CI)			44.7%	2.17 [1.23, 3.85]	• OW						
Heterogeneity: Tau ² =			‡ (P < 0.0)	0001); I²= 92%							
Test for overall effect	Z = 2.66 (P = 0.00)	3)			ad						
2.2.2 High methodolo	ogical quality				PTSD, stratified for risk of bias. Odds Ratio IV, Random, 95% CI August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 100, 100, 100, 100, 100, 100, 100,						
Cukor, 2011	0.27	0.07	13.6%	1.31 [1.14, 1.50]	- 3 <u>-</u>						
Goodwin, 2012	0.69	0.4	6.2%	1.99 [0.91, 4.37]	 • • • • • • • • • • • • • • • • • • •						
Harvey, 2012	0.98	0.29	8.4%	2.66 [1.51, 4.70]							
MacGregor, 2015	0.51		10.9%	1.67 [1.15, 2.42]	<u>→</u> 3.						
Polusny, 2011		0.26	9.1%	2.34 [1.41, 3.89]							
Shea, 2013	0.69	0.35	7.1%	1.99 [1.00, 3.96]	<u> </u>						
Subtotal (95% CI)	0.00 01:7 44.07		55.3%	1.80 [1.37, 2.37]	▼						
Heterogeneity: Tau² =		-) (P = 0.0	4); I*= 58%	Ř						
Test for overall effect	: ∠ = 4.20 (P < 0.00)	J1)			or or						
Total (95% CI)			100.0%	1.89 [1.46, 2.45]	. Ap						
Heterogeneity: Tau ^z =	= 0.12; Chi ² = 88.86	df = 1	I0 (P < 0.i	00001); I²= 89%	0.01 0.1 1 10 1006						
Test for overall effect	$Z = 4.79 (P \le 0.00)$	001)			0.01 0.1 1 10 1000						
Test for subgroup dif	ferences: Chi²= 0.3	33, df=	= 1 (P = 0.	.57), I² = 0%	202						
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Supplementary file 9. Forest plot depicting the effect of army deployment with PTSD, stra	atified for risk of bias.
Odds Ratio	Odds Ratio

				Oddo Mado		Oudo	rucio	
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI		IV, Rando	m, 95% C	1
2.3.1 Low methodolo	gical quality							
Reijnen, 2015	0.56	0.12	79.2%	1.75 [1.38, 2.21]				
Stevelink, 2018	0.52	0.27	15.6%	1.68 [0.99, 2.86]			-	
Wittchen, 2012	1.44	0.91	1.4%	4.22 [0.71, 25.12]		_		
Subtotal (95% CI)			96.2%	1.76 [1.42, 2.18]			•	
Heterogeneity: Tau ² =	0.00; Chi ² = 0.95 ,	df= 2	(P = 0.62)	; I² = 0%				
Test for overall effect:	$Z = 5.20 (P \le 0.000$	001)						
2.3.2 High methodolo	gical quality							
Joseph, 2014	1.03	0.55	3.8%	2.80 [0.95, 8.23]		•	<u> </u>	_
Subtotal (95% CI)			3.8%	2.80 [0.95, 8.23]			$\overline{}$	
Heterogeneity: Not ap	plicable							
Test for overall effect:	Z = 1.87 (P = 0.06)							
Total (95% CI)			100.0%	1.79 [1.45, 2.21]			•	
Heterogeneity: Tau ² =	0.01	0.1	1	10				
Test for overall effect:	,		0.01	0.1	•			
Test for subgroup diff	'erences: Chi² = 0.6	41), I² = 0%		- 1 > 1				

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Supplementary file 10.	Forest plot depictin	g the	effect of	confrontation with dea	ath with PTSD,	stratified for risk of bias.	04965
				Odds Ratio		Odds Ratio	51
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI		IV, Random, 95% CI	9n
2.4.2 Low methodolo	gical quality						25

iity			
0.62	0.21	9.9%	1.86 [1.23, 2.81]
0.31	0.05	34.2%	1.36 [1.24, 1.50]
0.51	0.15	15.6%	1.67 [1.24, 2.23]
		59.7%	1.50 [1.25, 1.80]
	0.62 0.31	0.62 0.21 0.31 0.05 0.51 0.15	0.62 0.21 9.9% 0.31 0.05 34.2% 0.51 0.15 15.6%

Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 3.41$, df = 2 (P = 0.18); $I^2 = 41\%$

Test for overall effect: Z = 4.40 (P < 0.0001)

2.4.3 High methodological quality

Goodwin, 2012	0.7 0.3	39 3.5%	2.01 [0.94, 4.32]
lkeda, 2017	0.73 0.2	23 8.6%	2.08 [1.32, 3.26]
Kim, 2017	0.91 1.1	14 0.4%	2.48 [0.27, 23.20]
MacGregor, 2015	0.55 0.0	08 27.8%	1.73 [1.48, 2.03]
Subtotal (95% CI)		40.3%	1.78 [1.54, 2.06]

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.74$, df = 3 (P = 0.86); $I^2 = 0\%$

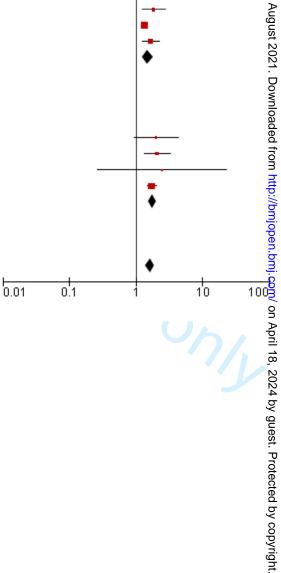
Test for overall effect: Z = 7.78 (P < 0.00001)

Total (95% CI) 1.63 [1.41, 1.90] 100.0%

Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 11.19$, df = 6 (P = 0.08); $I^2 = 46\%$

Test for overall effect: Z = 6.46 (P < 0.00001)

Test for subgroup differences: $Chi^2 = 2.01$, df = 1 (P = 0.16), $I^2 = 50.3\%$



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Supplementary file 11. Forest plot depicting the effect of number of army deployments (one versus multiple) with PTSD, stratified for study design.

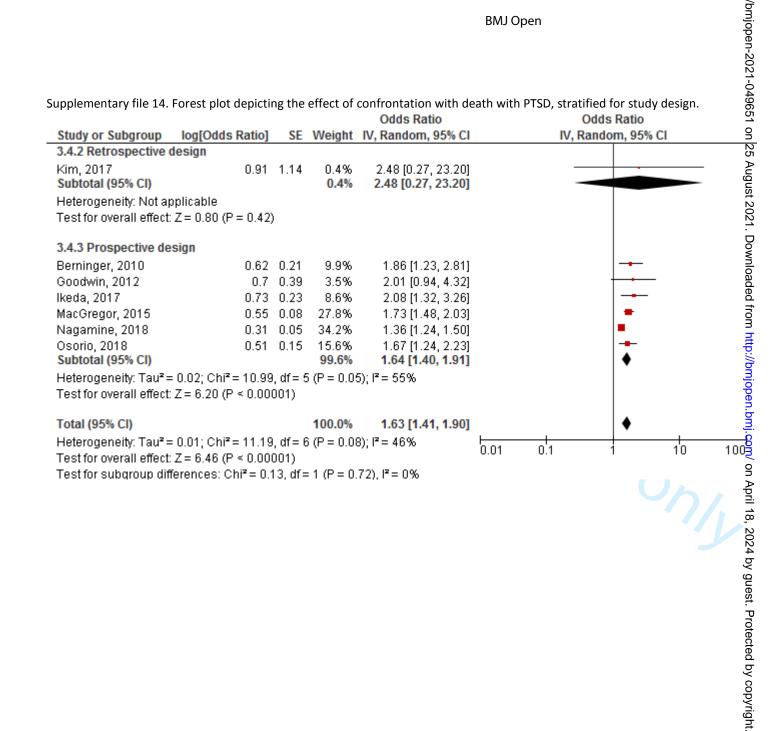
Supplementary life 11.	Forest plot depictif	ig the e	nect of n	Odds Ratio	One versus multipi	a) with P13D, Strai	rinecelor
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Randor	n, 95% CI	9
3.1.1 Retrospective of	design			,	ŕ		25
Ciarleglio, 2018	-0.19	0.57	0.0%	0.83 [0.27, 2.53]		_	Au
Maguen, 2010	0.14	0.004	100.0%	1.15 [1.14, 1.16]			gust
Subtotal (95% CI)	0.00.053.004	-16 A (F	100.0%	1.15 [1.14, 1.16]			: 20
Heterogeneity: Tau*= Test for overall effect:	Z= 35.00 (P < 0.00	ατ = 1 (F 3001)	² = U.56);	r= U%	Odds IV, Randor		21. Do
3.1.2 Prospective de	sign						wnl
Fear, 2010	-0.13	0.21	0.0%	0.88 [0.58, 1.33]	-	-	oad
Subtotal (95% CI)			0.0%	0.88 [0.58, 1.33]	•	•	ed f
Heterogeneity: Not ap	plicable						rom
Test for overall effect:	Z = 0.62 (P = 0.54)	l					<u>h</u>
Total (95% CI)			100.0%	1.15 [1.14, 1.16]			o://b
Heterogeneity: Tau² =	: 0.00; Chi² = 1.99,	df = 2 (F	9 = 0.37);	l² = 0%	0.01 0.1 1	10	100
Test for overall effect:	Z= 34.98 (P < 0.00	0001)			0.01 0.1 1	10	' g er
Test for subgroup diff	ferences: Chi² = 1.6	65, df=	1 (P = 0.2	0), I ^z = 39.5%			1.bm
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Supplementary file 12. Forest plot	depicting the effect of combat expos	sure with PTSD, stratified for study design.

2.1 Retrospective destinnorton, 2011 een, 2016 evelink, 2018 ttchen, 2012 btotal (95% CI) eterogeneity: Tau² = 0. st for overall effect: Z:	2.1 0 0.03 0 0.7 0 1.89 0 79; Chi² = 46.90, d	.35 7.1% .02 14.0% .23 9.9%	1.03 [0.99, 1.07] 2.01 [1.28, 3.16]	IV, Kallut	y design. s Ratio om, 95% CI
ennorton, 2011 een, 2016 evelink, 2018 ttchen, 2012 btotal (95% CI) eterogeneity: Tau² = 0. st for overall effect: Z:	2.1 0 0.03 0 0.7 0 1.89 0 79; Chi² = 46.90, d	.02 14.0% .23 9.9% .95 1.7%	1.03 [0.99, 1.07] 2.01 [1.28, 3.16]		-
een, 2016 evelink, 2018 ttchen, 2012 btotal (95% CI) eterogeneity: Tau² = 0. st for overall effect: Z :	0.03 0 0.7 0 1.89 0 79; Chi² = 46.90, c	.02 14.0% .23 9.9% .95 1.7%	1.03 [0.99, 1.07] 2.01 [1.28, 3.16]		+
evelink, 2018 ttchen, 2012 btotal (95% CI) eterogeneity: Tau² = 0. st for overall effect: Z :	0.7 0 1.89 0 79; Chi² = 46.90, d	.23 9.9% .95 1.7%	2.01 [1.28, 3.16]		
ttchen, 2012 btotal (95% CI) sterogeneity: Tau² = 0. st for overall effect: Z :	1.89 0 79; Chi² = 46.90, d	.95 1.7%			-
btotal (95% CI) terogeneity: Tau² = 0. st for overall effect: Z: 2.2 Prospective design	79; Chi² = 46.90, d		6.62 [1.03, 42.60]		-
st for overall effect: Z:		32.070			◆
2.2 Prospective desig	= 2.11 (P = 0.03)	f= 3 (P < 0.0	0001); I²= 94%		
_					
	ın				
ıkor, 2011	0.27 0	.07 13.6%	1.31 [1.14, 1.50]		•
odwin, 2012	0.69	0.4 6.2%	1.99 [0.91, 4.37]		-
irvey, 2012		.29 8.4%	2.66 [1.51, 4.70]		-
icGregor, 2015		.19 10.9%	1.67 [1.15, 2.42]		-
orio, 2018	0.3 0		1.35 [1.01, 1.81]		-
lusny, 2011	0.85 0		2.34 [1.41, 3.89]		
ea, 2013	0.69 0		1.99 [1.00, 3.96]		
btotal (95% CI)	00.053 40.44	67.2%	1.66 [1.34, 2.05]		▼
:terogeneity: Tau² = 0. st for overall effect: Z :			b); I*= 50%		
tal (95% CI)		100.0%	1.89 [1.46, 2.45]		_
	10: Obiz = 00.00 a				_
terogeneity: Tau² = 0. st for overall effect: Z :			00001), 17 = 89%	0.01 0.1	i 1'0 1
st for subgroup differe	,	•	20\ 3 - 10 2%		
ation adaptions differen	siices. Oiii = 1.11	ui – 1 (1 – 0	.23),1 - 10.2 %		

Supplementary file 13. Forest plot depicting the effect of army deployment with PTSD, stratified for study design

27					BMJ Open	/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyright.
Supplementary file 13.	Forest plot depicti	ng the	effect of	army deployment wit Odds Ratio	h PTSD, stratified for study design. Odds Ratio	21-049651
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI	on on
3.3.1 Retrospective						25
Joseph, 2014	1.03	0.55	3.8%	2.80 [0.95, 8.23]	-	Αu
Stevelink, 2018	0.52	0.27	15.6%	1.68 [0.99, 2.86]	-	gus
Wittchen, 2012 Subtotal (95% CI)	1.44	0.91	1.4% 20.8%	4.22 [0.71, 25.12] 1.96 [1.24, 3.10]	•	— st 202
Heterogeneity: Tau ² =	: 0.00° Chi² = 1.45	df = 2				21
Test for overall effect			(1 – 0.40)	,,1 = 0.00		Down
3.3.2 Prospective de	sign				_	lloade
Reijnen, 2015 Subtotal (95% CI)	0.56	0.12	79.2% 79.2%	1.75 [1.38, 2.21] 1.75 [1.38, 2.21]	•	ed fro
Heterogeneity: Not ap Test for overall effect	•	001)				m http:
Total (95% CI)			100.0%	1.79 [1.45, 2.21]	•	//bmj
Heterogeneity: Tau ² :	0.00; Chi² = 1.64,	df= 3	(P = 0.65)); I² = 0%	0.01 0.1 1 11	100
Test for overall effect	•	-			0.01 0.1 1	, 100 2
Test for subgroup dif	ferences: Chi² = 0.1	19, df=	= 1 (P = 0.	67), I² = 0%	1171	<u>3</u> .
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Supplementary file 15. Forest plot depicting the effect of number of army deployments (one versus multiple) with PTSD, stratifies for type of PTSD ascertainment.

				Odds Ratio	Odds Ratio	5
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI	9n_
4.1.1 Probable PTSD						25
Fear, 2010 Subtotal (95% CI)	-0.13	0.21	0.0% 0.0%	0.88 [0.58, 1.33] 0.88 [0.58, 1.33]	•	51 on 25 August 2021. Downloaded from http://bm/@pen.bm/.com/ on April 18, 2024 by guest. Protected by copyright.
Heterogeneity: Not ap Test for overall effect:						st 202
rootior oronan onoot.	2 0.02 (0.0)					<u> </u>
4.1.2 Diagnosed PTS	D					WO(
Ciarleglio, 2018	-0.19	0.57	0.0%	0.83 [0.27, 2.53]		nlo
Maguen, 2010 Subtotal (95% CI)	0.14	0.004	100.0% 100.0 %	1.15 [1.14, 1.16] 1.15 [1.14, 1.16]	T.	aded
Heterogeneity: Tau ² =	0.00; Chi² = 0.34, (df = 1 (F				fro
Test for overall effect:	Z= 35.00 (P < 0.00	1001)				n htt
Total (95% CI)			100.0%	1.15 [1.14, 1.16]		p://bi
Heterogeneity: Tau² = Test for overall effect:			P = 0.37);	l² = 0%	0.01 0.1 1 10 1	
Test for subgroup diff			1 (P = 0.2	0), i² = 39.5%		en.l
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Supplementary file 16. Forest plot depicting the effect of combat exposure with PTSD, stratified for type of PTSD ascertainment.

Odds Ratio

Odds Ratio

Odds Ratio

Study or Subgroup log Odds Ratio SE Weight IV, Random, 95% CI IV, Random, 95% CI SE Weight IV, Random, 95% CI IV, Random, 95% CI SE Weight IV, Random, 95% CI SE SE Weight IV, Random, 95% CI SE SE Weight IV, Random, 95% CI SE SE SE SE SE SE SE S					Odds Ratio	Odds Ratio 55
4.2.1 Probable PTSD Goodwin, 2012 0.69 0.4 6.2% 1.99 (0.91, 4.37) Harvey, 2012 0.98 0.29 8.4% 2.66 (1.51, 4.70) Osorio, 2018 0.3 0.15 11.9% 1.35 (1.01, 1.81) Polusny, 2011 0.85 0.26 9.1% 2.34 (1.41, 3.89) Stevelink, 2018 0.7 0.23 9.9% 2.01 (1.128, 3.16) Subtotal (95% CI) 45.5% 1.90 (1.44, 2.52) Heterogeneity. Tau² = 0.04; Chi² = 6.81, df = 4 (P = 0.15); P = 41% Test for overall effect Z = 4.48 (P < 0.00001) 4.2.2 Diagnosed PTSD Connorton, 2011 0.27 0.07 13.6% 1.31 (1.14, 1.50) Green, 2016 0.03 0.02 14.0% 1.03 (0.99, 1.07) MacGregor, 2015 0.51 0.19 10.9% 1.67 (1.15, 2.42) Shea, 2013 0.69 0.35 7.1% 1.99 (1.03, 3.96) Wittchen, 2012 1.89 0.95 1.7% 6.62 (1.03, 42.60) Subtotal (95% CI) 1.89 0.95 1.7% 6.62 (1.03, 42.60) Subtotal (95% CI) 54.5% 1.80 (1.28, 2.54) Heterogeneity. Tau² = 0.11; Chi² = 57.78, df = 5 (P < 0.00001); P = 91% Test for overall effect Z = 4.39 (P < 0.00007) Total (95% CI) 10.0.0% 1.89 (1.46, 2.45) Heterogeneity. Tau² = 0.12; Chi² = 88.86, df = 10 (P < 0.00001); P = 99% Test for overall effect Z = 4.79 (P < 0.00001) Test for subgroup differences: Chi² = 0.06, df = 1 (P = 0.81), P = 0%	Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI S
Goodwin, 2012 0.68 0.4 6.2% 1.99 [0.91, 4.37] Harvey, 2012 0.98 0.29 8.4% 2.66 [1.51, 4.70] Osorio, 2018 0.3 0.15 11.9% 1.35 [1.01, 1.81] Polusny, 2011 0.85 0.26 9.1% 2.34 [1.41, 3.89] Stevelink, 2018 0.7 0.23 9.9% 2.01 [1.28, 3.16] Subtotal (95% CI) 45.5% 1.90 [1.44, 2.52] Heterogeneity, Tau² = 0.04; Chi² = 6.81, df = 4 (P = 0.15); F = 41% Test for overall effect: Z = 4.48 (P < 0.00001) 4.2.2 Diagnosed PTSD Connorton, 2011 0.27 0.07 13.8% 1.31 [1.14, 1.50] Green, 2016 0.03 0.02 14.0% 1.03 [0.99, 1.07] MacGregor, 2015 0.51 0.19 10.9% 1.87 [1.15, 2.42] Shea, 2013 0.69 0.35 7.1% 1.99 [1.00, 3.96] Wittchen, 2012 1.89 0.95 1.7% 6.62 [1.03, 42.60] Subtotal (95% CI) 5.45% 1.80 [1.28, 2.54] Heterogeneity, Tau² = 0.11; Chi² = 57.78, df = 5 (P < 0.00001); F = 91% Test for overall effect: Z = 3.39 (P = 0.0007) Total (95% CI) 10.9 8.86, df = 10 (P < 0.00001); F = 99% Test for overall effect: Z = 4.79 (P < 0.000001) Test for subgroup differences: Chi² = 0.06, df = 1 (P = 0.81), F = 0%	4.2.1 Probable PTSD					25
Harvey, 2012 0.98 0.29 8.4% 2.66 [1.51, 4.70] Osorio, 2018 0.3 0.15 11.9% 1.35 [1.01, 1.81] Polusny, 2011 0.85 0.26 9.1% 2.34 [1.41, 3.89] Stevelink, 2018 0.7 0.23 9.9% 2.01 [1.28, 3.16] Subtotal (95% CI) 45.5% 1.90 [1.44, 2.52] Heterogeneity, Tau* = 0.04; Chi* = 6.81, df = 4 (P = 0.15); i* = 41% Test for overall effect Z = 4.48 (P < 0.00001) 4.2.2 Diagnosed PTSD Connorton, 2011 2.1 0.35 7.1% 8.17 [4.11, 16.22] Cukor, 2011 0.27 0.07 13.8% 1.31 [1.14, 1.50] Green, 2016 0.03 0.02 14.0% 1.03 [0.99, 1.07] MacGregor, 2015 0.51 0.19 10.9% 1.67 [1.15, 2.42] Shea, 2013 0.69 0.35 7.1% 1.99 [1.00, 3.96] Wittchen, 2012 1.89 0.95 1.7% 6.62 [1.03, 42.60] Subtotal (95% CI) 54.5% 1.80 [1.28, 2.54] Heterogeneity, Tau* = 0.11; Chi* = 57.78, df = 5 (P < 0.00001); i* = 91% Test for overall effect Z = 3.39 (P = 0.0007) Total (95% CI) 100.0% 1.89 [1.46, 2.45] Heterogeneity, Tau* = 0.12; Chi* = 88.86, df = 10 (P < 0.00001); i* = 89% Test for overall effect Z = 4.79 (P < 0.00001) Test for subgroup differences: Chi* = 0.06, df = 1 (P = 0.81), i* = 0%	Goodwin, 2012	0.69	0.4	6.2%	1.99 [0.91, 4.37]	
Osorio, 2018	Harvey, 2012	0.98	0.29	8.4%	2.66 [1.51, 4.70]	gus
Polusmy, 2011 0.85 0.26 9.1% 2.34 [1.41, 3.89] Stevelink, 2018 0.7 0.23 9.9% 2.01 [1.28, 3.16] Subtotal (95% CI) 45.5% 1.90 [1.44, 2.52] Heterogeneity, Tau² = 0.04; Chi² = 6.81, df = 4 (P = 0.15); P = 41% Test for overall effect. Z = 4.48 (P < 0.00001) 4.2.2 Diagnosed PTSD Connorton, 2011 2.1 0.35 7.1% 8.17 [4.11, 16.22] Cukor, 2011 0.27 0.07 13.6% 1.31 [1.14, 1.50] Green, 2016 0.03 0.02 14.0% 1.03 [0.99, 1.07] MacGregor, 2015 0.51 0.19 10.9% 1.67 [1.15, 2.42] Shea, 2013 0.69 0.35 7.1% 1.99 [1.00, 3.96] Wittchen, 2012 1.89 0.95 1.7% 6.62 [1.03, 42.60] Subtotal (95% CI) 54.5% 1.80 [1.28, 2.54] Heterogeneity, Tau² = 0.11; Chi² = 57.78, df = 5 (P < 0.00001); P = 91% Test for overall effect. Z = 4.79 (P < 0.00001) Test for subgroup differences: Chi² = 0.06, df = 1 (P = 0.81), P = 0%				11.9%		- 120
Stevelink, 2018						- − 21
Subtotal (95% CI) 45.5% 1.90 (1.44, 2.52) Heterogeneity: Tau² = 0.04; Chi² = 6.81, df = 4 (P = 0.15); i² = 41% Test for overall effect: Z = 4.48 (P < 0.00001) 4.2.2 Diagnosed PTSD Connorton, 2011 2.1 0.35 7.1% 8.17 [4.11, 16.22] Cukor, 2011 0.27 0.07 13.6% 1.31 [1.14, 1.50] Green, 2016 0.03 0.02 14.0% 1.03 [0.99, 1.07] MacCregor, 2015 0.51 0.19 10.9% 1.67 [1.15, 2.42] Shea, 2013 0.69 0.35 7.1% 1.99 [1.00, 3.96] Wittchen, 2012 1.89 0.95 1.7% 6.62 [1.03, 42.60] Subtotal (95% CI) 54.5% 1.80 [1.28, 2.54] Heterogeneity: Tau² = 0.11; Chi² = 57.78, df = 5 (P < 0.00001); i² = 91% Test for overall effect: Z = 3.39 (P = 0.0007) Total (95% CI) 10.0% 1.89 [1.46, 2.45] Heterogeneity: Tau² = 0.12; Chi² = 88.86, df = 10 (P < 0.00001); i² = 99% Test for overall effect: Z = 4.79 (P < 0.00001) Test for overall effect: Z = 4.79 (P < 0.00001) Test for subgroup differences: Chi² = 0.06, df = 1 (P = 0.81), i² = 0%		0.7	0.23			· D
Heterogeneity: Tau*= 0.04; Chi*= 6.81, df= 4 (P = 0.15); i*= 41% Test for overall effect Z = 4.48 (P < 0.00001) 4.2.2 Diagnosed PTSD Connorton, 2011						▼
### According to the image of				(P = 0.15)); I² = 41%	nloa
A.2.2 Diagnosed PTSD Connorton, 2011 Cukor, 2011 Cukor, 2011 Cukor, 2011 Green, 2016 Consorton, 2015 Consorton, 2015 Consorton, 2016 Cukor, 2017 Cukor, 2017 Cukor, 2016 Cukor, 2016 Cukor, 2016 Cukor, 2016 Cukor, 2017 Cukor, 2016 Cukor, 2017 Cukor, 2016 Cukor, 2016 Cukor, 2016 Cukor, 2017 Cukor, 2017 Cukor, 2016 Cukor, 2016 Cukor, 2016 Cukor, 2016 Cukor, 2017 Cukor, 2016 Cukor,	Test for overall effect:	Z = 4.48 (P < 0.00)	001)			ade
Connorton, 2011 2.1 0.35 7.1% 8.17 [4.11, 16.22] Cukor, 2011 0.27 0.07 13.6% 1.31 [1.14, 1.50] Green, 2016 0.03 0.02 14.0% 1.03 [0.99, 1.07] MacGregor, 2015 0.51 0.19 10.9% 1.67 [1.15, 2.42] Shea, 2013 0.69 0.35 7.1% 1.99 [1.00, 3.96] Wittchen, 2012 1.89 0.95 1.7% 6.62 [1.03, 42.60] Subtotal (95% CI) 54.5% 1.80 [1.28, 2.54] Heterogeneity: Tau² = 0.11; Chi² = 57.78, df = 5 (P < 0.00001); I² = 91% Test for overall effect: Z = 3.39 (P = 0.0007) Total (95% CI) 100.0% 1.89 [1.46, 2.45] Heterogeneity: Tau² = 0.12; Chi² = 88.86, df = 10 (P < 0.00001); I² = 89% Test for overall effect: Z = 4.79 (P < 0.00001) Test for subgroup differences: Chi² = 0.06, df = 1 (P = 0.81), I² = 0%	4.2.2 Diagnosed PTS	D				od fro
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Total (95% CI) Heterogeneity: Tau² = 0.12; Chi² = 88.86, df = 10 (P < 0.00001); ² = 89% Test for overall effect: Z = 4.79 (P < 0.00001) Test for subgroup differences: Chi² = 0.06, df = 1 (P = 0.81), ² = 0% 100.01 100.01 100.02 100.03 100.01 100.01 100.01 100.03 100.01 1	Test for overall effect:	Z = 3.39 (P = 0.00)	07)			7/ or
Heterogeneity: Tau² = 0.12; Chi² = 88.86, df = 10 (P < 0.00001); I² = 89% Test for overall effect: Z = 4.79 (P < 0.00001) Test for subgroup differences: Chi² = 0.06, df = 1 (P = 0.81), I² = 0% Protected by guest. Protected by copyrig	Total (95% CI)			100.0%	1.89 [1.46, 2.45]	Ap Ap
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Supplementary file 17. Forest plot depicting the effect of army deployment with PTSD, stratified for type of PTSD ascertainment.

Supplementary life 17. i	Forest plot depictif	ig trie	enect or	Odde Ratio	Odd	le Patio	rainment. 8
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV. Random, 95% CI	IV. Rand	iom. 95% Cl	9
4.3.1 Probable PTSD	regionne rinnej			,	,		25
Reijnen, 2015	0.56	0.12	79.2%	1.75 [1.38, 2.21]			Ą
Stevelink, 2018	0.52	0.27	15.6%	1.68 [0.99, 2.86]		-	gus
Subtotal (95% CI)			94.9%	1.74 [1.40, 2.16]		•	# 20
Heterogeneity: Tau ² =	0.00; Chi ² = 0.02 ,	df = 1	(P = 0.89)); I² = 0%)21
Test for overall effect:	Z = 5.05 (P < 0.000)	J01)					D
4.3.2 Diagnosed PTS	D						<u>w</u> n
Joseph. 2014	1.03	0.55	3.8%	2.80 [0.95, 8.23]		-	oac
Wittchen, 2012	1.44	0.91	1.4%	4.22 [0.71, 25.12]		-	—
Subtotal (95% CI)			5.1%	3.13 [1.24, 7.86]			fror
Heterogeneity: Tau² =	0.00; Chi ² = 0.15 ,	df= 1	(P = 0.70)); I² = 0%			<u>⇒</u>
Test for overall effect:	Z = 2.42 (P = 0.02)						£.
Total (95% CI)			100.0%	1 70 [1 45 2 21]		•	/bm
Heterogeneity: Tau ² =	$0.00^{\circ} \text{ Chi}^2 = 1.64^{\circ}$	df = 3	(P = 0.65)	1.75 [1.45, 2.21] 1:12 = 0%		+	0
Test for overall effect:	Z = 5.46 (P < 0.000)	001)	(1 – 0.00)	7,1 - 070	0.01 0.1	1 10	100
Test for subgroup diffe	erences: Chi² = 1.4	17. df=	= 1 (P = 0.	23), I² = 32.0%			<u>ğ</u> .
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Study or Subgroup 4.3.1 Probable PTSD Reijnen, 2015 Stevelink, 2018 Subtotal (95% CI) Heterogeneity: Tau² = Test for overall effect: 4.3.2 Diagnosed PTSI Joseph, 2014 Wittchen, 2012 Subtotal (95% CI) Heterogeneity: Tau² = Test for overall effect: Total (95% CI) Heterogeneity: Tau² = Test for overall effect: Test for subgroup diffe							ору
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Supplementary file 18. Forest plot depicting the effect of confrontation with death with PTSD, stratified for type of PTSD ascertainment.

Supplementary me 10.1	orest plot depletii	18 1110		Odds Ratio	Odds	Ratio	55 43661 (41)
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Rando	om, 95% CI	9
4.4.2 Probable PTSD							25
Berninger, 2010	0.62	0.21	9.9%	1.86 [1.23, 2.81]		-	Aug
Goodwin, 2012	0.7	0.39	3.5%	2.01 [0.94, 4.32]			gus
Ikeda, 2017	0.73		8.6%	2.08 [1.32, 3.26]		-	t 20
Nagamine, 2018	0.31		34.2%	1.36 [1.24, 1.50]		•)21
Osorio, 2018	0.51	0.15	15.6%	1.67 [1.24, 2.23]			D
Subtotal (95% CI)			71.8%	1.61 [1.33, 1.94]		▼	OWI
Heterogeneity: Tau² =			(P = 0.14)); I ^z = 42%			nlos
Test for overall effect:	Z = 4.99 (P < 0.00)	JU1)					ade
4.4.3 Diagnosis PTSD)						51 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyright.
Kim, 2017	0.91	1.14	0.4%	2.48 [0.27, 23.20]		<u> </u>	<u> </u>
MacGregor, 2015	0.55		27.8%	1.73 [1.48, 2.03]		-	#
Subtotal (95% CI)			28.2%	1.74 [1.48, 2.03]		*	://b
Heterogeneity: Tau² =	0.00; Chi ² = 0.10 ,	df = 1	(P = 0.75)); I² = 0%			<u>m</u> .
Test for overall effect:	Z = 6.91 (P < 0.000)	001)					þei
Total (95% CI)			100.0%	1.63 [1.41, 1.90]		•	າ.bn
Heterogeneity: Tau ² =	0.01: Obiz = 11.10	df _ 0					<u>.</u> .
Test for overall effect:	•	-) (F = 0.00	0), 1" = 40%	0.01 0.1	i 1'	0 100≦
Test for subgroup diffe	,		1 (P = 0	54) P = 0%			on
restror subgroup unit	01011000.0111 = 0.0	70, ai -	- 1 (1 – 0.	.547,1 = 070			Ap
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PRISMA 2009 Checklist

		27	
Section/topic	#	Checklist item 24965	Reported on page #
TITLE	· ·	9n 2g	
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT		ust	
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION		n loac	
Rationale	3	Describe the rationale for the review in the context of what is already known.	3
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, in grventions, comparisons, outcomes, and study design (PICOS).	3
METHODS	<u> </u>	9://b	
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and if available, provide registration information including registration number.	4
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	4
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	4
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	4
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	4
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	5
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	5
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	5
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	5
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including nearly assures of consistency (e.g., I²) for each meta-analysis. For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml	5



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45 46 47

PRISMA 2009 Checklist

		BMJ Open 30,6	Page 128 of 12
PRISMA 20	09	Jo	
		Page 1 of 2	
Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	5
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	5-6
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reach stage, ideally with a flow diagram.	7
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOs, follow-up period) and provide the citations.	7
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	7
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summare data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	7-9
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	7-9
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	7-9
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	7-9
DISCUSSION	<u>'</u>		
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	10
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	10-11
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	12
FUNDING		ू पू	
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of datage; role of funders for the systematic review.	13

41 From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The RISMA Statement. PLoS Med 6(6): e1000097.
43 For more information, visit: www.prisma-statement.org.

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What work-related exposures are associated with posttraumatic stress disorder? A systematic review with metaanalysis

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What work-related exposures are associated with post-traumatic stress disorder? A systematic review with meta-analysis

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Number of figures: 3

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Abstract

<u>Objectives</u>: Although there is evidence that work-related exposures cause post-traumatic stress disorder (PTSD), there are few quantitative studies assessing the degree to which these factors contribute to PTSD. This systematic review with meta-analysis identified work-related exposures associated with PTSD, and quantified their contribution to this disorder.

<u>Methods</u>: We searched Medline, PsycINFO, Embase, PILOTS and Web of Science (2005 to 10-09-2019) for longitudinal studies on work-related exposures and PTSD. We described included articles, and conducted meta-analyses for exposures with sufficient homogeneous information. We performed subgroup analyses for risk of bias, study design and PTSD ascertainment. We assessed evidence quality using GRADE, and estimated population attributable fractions.

Results: After screening 8,590 records, we selected 33 studies (n=5,719,236). From what was moderate quality evidence at best, we identified various work-related exposures that were associated with PTSD, mainly involving individuals in the military and first responder (e.g., police or fire brigade) occupations. These exposures included the number of army deployments (odds ratio: 1.15 [1.14 1.16]), combat exposure (1.89 [1.46 2.45]), army deployment (1.79 [1.45 2.21]) and confrontation with death (1.63 [1.41 1.90]). Effects were robust across subgroups and exposures attributed modestly (7%-34%) to PTSD. We identified additional exposures in other occupations, including life threats, being present during an attack, and hearing about a colleague's trauma.

<u>Conclusions</u>: We identified various work-related exposures associated with PTSD and quantified their contribution. While exposure assessment, PTSD ascertainment, and inconsistency may have biased our findings, our data are of importance for development of preventive interventions and occupational health guidelines.

Key words: Post traumatic stress disorder; occupational health; occupational diseases; systematic review; meta-analysis

Strengths and limitation of this study

- Post-traumatic stress disorder (PTSD) is particularly prevalent among certain occupational groups, e.g., first responder (such as police or fire brigade) and military personnel.
- However, the association of work-related exposures with PTSD has not previously been quantified in a meta-analysis.
- We identified 33 studies (with n=5,719,236 participants) in which various work-related exposures were found to be associated with PTSD, based on moderate quality evidence at best.
- These findings can be used to support the development of preventive interventions, and as an aid to the assessment of occupational PTSD in occupational medicine guidelines.

Background

Post-traumatic stress disorder (PTSD) can be triggered when individuals experience or witness traumatic events. PTSD has been a clinical diagnosis since 1980, when the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) was published¹. The most recent DSM-5² states that PTSD results from exposure to severely traumatic event(s), while exhibiting a pattern of symptoms characterised by intrusion, avoidance, negative moods and cognitions, arousal, and reactivity. A diagnosis of PTSD also involves duration and functional impairment criteria, and the patient's symptoms should be exclusive (i.e., not caused by drugs or other illnesses). Estimates of PTSD prevalence among the general population differ widely. For example, lifetime PTSD prevalence ranged from 6% to 9% in United States (US) and Canadian samples, while prevalence rates in Australian samples range from 1% to 2%³. The substantial differences between individual studies could result from different ways in which PTSD was ascertained, varying from any type of clinical diagnosis, to self-reports of DSM-5 criteria and PTSD symptoms assessed as *probable PTSD*.

PTSD can have a major impact on individuals and society as a whole, as it is associated with mental comorbidities⁴, substance abuse⁵ and suicide⁶. PTSD is particularly prevalent among certain occupational groups, such as police officers, firefighters, medical workers and military personnel, all of whom can experience events that might trigger PTSD⁷ ⁸. One particular systematic review showed that the prevalence of PTSD in military veterans and other high-risk occupational groups can be almost twice as high as among the general population⁸. Another more recent review identified a number of occupational groups, including healthcare workers, police officers, prison workers, and emergency personnel, with an increased risk of PTSD⁹. Also, various specific work-related exposures (i.e., exposures to situations or conditions at work that may have an effect on PTSD) and their association with PTSD have been reported⁷. This included traumatic events experienced by military personnel and first responders (e.g., police officers or fire fighters). The latter review also identified journalists, healthcare workers or individuals in other occupations who are exposed to traumatic events or the aftermath thereof⁷.

Despite this evidence, the association of work-related exposures with PTSD has not yet been quantified in a meta-analysis. Such knowledge is of importance to answer questions regarding work-related causation and prevention, as a prelude to developing interventions. With regard to prevention, we need to quantify the contribution of work-related exposures in the onset of PTSD¹⁰. Such data could be used to formulate clinically relevant exposure threshold limits, as has been done with other disorders¹¹ 12. It could also be of use in occupational health guidelines, as many countries provide financial compensation for individuals diagnosed with an occupational disease.

In this study, our aim was to 1) identify the work-related exposures associated with the onset of PTSD, and 2) quantify the extent to which such exposures contribute to this disorder. Evidence on the contribution of work-related factors to PTSD could be used to facilitate decisions in reporting schemes. It could also help to identify and prioritise preventive interventions against those exposures with the strongest effect, in terms of triggering PTSD.

Methods

The protocol for this systematic review with meta-analysis was registered in PROSPERO¹³ a-priori. The review itself was conducted in accordance with the PRISMA statement guidelines¹⁴.

Searches

The Medline, PsycINFO, Embase, PILOTS and Web of Science databases were systematically searched for material published from 2005 (January) to 2019 (September 10). This was an arbitrarily chosen period on the basis of changes in people's exposure to work-related traumatic events and changes in the definition of PTSD over time². The search strategy consisted of a combination of controlled search terms (e.g., Medical Subject Headings/MeSH) and free-text words used to specify search terms related to: 1) PTSD 2) exposure, and 3) work. A methodological filter was used to select longitudinal studies (prospective, retrospective or case-control), studies published in English, and those involving human participants only. The search strategy used is described in detail in supplementary file 1. We validated this search with various key references, to avoid term bias. In addition to the database search, we conducted snowball searches for additional studies. These were based on citation tracking (forwards and backwards) from the articles and reviews retrieved in our electronic search. We also conducted scoping searches for key researchers on this topic, and used ResearchGate profiles to identify relevant records and projects (including unpublished projects). Outcome articles were compared to potential protocol papers, to assess selective reporting.

Inclusion and exclusion criteria

Two reviewers, working independently of one another, used Rayyan (an online tool: https://rayyan.qcri.org/) to screen for eligible references. The full texts of any such references (whose eligibility was based on the screening title and abstract) were retrieved for further screening. Any conflicts were resolved during a consensus meeting. We included studies on the association between any work-related exposure and the onset of PTSD (acute or delayed) in paid workers of working age (aged 18-65). Any studies that described work-related exposures in terms of work demands or other occupational factors were eligible for inclusion. However, studies in which exposures were related to job title or work title only were excluded. Studies were included if there was an actual diagnosis of PTSD (either using checklists with defined cut-off values or clinical criteria, e.g., using DSM criteria² and/or coded according to the International Classification of Disorders -ICD-9-CM 309.81-). Studies in which PTSD was assessed by means of self-reports only (not using any criteria) were excluded. We excluded any studies into the persistence or growth of PTSD. Those studies in which the exposure-outcome association was quantified, e.g., in terms of effect sizes such as a hazard ratio (HR), relative risk (RR) or odds ratio (OR), were included. We restricted ourselves to original articles, in English or Dutch, published in peer-reviewed scientific journals from 2005 onwards. Studies with a prospective, retrospective or case-control longitudinal design were included, while cross-sectional studies were excluded, to be able to monitor the time sequence between exposure and the PTSD onset, in which the assessments of exposure precede the actual onset of the disorder. The above-mentioned set of criteria were finalised after a pilot screening of 300 references.

Data extraction and risk of bias assessment

Two reviewers, working independently of one another, extracted data and assessed risk of bias from each of the eligible articles. Any conflicts were resolved during a consensus meeting. We extracted first author and year of publication, study name and design, sample (country, occupational group,

age and sex), exposure assessment, PTSD ascertainment, and effect size. Where it was not possible to retrieve sufficient information from the published articles, additional data were requested from study researchers.

Risk of bias was assessed using the 'Quality in Prognosis Studies' tool¹⁵, with criteria related to study participation, attrition, prognostic factor (i.e., exposure) measurements, outcomes, confounding, and statistical analysis. Here, we attributed a low risk of bias regarding attrition to studies with a >80% participant retention.

Data analysis

The included articles were described in terms of extracted data and risk of bias. Work-related exposures were categorised according to the DSM-5 criteria for PTSD stressors²: 1) direct exposure to the trauma, 2) witnessing a trauma, 3) hearing about a colleague/co-workers (adapted to work context) was/were exposed to a trauma, or 4) indirect exposure to aversive details of a trauma (e.g., first responders and medics).

Where sufficient clinically and methodologically homogeneous information were available, a quantitative meta-analysis was conducted to determine a pooled effect size for the association of each exposure with PTSD. Review Manager (RevMan 5) was used for the meta-analyses, and to generate forest and funnel plots. The latter were used to assess publication bias, through visual inspection. According to the Cochrane collaboration handbook, funnel plots were only generated for exposures with effect sizes from ≥10 studies¹6. Most of the exposure-outcome associations featured statistical heterogeneity (I²>75%), so random-effects estimates were adopted for statistical pooling. We assumed that the interpretation of effect estimates (e.g., HR and OR) was consistent, and we estimated pooled OR with 95% confidence interval (95%CI). We adopted the OR, as this was the most frequently reported effect size in the articles found (being reported in 32 articles, whereas two articles reported HRs and three articles reported RRs).

When more than one article reported on the same study, information from just one of these articles was used for analyses, using effect sizes from the article with the shortest follow-up duration (with a latency time of at least four weeks) to ensure that the work-related exposure of interest is indeed the most likely cause of PTSD. Wherever possible, we used information from fully adjusted models and we did not consider subgroups (e.g., sex differences). Population attributable fractions (PAFs) were estimated¹⁷ to assess the extent to which work-related exposures contributed to the development of PTSD. Here, the proportion of workers exposed to the exposure of interest (P_e) were multiplied by the attributable proportion in the exposed workers: $P_e(OR-1)/(1+P_e(OR-1))$.

In line with our registered protocol¹³, subgroup analyses were based on the risk of bias (with a cut-off score of 60% for the risk of bias scale summary score, to obtain two subgroups), on the study design (prospective vs retrospective) and on PTSD ascertainment (clinically diagnosed PTSD vs probable PTSD). In contrast to the protocol that we registered a-priori,¹³ we were unable to compare other characteristics of PTSD (i.e., acute vs delayed) due to limited available data. Any information that could not be qualitatively analysed was described narratively.

Strength of evidence

The strength of the evidence was assessed using the GRADE (Grades of Recommendations, Assessment, Development and Evaluation) framework¹⁸. Four quality levels were distinguished: high, moderate, low, and very low. Our starting point for evidence grading was 'moderate', which has previously been proposed for use in the assessment of prognostic factors¹⁹. Various study limitations

could have detracted from the strength of the evidence (if the majority of the studies scored <60% on the risk of bias scale), as could inconsistency (I²>50%), indirectness, imprecision (95%CI boundaries are <1 and >2), and publication bias (based on the funnel plots). Study findings with moderate or large effect sizes (i.e., lower limit of 95%CI OR>2.0) or an exposure-response gradient could boost the quality of the evidence.

Patient and public involvement

There was no patient or public involvement in designing and conducting this study.

Results

Study selection

The study selection procedure is described in Figure 1. We identified 14,529 records during database searches. After discarding duplicates, we screened the remaining 8,590 records on title and abstract. Of these, we assessed 107 full text articles and excluded 65 for various reasons (see Supplementary file 2 for more details). As no additional articles were found during snowball and scoping searches, 42 articles from 33 studies were described in this review²⁰⁻⁶¹.

Study description and methodological quality/risk of bias

Supplementary file 3 contains the extracted data, and risk of bias assessment is shown in supplementary file 4-5. The 33 included studies provided data on n=5,719,236 participants, ranging from n=19 to n=2,549,949 participants per study. Eighteen studies were from the US, four were from the United Kingdom, two were from Denmark, and two others from Japan. There was one study from each of the following countries: Israel, The Netherlands, Germany, Portugal, Italy, Norway and Korea. The majority of the studies (N=21) involved participants from armed forces. Five studies featured first responders who had attended the scene of a disaster, three focused on healthcare workers, two on employers at the scene of a disaster, one on bank workers and one on public transport workers.

Four studies reported no details of sex, five studies only used male participants, and 17 used samples in which the majority of participants were male (≤20% females). In only seven studies, did female participants make up a reasonable proportion (>20%) of the study sample. Twenty-eight studies reported exposures obtained from self-reports, 12 studies used deployment administration databases, and two studies were based on a combination of these two measurements. Baseline exposure assessment was carried out for the period 1983-2012. Twenty-five articles assessed PTSD (by clinical diagnosis) while the remaining 17 articles assessed probable PTSD/PTSD symptoms (by self-reports using pre-defined (e.g., DSM-5) criteria). The weighted average for PTSD prevalence during in the follow-up periods was 7.3%, while individual study prevalence ranged from 1.0% to 70.5%. The average prevalence for diagnosed cases of PTSD was slightly higher (7.3%) than for probable PTSD (6.4%).

Twenty-five studies were prospective studies and eight were retrospective studies. On average, methodological quality was 62% (SD:19%), ranging from 25% to 100%. Most articles showed a low risk of bias on analysis/reporting (N=37) and confounding (N=25). Less than half of the articles showed a low risk of bias on participation selection (N=11), attrition (N=9), prognostic factor (exposure) assessment (N=9) and outcome (PTSD) ascertainment (N=13).

Work-related exposures

Each of the exposure-outcome associations presented have been described and categorised according to the DSM-5 criteria for PTSD stressors²: 1) direct exposure, 2) witnessing a trauma, 3) hearing that a colleague or co-worker was exposed to a trauma, or 4) indirect exposure to aversive details of a trauma. An overview of qualitative and quantitative analyses of all exposure-outcome associations is shown in Table 1. Figures 2 and 3 depict quantitative analyses, while Table 2 contains an overview of any exposure-outcome associations that could not be statistically pooled.

Direct exposure

The exposure-outcome associations for direct exposures were quantitatively analysed for: number of army deployments (OR[95%CI]: 1.15[1.14 1.16], I²=0%, n=333,024, Figure 2), combat exposure

(OR[95%CI]: 1.89[1.46 2.45], I²=89%, n=28,304, Figure 2) and army deployment (OR[95%CI]: 1.79 [1.45 2.21], I²=0%, n=11,023, Figure 3). The PAFs for these exposures were 7%, 14% and 34%, respectively. Evidence for these exposure-outcome associations was moderate, very low, and low quality, respectively. In some cases, the evidence was downgraded due to high risk of bias and inconsistency. There was some evidence for publication bias, although it was only possible to assess that for the 'combat exposure' variable (Supplementary file 6). Subgroup analyses based on risk of bias (Supplementary file 7-9), study design (Supplementary file 10-12) and PTSD ascertainment (Supplementary file 13-15) showed no statistically significant differences between effects for those subgroups.

In our qualitative analyses of exposures that could not be statistically pooled, we found exposure-outcome associations for exposures related to undergoing a traumatic event, cumulative exposure and the severity of exposure (Table 2). With regard to undergoing a traumatic event, the effect sizes ranged from OR[95%CI]: 0.86[0.32 2.28] (physical contacts with thieves)³⁴ to OR[95%CI]: 5.65[3.27 9.74] (workers fleeing from a tsunami)⁴². Cumulative exposure was e.g. expressed in length of deployment³⁷ (OR[95%CI]: 0.97[0.92 1.03]) and high frequency of violence (compared to no violence)⁵⁵ (OR[95%CI]: 6.5[1.6 25.6]). The effect sizes for exposure severity ranged from OR[95%CI]: 1.01[0.67 1.35] (severity of battles)⁴⁵ to OR[95%CI]: 6.5[1.6 26.0] (severe compared to no violence)⁵⁵

Witnessing a trauma

With regard to the DSM-5 criterion 'witnessing a trauma', there was insufficient homogeneous data to pool studies statistically (Table 2). In five studies (with n=4,876 participants), effect sizes ranged from OR[95%CI]: 1.01[0.63 1.64] ('perceiving a life threat')⁵⁶ to OR[95%CI]: 9.3[6.1 14.2] ('being present during an attack')³⁸.

A colleague or co-worker was exposed to a trauma

Only one study (n=980) reported on effect sizes regarding 'colleague or co-worker exposed to a trauma'. This study, among public transport workers, found that 'hearing that a close colleague had suffered a person under train experience' was not significantly association with PTSD (OR[95%CI]: 0.55[0.12 2.47])⁴⁶

Indirect exposure to aversive details

Regarding indirect exposure to adverse events, we statistically pooled the effect sizes from seven studies (n=75,902 participants) with moderate-quality evidence for an association between confrontation with death and PTSD (Figure 3; OR[95%CI]: 1.63[1.41 1.90]). Subgroup analyses regarding risk of bias (Supplementary file 16), study design (Supplementary file 17) and PSTD ascertainment (Supplementary file 18) showed no statistically significant differences between any of those subgroups.

Additional evidence from four studies (n=14,085 participants), which could not be statistically pooled, showed effect sizes ranging from OR[95%CI]: 1.03[1.00 1.06] (being exposed to the aftermath of a battle)³⁷ to OR[95%CI]: 4.0[2.5 6.6] (being present during the morning of the 9/11 attacks)²⁷.

Other exposures

We found additional evidence that could not be categorised into any of the DSM-5 criteria. An increased risk of PTSD was associated with experiencing stress, with evidence ranging from

OR[95%CI]: 1.01[0.98 1.04] (deployment concerns)²⁸ to OR[95%CI]: 3.52[2.94 4.21] (high deployment stress)²¹. Also, the time that has passed since a given traumatic event seems to be associated with PTSD. This factor can either reduce the PTSD risk (OR[95%CI]: 0.47[0.32 0.70] with a longer dwell time between deployments)⁴⁸ or increase it (OR[95%CI]: 1.89[0.99 3.60] if the period since the return from deployment exceeds 6.5 years)³². Other exposures included experiencing discrimination at work (OR[95%CI]: 5.72[3.37 9.71])⁴² and having to perform duties that involved a risk of radiation exposure (OR[95%CI]: 1.08[0.97 1.20])⁵³.



Discussion

In this systematic review with meta-analysis and evidence grading, we found various associations, albeit based on moderate-quality evidence at best, showing that several work-related exposures are associated with PTSD development. This includes exposures such as the number of army deployments, combat exposure, army deployment and confrontation with death. The corresponding effect sizes ranged from 1.15[1.14 1.16] to 1.89[1.46 2.45] and PAFs varied from 7% (for the number of army deployments) to 34% (for army deployment). The latter values indicate the proportion of PTSD cases that could potentially be avoided in a working population, if the exposure in question were to be totally eliminated. The data suggests that there could be an only moderate relationship between PTSD and work situations. However, they could also indicate that PTSD cannot be attributed to a single work-related exposure and that it is multi-factorial in nature and/or is mediated by other factors. This could, perhaps, also account for the relatively low ORs found for some of the effects.

Only a limited data, which could not be statistically pooled, was available concerning exposures that corresponded to the DSM-5 criteria 'witnessing a trauma' and 'hearing that a colleague/coworker was exposed to a trauma'. These exposures include 'perceiving a life threat', 'being present during an attack', and 'hearing that a close colleague had suffered a person under train experience'. The additional exposures that could not be categorised according to DSM-5 criteria include 'military deployment', 'deployment stress', and 'time since return from deployment'. In future, it may be worth considering exposures of this kind when diagnosing work-related PTSD.

The details uncovered by this review are key to a better understanding of work-related causes of PTSD, to the selection or development of preventive interventions, and to the identification of thresholds for occupational health guidelines. This review has updated earlier work^{7 9} and we are the first to quantify the association between work-related exposures and PTSD. This update identifies occupational groups and exposures that do not feature in previous reviews, such as public transport workers⁴⁶ and bank workers (being exposed to robberies)³⁴.

Although the prevention of occupational diseases, including PTSD, is preferable, not all risks can be fully eliminated as witnessing traumatic events, disasters and war situations are likely to remain present in our working situations. In the working environment it is also important to attenuate the impact of exposures on workers or to treat them when having developed work-related PTSD. In the current review we also identified work-related factors that can reduce the risk of PTSD, which can be helpful to attenuate the impact of stressful exposures. For instance, among highly exposed occupational groups, a high level of preparedness (OR[95%CI]: 0.6[0.4 0.9])⁶², unit support (OR[95%CI]: 0.5[0.3 0.8])⁶², post-deployment support (OR[95%CI]: 0.3[0.2 0.4])⁶² and social support (OR[95%CI]: 0.96[0.93 0.98])³⁷ were all found to be associated with a reduced risk of PTSD. These elements can be used in the development of interventions, especially for those in occupations that involve high PTSD risks.

Methodological strengths and limitations

The strengths of this review are the systematic methods used plus a protocol that was registered apriori, the systematic review with meta-analysis, and the assessment of evidential quality using GRADE¹⁸. The findings appear to be quite robust, since subgroup analyses based on risk of bias, study design and PTSD ascertainment produced results that did not differ between any of those subgroups. Moreover, the PAFs estimated in our study provide insight into the extent to which the identified exposures were occupationally related to PTSD. We deviated from our a-prior registered protocol¹³ in that we were unable to compare different PTSD diagnoses (acute vs delayed). In our meta-analysis, we used effect sizes from the article with the shortest follow-up duration (with a latency time of at least four weeks). There were, however, also data available from few studies measuring both the short-term and long-term effects of exposure and their association with PTSD. For example, 'being present during a terrorist attack' was strongly associated with PTSD in the acute phase (after 10 months; OR[95%CI]: 9.3[6.1 14.2]), but this association was even stronger in the long term (after 34 months; OR[95%CI]: 10.0[5.4 18.6])³⁸. Regarding 'being exposed to combat', the opposite was true. Stronger effects were seen in short term (OR[95%CI]: 2.91[1.34 6.31]) than long term (OR[95%CI]: 2.42[1.04 5.62])³⁹. This is in line with another review indicating that, following exposure, the risk of PTSD attenuates over time⁷.

Another potential source of heterogeneity stems from the method used to ascertain PTSD. In 25 articles, PTSD was assessed by clinical diagnosis while 17 articles assessed probable PTSD/PTSD symptoms, based on self-reports using pre-defined (e.g., DSM-5) criteria. We found that the average prevalence was slightly higher for diagnosed PTSD (7.3%) than for probable PTSD (6.4%). This is in line with a study of disaster workers, following the 9/11 attacks, in which 2-9% had probable self-reported PTSD, respectively³¹. However, 6-15% of these workers were diagnosed with PTSD. Nevertheless, our pooled effect sizes were robust across different methods for ascertaining PTSD. While ascertaining PTSD by clinical diagnosis may be more valid, this source of heterogeneity is unlikely to have substantially affected the findings presented. We have only assessed incidence of PTSD. Accordingly, this review does not address the persistence or growth of PTSD. Future studies should, therefore, focus on different types of PTSD diagnoses. They should also assess the work-relatedness of PTSD persistence and growth, as an aid to the development of occupational health guidelines.

One limitation of our study is that the majority of the studies in this review were based on participants from armed forces (N=21) and first responders (N=5). There was limited information on other occupations, such as public transport workers, bank employees and healthcare workers. Furthermore, most studies of the armed forces and of first responders tend to be male dominated and from Western countries. Future research should address these issues, by assessing previously unexplored occupational sectors and groups, as well as data from other countries. In this review we only included longitudinal studies in which the exposure would proceed the outcome, as a result of which a better inference of causality can be provided than with cross-sectional studies only. Moreover, we focussed in our review on articles published from 2005 onwards. This cut-off was based on changes in people's exposure to work-related traumatic events and changes to the definition of PTSD over time².

While our use of the GRADE framework provides an adequate way to assess quality of the evidence, it does not necessarily provide insights into causation of the association of work-related exposures and PTSD, for which other approaches such as the Bradford Hill criteria⁶³ could be used. It has been argued that the majority of the Bradford Hill criteria are to some extent incorporated in GRADE, such as the strength and consistency of the association⁶⁴. Other criteria, such as that of the biological plausibility are not well covered nor are they in the current review evidence regarding work-related PTSD. Future studies should therefore aim at providing more insights into this, to further build the evidence base around work-related PTSD and the biology of risk for PTSD⁶⁵. Although methodological quality of the included studies was of an acceptable level (62%, on average), the quality of the evidence was rated moderate at best. More than half of the articles showed a risk of bias with regard to participation (i.e., selection bias), attrition (with <80% of the

participants being retained during the follow-up period), and misclassification due to a limited assessment of the prognostic factors (i.e., exposure) and the outcome of interest. As mentioned above, the ascertainment of PTSD is unlikely to have caused a substantial bias in our findings. However, exposures were often measured by means of self-reports, which may well have biased our findings. In addition, the quality of the evidence was downgraded due to inconsistency for some of the exposures. Our assessment of publication bias was limited to just one of the pooled exposures. It appeared, however, that none of the studies had published or registered their protocol, which could have caused publication bias.



Conclusion

In this systematic review with meta-analysis of 33 studies (with n=5,719,236 participants), based on moderate quality evidence at best, we identified a number of work-related exposures (mainly involving individuals in the armed forces and in first responder occupations) that increase the risk of PTSD (by 15% to 89%). These exposures include 'number of army deployments', 'combat exposure', 'army deployment' and 'confrontation with death', for which we found a moderate contribution to the development of PTSD. We identified additional exposures in other occupations, such as bank workers, public transport workers, and medics. These included 'life threats', 'being present during an attack' and 'hearing about a colleague's trauma'. Although exposure assessment, PTSD ascertainment and inconsistency may have biased our findings, the results of this review are quite robust and are of importance for the development of preventive interventions and occupational health guidelines.

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Author contribution

Both authors (PC and HvdM) designed the study and reviewed the manuscript for important intellectual content. Both authors identified relevant articles and conducted data extraction and analyses together. PC drafter the first version of the manuscript. HvdM is the study guarantor.

Data sharing

All data relevant to the study are included in the article and supplementary documents.

Study ethics

Not applicable as this study is a systematic review

Competing interests

The authors declare no competing interests

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Data sharing

Additional data is provided in the supplementary files.

Ethical approval

As this is a systematic review, no ethical approval is required

Patient consent

As this is a systematic review, no patient consent is required

Table 1. Overview of the evidence from both qualitative and quantitative analyses, with exposures categorised according to DSM-5 criteria. For exposures for which quantitative analyses could be performed (Figure 2 and 3), quality of the evidence for the relationship between work-related exposures and PTSD according to the GRADE framework is shown. Other exposures are described qualitatively (Table 2).

DSM-5 criterion	Exposure	N	n	Limit ¹	Incons ²	Indirect ³	Imprec ⁴	Pub bias ⁵	OR [95%CI] ⁶ 25	Grad ⁷	GRADE	PAF	Reference
Direct exposure	Number of army deployments ⁸	3	333,024	No	0%	No	No	N/A	1.15 [1.14 1.16]	No	Moderate	7%	Figure 2
	Combat exposure	11	28,304	Yes	89%	No	No	Yes	1.89 [1.46 2.45]	No	Very low	14%	Figure 2
	Army deployment ⁹	4	11,023	Yes	0%	No	No	N/A	1.79 [1.45 2.21]	No	Low	34%	Figure 3
	Undergoing a traumatic event	13	1,703,107	-	-	-	-	-	Min: 0.86 [0.32 2 28] Max: 5.65 [3.27 5 .74]	-	-		Table 2
	Cumulative exposure	8	1,749,762	<i>-</i> /~ ,	-	-	-	-	Min: 0.97 [0.92 $\frak{R}03$] Max: 6.5 [1.6 25 \frak{R}]	-	-		Table 2
	Exposure severity	3	2,558	-		-	-	-	Min: 1.01 [0.67 135] Max: 6.5 [1.6 269]	-	-		Table 2
Witnessing trauma	-	5	4,876	-	-50	-	-	-	Min: 1.01 [0.63 164] Max: 9.3 [6.1 142]	-	-		Table 2
Colleague exposed ¹⁰	-	1	980	-	-	- /-	-	-	0.55 [0.12 2.47]	-	-		Table 2
Indirect exposure	Confrontation with death	7	75,902	No	46%	No	No	N/A	1.63 [1.41 1.90]	No	Moderate	15%	Figure 3
		4	14,085	-	-	-	· /6	7	Min: 1.03 [1.00 3 06] Max: 4.0 [2.5 6.6]	-	-		Table 2
Other exposures	Stress	4	1,390,641	-	-	-	-	-	Min: 1.01 [0.98 104] Max: 3.52 [2.94 4.21]	-	-		Table 2
·	Time since event	3	1,358,468	-	-	-	-	-	Min: 0.47 [0.32 6 70] Max: 1.89 [0.99 3 60]	-	-		Table 2
	Other	3	69,176	-	-	-	-	-	Min: 1.08 [0.97 120] Max: 5.72 [3.37 2,71]	-	-		Table 2

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¹Limitation: downgraded if the majority of studies score lower than 60% on the risk of bias scale. ² Inconsistency: downgrade if l²≥50%.

³ Indirectness: downgrade if indirectness is present. ⁴ Imprecision: downgrade if the 95% confidence interval is <1 and >2.

Indirectness: downgrade if indirectness is present. Imprecision: downgrade if the 95% confidence interval is <1 and >2.
 Publication bias: downgraded if publication bias is present (based on the funnel plots). Effect size: upgrade if the lower limit of the 95% confidence interval is >2.0.

⁷ Gradient: upgraded if there is a dose-response gradient available.

⁸ Depicting the effect of being deployed more than once, as compared to being deployed once.

⁹ Depicting the effect of being deployed, as compared to not being deployed.

¹⁰ For this study on occupational exposures, the DSM-5 criterion 'relative/friend' was adapted to 'colleague or co-worker'.

Table 2. Overview of all exposure-outcome effect sizes from qualitative analyses, with exposures categorised according to DSM-5 criteria. Odds ratios (OR) with 95% confidence intervals (95%CI) are shown.

DSM-5 criterion	Exposure category	Exposure	Effect size (OR [95%CI])
Direct exposure	Undergoing	Work-related threats ²⁰	1.10 [1.04 1.15]
	an event	Work-related violence ²⁰	1.02 [0.98 1.06]
		Previous disaster experience ²³	1.4 [1.2 1.6]
		One injury sustained during the 9/11 attacks ²⁹	1.1 [0.6 2.0]
		Two or more injuries sustained during the 9/11 attacks ²⁹	1.4 [0.6 3.4]
		Participation in abusive violence ³³	3.32 [1.81 6.08]
		Robberies during working life ³⁴	1.18 [0.97 1.44]
		Physical contacts with robbers ³⁴	0.86 [0.32 2.28]
		Scuffle [taking part or being present] ³⁴	1.92 [0.63 5.79]
		Being injured during the robbery ³⁴	1.28 [0.31 5.21]
		Discharged weapon on deployment ³⁶	1.48 [0.61 3.60]
		Experience of life-threatening danger ⁴²	4.32 [2.89 6.48]
		Major property loss ⁴²	3.45 [2.28 5.23]
		Escape from tsunami ⁴²	5.65 [3.27 9.74]
		Life threatening war ⁴⁵	
		-	1.91 [1.07 3.24]
		Conflict with passengers ⁴⁶	3.21 [1.14 9.03]
		Felt in great danger of being killed ⁴⁸	3.44 [2.50 4.72]
		Exposure to blast ⁵⁰	4.72 [2.9 7.7]
	C 1. 11	Encountering explosive devices ⁵⁴	1.26 [0.95 1.66]
	Cumulative	Prolonged work at the WTC site ²³	2.0 [1.7 2.3]
	exposure	Length of deployment ³⁷	0.97 [0.92 1.03]
		≥5 critical cases per call for traumatic surgeons ⁴³	7 [1.1 8]
		≥7 call duties a month for traumatic surgeons ⁴³	3.8 [0.9 7.2]
		≥15 operative cases per month ⁴³	2.8 [0.4 3.2]
		Cumulative years deployed in navy ⁴⁷	2.04 [1.93 2.15]
		Cumulative years deployed in army ⁴⁷	1.74 [1.71 1.76]
		No. of Combat Exposures ⁴⁸	1.62 [1.46 1.79]
		Two combat exposure deployment ⁴⁸	1.37 [1.17 1.61]
		Three combat exposure deployment ⁴⁸	1.30 [0.94 1.82]
		Two deployments ⁴⁸	1.00 [1.00 1.01]
		Three deployments ⁴⁸	1.00 [0.99 1.01]
		One exposure (compared to no exposure)50	4.67 [3.1 7.1]
		Two or more deployments (compared to no exposure) ⁵⁰	6.15 [4.4 8.7]
		Deployment length 1–3 months ⁵³	1.53 [1.37 1.70]
		Deployment length ≥3 months ⁵³	2.64 [2.33 2.99]
		Low frequency of violence (compared to no violence) ⁵⁵	4.0 [1.0 16.3]
		Medium frequency of violence (compared to no violence) ⁵⁵	5.9 [1.4 24.2]
		High frequency of violence (compared to no violence) ⁵⁵	6.5 [1.6 25.6]
	Exposure	Combat exposure scale ³³	1.98 [1.50 2.62]
	severity	Severity of battles ⁴⁵	1.01 [0.67 1.35]
	Severity	Max. mild violence (compared to no violence) ⁵⁵	3.8 [0.3 46.2]
		Max. threats of violence (compared to no violence) ⁵⁵	5.4 [1.2 24.2]
		Max. moderate violence (compared to no violence) ⁵⁵	2.6 [0.6 10.8]
		Max. severe violence (compared to no violence) ⁵⁵	6.5 [1.6 26.0]
Mitnossina tha		Perceived life threat ⁵⁶	
Witnessing the			1.01 [0.63 1.64]
trauma		Observation of abusive violence ³³	8.36 [4.56 15.35
		Presence during attack ³⁸	9.3 [6.1 14.2]
		Witnessing of plant explosions ⁴²	2.09 [1.43 3.06]
		Person under train experience ⁴⁶	1.54 [0.52 4.55]
		One person under train experiences ⁴⁶	1.77 [0.31 4.47]
		Two or more person under train experiences ⁴⁶	2.36 [0.57 9.70]
		Sudden train stop ⁴⁶	3.66 [0.82 16.4]
		Near train accident ⁴⁶	8.81 [1.96 39.3]

		Damage to train ⁴⁶	1.71 [0.48 6.14]
Colleague exposed		Person under train experience of colleague ⁴⁶	0.55 [0.12 2.47]
Indirect exposure		Aftermath of battle ³⁷	1.03 [1.00 1.06]
to aversive details		Morning of 9/11 (compared to >3 days) ²⁷	4.0 [2.5 6.6]
		Afternoon of 9/11 (compared to >3 days) ²⁷	2.1 [1.3 3.3]
		Day 2 (compared to >3 days) ²⁷	1.4 [0.9 2.4]
		Morning of 9/11 (compared to >3 days) ²³	2.0 [1.3 2.9]
		Afternoon of 9/11 (compared to >3 days) ²³	1.1 [0.8 1.5]
		Exposure to aftermath of battle ⁵⁶	1.81 [1.08 3.06]
Other exposures	Stress	High deployment stress ²¹	3.52 [2.94 4.21]
		Deployment concerns summary score ²⁸	1.01 [0.98 1.04]
		Worried by other issues related to robbery ³⁴	2.64 [0.95 7.36]
		Unit cumulative high deployment stress rate (marine) ⁴⁷	1.04 [1.03 1.05]
		Unit cumulative high deployment stress rate (army) ⁴⁷	1.05 [1.04 1.06]
	Time since	Months since most recent deployment ²⁸	1.00 [0.98 1.02]
	event	Time since return from deployment (up to 2 years) ³²	1.18 [0.75 1.86]
		Time since return from deployment (up to 3 years) ³²	1.80 [1.05 3.10]
		Time since return from deployment (up to 4 years) ³²	1.88 [0.98 3.62]
		Time since return from deployment (up to 5 years) ³²	1.53 [0.92 2.55]
		Time since return from deployment (up to 6.5 years) ³²	1.89 [0.99 3.60]
		Dwell to deployment ratio (1:1 versus <1:1)48	0.83 [0.60 1.13]
		Dwell to deployment ratio (2:1 versus <1:1)48	0.47 [0.32 0.70]
	Other	Supervising responsibilities ²³	2.2 [1.7 2.9]
		Discrimination/slurs ⁴²	5.72 [3.37 9.71]
		Duties with radiation exposure risk ⁵³	1.08 [0.97 1.20]

Figure caption

Figure 1. Flow chart depicting the search for literature.

Figure 2. Study findings (i.e., effect sizes) for articles reporting on the association of number of army deployments (depicting the effect of being deployed more than once, as compared to being deployed once; upper panel) and combat exposure (lower panel) with PTSD. Individual study as well as pooled effects are presented. SE = standard error; CI = confidence interval; IV = Inverse variance.

Figure 3. Study findings (i.e., effect sizes) for articles reporting on the association of deployments status (depicting the effect of being deployed, as compared to not being deployed; upper panel) and confrontation with death (lower panel) with PTSD. Individual study as well as pooled effects are presented. SE = standard error; CI = confidence interval; IV = Inverse variance.



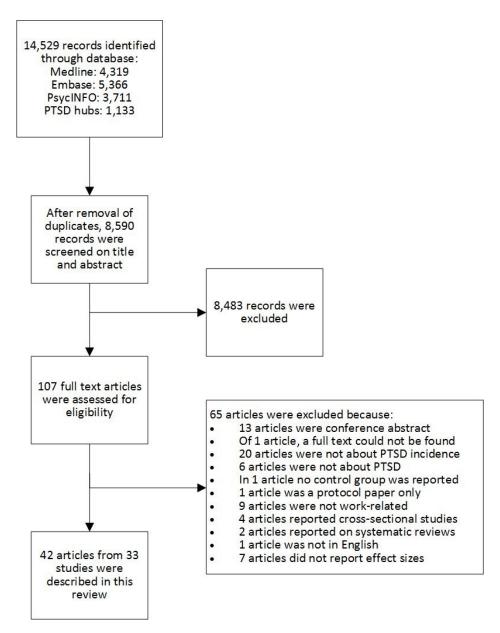
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Flow chart depicting the search for literature.

101x130mm (200 x 200 DPI)

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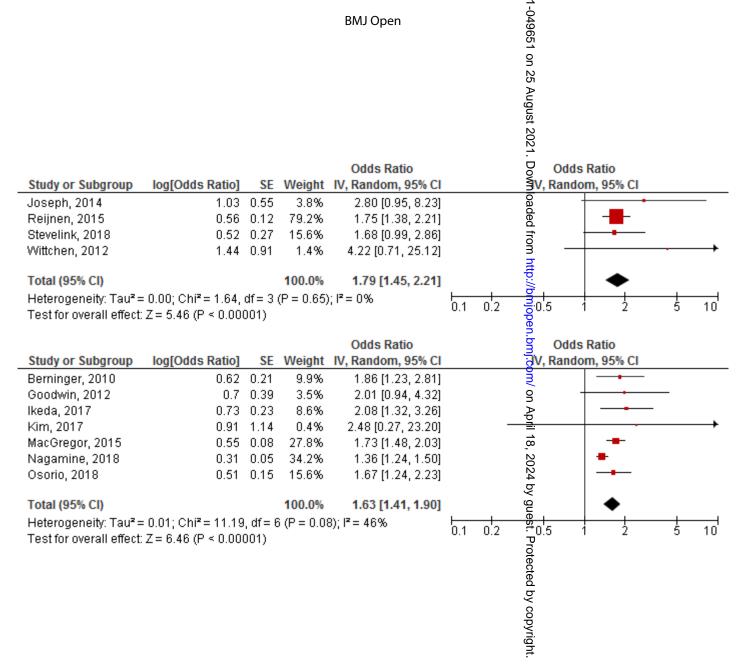
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Supplementary file 1

Sup	olementary file 1. Ovid MEDLINE(R) ALL <1946 to September 09, 2019>. Search date: 10 September 2019	
#	Search	Results
1	stress disorders, post-traumatic/ or stress disorders, traumatic, acute/	30925
2	(acute stress or (asd and stress) or ptsd or ptss or posttraumatic stress or post traumatic stress or acute stress disorder or posttraumatic symptom? or post traumatic symptom? or traumatic stress).ab,kf,ti,sh.	42697
3	(htsq or trauma screen* or (trauma screen* and stress)).ab,kf,ti. [trauma screening zoals de Harvard Trauma Screening Questionnaire - htsq]	160
4	or/1-3 [ptsd]	51153
5	exp Occupations/ or Workload/ or exp Work/ or Workplace/ or exp Occupational Diseases/ or Rehabilitation, Vocational/ or Occupational Health/ or Sick Leave/ or Absenteeism/ or Retirement/ or workers' compensation/ or exp Employment/ or exp Occupational Exposure/ or Volunteers/	361332
6	(worka* or worke* or workg* or worki* or workl* or workp* or work capacity or work disabilit* or work abilit* or at work or work exposure or work related or workers or job* or employee or staff or personnel or occupation or occupations or occupational or outdoor work* or day shift* or night shift* or shift work* or vocational rehabilitation or sick leave or absenteeism or sickness absen* or absente* or presente* or "return to work" or vocational reintegration or retirement or pension or employment or unemployed or unemployment or work status or industries or industrial sector or volunteer* or voluntary worker* or repetitive work).ab,kf,ti.	2038626
7	exp "personnel, hospital"/ or exp emergency responders/	100417
8	(residents or emergency responder? or first responder? or firefighter? or fire fighter? or Police officer? or emergency medicals or Armed forces or paramedics or veterans or Journalist?).ab,kf,ti.	147998
9	or/5-8 [work]	2360997
10	Epidemiologic studies/	8073
11	exp case control studies/	1016792
12	exp cohort studies/	1894888
13	Case control.tw.	118051
14	(cohort adj (study or studies)).tw.	183886
15	Cohort analy\$.tw.	7241
16	(Follow up adj (study or studies)).tw.	47481
17	(observational adj (study or studies)).tw.	95892
18	Longitudinal.tw.	227916
19	or/10-17 [observationele- en longitudinale studies]	2269321
20	(risk or predict*).mp.	3563653
21	19 or 20	4936872
22	and/4,9,21	6387
23	limit 22 to yr="2010-current"	4319

	Ovid Embase Classic+Embase <1947 to 2019 September 09>. Search date: 10 September 2019				
#	Search	Results			
1	*posttraumatic stress disorder/ or *acute stress disorder/	30071			
2	(acute stress or (asd and stress) or ptsd or ptss or posttraumatic stress or post traumatic stress or acute stress disorder or posttraumatic symptom? or post traumatic symptom? or	56167			

	traumatic stress).ab,kw,ti.	
3	(htsq or trauma screen* or (trauma screen* and stress)).ab,kw,ti.	199
4	or/1-3 [ptsd]	60673
5	exp *Occupation/ or exp *occupational health/ or exp *work/ or *Volunteer/ or exp *named groups by occupation/	907358
6	(worka* or worke* or workg* or worki* or workl* or workp* or work capacity or work disabilit* or work abilit* or at work or work exposure or work related or workers or job* or employee or staff or personnel or occupation or occupations or occupational or outdoor work* or day shift* or night shift* or shift work* or vocational rehabilitation or sick leave or absenteeism or sickness absen* or absente* or presente* or "return to work" or vocational reintegration or retirement or pension or employment or unemployed or unemployment or work status or industries or industrial sector or volunteer* or voluntary worker* or repetitive work).ab,kw,ti.	3266921
7	exp *hospital personnel/ or rescue personnel/	46527
8	(residents or emergency responder? or first responder? or firefighter? or fire fighter? or Police officer? or emergency medicals or Armed forces or paramedics or veterans or Journalist?).ab,kw,ti.	195059
9	or/5-8 [work]	3981638
10	*Clinical study/	56379
11	*Case control study/	6905
12	*Family study/	2834
13	*Longitudinal study/	7151
14	*Retrospective study/	19751
15	*Prospective study/	21494
16	Randomized controlled trials/	168154
17	15 not 16	21378
18	*Cohort analysis/	26124
19	(Cohort adj (study or studies)).mp.	275760
20	(Case control adj (study or studies)).tw.	126673
21	(follow up adj (study or studies)).tw.	66352
22	(observational adj (study or studies)).tw.	151582
23	(epidemiologic\$ adj (study or studies)).tw.	106051
24	or/10-15,17-23	799536
25	(risk or predict*).mp.	5152294
26	24 or 25	5545704
27	and/4,9,26	7053
28	limit 27 to yr="2010-current"	5366

	Ovid PsycINFO <1806 to September Week 1 2019>. Search date: 10 September 2019			
#	Search	Results		
1	posttraumatic stress disorder/ or acute stress disorder/	31361		
2	(acute stress or (asd and stress) or ptsd or ptss or posttraumatic stress or post traumatic stress or acute stress disorder or posttraumatic symptom? or post traumatic symptom? or traumatic stress).ab,id,ti.	49013		
3	(htsq or trauma screen* or (trauma screen* and stress)).ab,id,ti,tm.	292		
4	or/1-3 [ptsd]	50242		

		1
5	exp occupations/ or exp occupational health/ or occupational status/	59891
6	(worka* or worke* or workg* or worki* or workl* or workp* or work capacity or work disabilit* or work abilit* or at work or work exposure or work related or workers or job* or employee or staff or personnel or occupation or occupations or occupational or outdoor work* or day shift* or night shift* or shift work* or vocational rehabilitation or sick leave or absenteeism or sickness absen* or absente* or presente* or "return to work" or vocational reintegration or retirement or pension or employment or unemployed or unemployment or work status or industries or industrial sector or volunteer* or voluntary worker* or repetitive work).ab,id,ti.	866191
7	exp medical personnel/ or exp emergency personnel/	89105
8	(residents or emergency responder? or first responder? or firefighter? or fire fighter? or Police officer? or emergency medicals or Armed forces or paramedics or veterans or Journalist?).ab,id,ti.	68300
9	or/5-8 [work]	972972
10	(Clinical stud* or Case control stud* or Longitudinal stud* or Retrospective stud* or (Prospective stud* not (Randomized controlled trials or rct)) or Cohort analysis or (Cohort adj (study or studies)) or (Case control adj (study or studies)) or (follow up adj (study or studies)) or (observational adj (study or studies)) or (epidemiologic\$ adj (study or studies))).ab,id,ti.	136663
11	(risk or predict*).mp.	730689
12	10 or 11	808563
13	and/4,9,12	5417
14	limit 13 to yr="2010-current"	3711

	ProQuest PTSDhubs. Search date: 10 September 2019	
#	Search	Results
1	(su((worka* OR worke* OR workg* OR worki* OR workl* OR workp* OR work capacity OR work disabilit* OR work abilit* OR at work OR work exposure OR work related OR workers OR job* OR employee OR staff OR personnel OR occupation OR occupations OR occupational OR outdoor work* OR day shift* OR night shift* OR shift work* OR vocational rehabilitation OR sick leave OR absenteeism OR sickness absen* OR absente* OR presente* OR "return to work" OR vocational reintegration OR retirement OR pension OR employment OR unemployed OR unemployment OR work status OR industries OR industrial sector OR volunteer* OR voluntary worker* OR repetitive work)) OR su((residents OR emergency responder? OR first responder? OR firefighter? OR fire fighter? OR Police officer? OR emergency medicals OR Armed forces OR paramedics OR veterans OR Journalist?))) AND (su(risk OR predict*) OR su((Clinical stud* OR Case control stud* OR Longitudinal stud* OR Retrospective stud* OR (Prospective stud* NOT (Randomized controlled trials OR rct)) OR Cohort analysis OR Cohort stud* OR Case control stud* OR observational stud* OR epidemiologic stud*)))	1849
2	Limit 1 to publication date = 2010-01-01 / 2019-09-10	1133

Supplementary file 2. Excluded articles

Jup	prementary file 2. Excluded difficies	Reason for	No
Art	icle	exclusion	papers
1.	Amiri T. Occupational posttraumatic stress disorder: Latent structure and risk pathways. 2019, Dissertation Abstracts International, 80(4).	Conference abstract	1
2.	Chin WS, Shiao JSC, Liao SC, Kuo CY, Chen CC, Guo YL. Psychiatric diseases at six years after occupational injuries. 2016. Occupational and Environmental Medicine, 73: A175.	Conference abstract	2
3.	Connorton E, Miller M, Perry MJ, Hemenway D. Mental health and combat, peacekeeping, or relief work: Results from the National Comorbidity Survey Replication. 2011. Comprehensive Psychiatry, 52: E4.	Conference abstract	3
4.	Geronazzo AL, Shen S, Duarte CS, Wu P, Lord E, Amsel L, Musa GJ, Wicks J, Yip J, Fan B, Guffanti G, Hoven CW. Cumulative exposure to work-related incidents and current posttraumatic stress disorder in new york city's first responders. 2013. European Psychiatry Conference.	Conference abstract	4
5.	Goldmann E, Tamburrino M, Liberzon I, Slembarski R, Prescott MR, Calabrese J Galea S. Pre-, peri-, and post-deployment characteristics and risk of posttraumatic stress disorder among ohio national guard soldiers. 2010. American Journal of Epidemiology, 11: S90.	Conference abstract	5
6.	Goodwin L, Jones M, Sundin J, Wessely S, Rona RJ, Fear NT. Prevalence and predictors of delayed onset PTSD in military personnel: Is there evidence for this disorder? Results of a prospective UK cohort study. 2011. Occupational and Environmental Medicine,1351-0711,1,A100.	Conference abstract	6
7.	Herrell R, Wilk J, Bliese P, Hoge C. Combat intensity, psychopathology, and suicidal ideation in a population of soldiers after deployment to Iraq. 2011. Comprehensive Psychiatry, 52: E8.	Conference abstract	7
8.	Herrell RK, Bliese PA, Hoge CW. Effect of combat intensity, depression, alcohol misuse, and family history of depression and alcohol misuse on PTSD in a sample of post-deployment US Soldiers. 2013. Comprehensive Psychiatry, 54: E4-E5.	Conference abstract	8
9.	Herrell RK, Bliese PB, Hoge CW. Number of deployments and total months of deployment as predictors of post-traumatic stress disorder in active duty soldiers. 2011. American Journal of Epidemiology, 11: S289.	Conference abstract	9
10.	Horesh D, Solomon Z, Ein-Dor T. Delayed-onset PTSD following combat: The role of social resources. 2013. Comprehensive Psychiatry, 54: e24.	Conference abstract	10
11.	Kim AR, Sung JH, Cho SW, Jeong KS, Ahn YS. The relationship between the post-traumatic stress syndrome and the occupational stress among the firefighters in Korea. 2018. Occupational and Environmental Medicine, 75: A380.	Conference abstract	11
12.	Pierce MD, Wood MD, Reddy M, Sevin E, Shea MT. A prospective examination of posttraumatic stress and alcohol use disorders among returning veterans. 2012. Alcoholism: Clinical and Experimental Research, 1: 303A.	Conference abstract	12
13.	Subramaney U. Personality, trauma exposure, PTSD and depression in a cohort of SA metro policemen: A longitudinal study. 2010. South African Journal of Psychiatry, 16: 97-98.	Conference abstract	13
	Huang, D, Wang X, Kung WW. The impact of job loss on posttraumatic stress disorder among Asian Americans: 11-12 years after the World Trade Center attack. 2019. Traumatology,1085-9373.	Full text could not be found	1
15.	Andersen SB, Karstoft KI, Bertelsen M, Madsen T. Latent trajectories of trauma symptoms and resilience: the 3-year longitudinal prospective USPER study of Danish veterans deployed in Afghanistan. 2014. Journal of Clinical Psychiatry, 75(9): 1001-1008.	No PTSD incidence	1
16.	Armstrong D, Shakespeare-Finch J, Shochet I. Predicting post-traumatic growth and post-traumatic stress in firefighters. 2014. Australian Journal of Psychology, 66(1): 38-46.	No PTSD incidence	2
17.	Boasso AM, Steenkamp MM, Nash, WP, Larson JL, Litz BT. The relationship between course of PTSD symptoms in deployed U.S. Marines and degree of combat exposure. 2015. Journal of Traumatic Stress, 28(1): 73-78.	No PTSD incidence	3
18.	Bowler RM, Harris M, Li J, Gocheva V, Stellman SD, Wilson K, Alper H, Schwarzer R,	No PTSD	4

	Cone JE.Longitudinal mental health impact among police responders to the 9/11 terrorist attack. 2012. American Journal of Industrial Medicine, 55(4): 297-312.	incidence	
19.	Chin WD, Shiao JS, Liao SC, Kuo CY, Chen CC, Guo YL. Depressive, anxiety and post-traumatic stress disorders at six years after occupational injuries. 2017. European	No PTSD incidence	5
20.	Archives of Psychiatry & Clinical Neuroscience, 267(6): 507-516. Eriksson CB, Lopes Cardozo B, Foy DW, Sabin M, Ager A, Snider L, Scholte WF, Kaiser R, Olff M, Rijnen B, Crawford CG, Zhu J, Simon W. Predeployment mental health and trauma exposure of expatriate humanitarian aid workers: Risk and resilience factors. 2013. Traumatology, 19(1): 41-48.	No PTSD incidence	6
21.	Garcia FE, Vazquez C, Inostroza C. Predictors of post-traumatic stress symptoms following occupational accidents: A longitudinal study. 2019. Anxiety, Stress, & Coping, 32(2): 168-178.	No PTSD incidence	7
22.	Hartley TA, Violanti JM, Sarkisian K, Andrew ME, Burchfiel CM. PTSD symptoms among police officers: associations with frequency, recency, and types of traumatic events. 2013. International Journal of Emergency Mental Health, 15(4): 241-253.	No PTSD incidence	8
23.	Huang H, Kashubeck-West S. Exposure, agency, perceived threat, and guilt as predictors of posttraumatic stress disorder in veterans. 2015. Journal of Counseling & Development, 93(1): 3-13.	No PTSD incidence	9
24.	Jaegers LA, Matthieu MM, Vaughn MG, Werth P, Katz IM, Ahmad SO. Posttraumatic Stress Disorder and Job Burnout Among Jail Officers. 2019. Journal of Occupational & Environmental Medicine, 61(6): 505-510.	No PTSD incidence	10
25.	Mac Donald CL, Johnson AM, Wierzechowski L, Kassner E, Stewart T, Nelson EC, Werner NJ, Zonies D, Oh J, Fang R, Brody DL. Prospectively assessed clinical outcomes in concussive blast vs nonblast traumatic brain injury among evacuated US military personnel. 2014. JAMA Neurology, 71(8): 994-1002.	No PTSD incidence	11
26.	Magruder KM, Goldberg J, Forsberg CW, Friedman MJ, Litz BT, Vaccarino V, Heagerty PJ, Gleason TC, Huang GD, Smith NL. Long-Term Trajectories of PTSD in Vietnam-Era Veterans: The Course and Consequences of PTSD in Twins. 2016. Journal of Traumatic Stress, 29(1): 5-16.	No PTSD incidence	12
27.	Marchand A, Nadeau C, Beaulieu-Prevost D, Boyer R, Martin M. Predictors of posttraumatic stress disorder among police officers: A prospective study. 2015. Psychological Trauma:Theory, Pesearch, Practice and Policy, 7(3): 212-221.	No PTSD incidence	13
28.	Nash WP, Boasso AM, Steenkamp MM, Larson JL, Lubin RE, Litz BT. Posttraumatic stress in deployed marines: Prospective trajectories of early adaptation. 2015. Journal of Abnormal Psychology, 124(1): 155-171.	No PTSD incidence	14
29.	Polusny MA, Kumpula MJ, Meis LA, Erbes CR, Arbisi PA, Murdoch M, Thuras P, Kehle-Forbes SM, Johnson AK. Gender differences in the effects of deployment-related stressors and pre-deployment risk factors on the development of PTSD symptoms in National Guard Soldiers deployed to Iraq and Afghanistan. 2014. Journal of Psychiatric Research, 49(1): 1-9.	No PTSD incidence	15
30.	Rona RJ, Jones M, Sundin J, Goodwin L, Hull L, Wessely S, Fear NT. Predicting persistent posttraumatic stress disorder (PTSD) in UK military personnel who served in Iraq: a longitudinal study. 2012. Journal of Psychiatric Research, 46(9): 1191-1198.	No PTSD incidence	16
31.	Ryan-Gonzalez C, Kimbrel N, Meyer EC, Gordon EM, DeBeer BB, Gulliver SB, Elliott TR, Mosissette S. Differences in PTSD symptoms among post-9/11 veterans with blast- and non-blast mild TBI. 2019. Journal of Neurotrauma, 0897-7151.	No PTSD incidence	17
32.	Steenkamp MM, Schlenger WE, Corry N, Henn-Haase C, Qian M, Li M, Horesh D, Karstoft KI, Williams C, Ho CL, Shalev A, Kulka R, Marmar C. Predictors of PTSD 40 years after combat: Findings from the National Vietnam Veterans longitudinal study. 2017. Depression & Anxiety, 34(8): 711-722.	No PTSD incidence	18
33.	Wolf E, Mitchell K, Koenen K, Miller M. Combat exposure severity as a moderator of genetic and environmental liability to post-traumatic stress disorder. 2014. Psychological Medicine, 44(7): 1499-1509.	No PTSD incidence	19
34.	Yuan C, Wang Z, Inslicht SS, McCaslin SE, Metzler TJ, Henn-Haase C, Apfel BA, Tong H, Neylan TC, Fang Y, Marmar CR. Protective factors for posttraumatic stress disorder symptoms in a prospective study of police officers. 2011. Psychiatry Research, 188(1): 45-50.	No PTSD incidence	20

35.	Amster ED, Fertig SS, Green M, Carel R. Occupational exposures and psychological symptoms among fire fighters and police during a major wildfire: The carmel cohort study. 2018. Occupational and Environmental Medicine, 75: A590-A591	Not about PTSD	1
36.	Cavanaugh CE, Campbell JC, Messing JT. A longitudinal study of the impact of cumulative violence victimization on comorbid posttraumatic stress and depression among female nurses and nursing personnel. 2014. Workplace Health and Safety, 62 (6): 224-232.	Not about PTSD	2
37.	Han M, Park S, Park JH, Hwang SS, Kim I. Do police officers and firefighters have a higher risk of disease than other public officers? A 13-year nationwide cohort study in South Korea. 2018, BMJ Open; 8(1):e019987.	Not about PTSD	3
38.	Jacobson IG, Horton JL, Leardmann CA, Ryan MA, Boyko EJ, Wells TS, Smith B, Smith TC. Posttraumatic stress disorder and depression among U.S. military health care professionals deployed in support of operations in Iraq and Afghanistan. 2012, J Trauma Stress;25(6):616-23.	Not about PTSD	4
39.	Tvaryanas AP, Maupin GM. Risk of incident mental health conditions among critical care air transport team members. 2014. Aviation Space & Environmental Medicine, 85(1): 30-38.	Not about PTSD	5
40.	Vasterling JJ, Brailey K, Proctor SP, Kane RL, Heeren T, Franz, Molly R. Neuropsychological outcomes of mild traumatic brain injury, post-traumatic stress disorder and depression in Iraq-deployed US Army soldiers. 2012. British Journal of Psychiatry, 201(3): 186-192.	Not about PTSD	6
41.	Bandelow BB, Koch M, Zimmermann P, Biesold KH, Wedekind D, Falkai P. Posttraumatic stress disorder (PTSD) in the German Armed Forces: a retrospective study in inpatients of a German army hospital. 2012. European Archives of Psychiatry & Clinical Neuroscience, 262(6): 459-467.	No control group	1
42.	Aslan M, Concato J, Peduzzi PN, Proctor SP, Schnurr PP, Marx BP, McFall ME, Gleason TC, Huang GD, Vasterling JJ. Design of 'Neuropsychological and mental health outcomes of Operation Iraqi Freedom: a longitudinal cohort study'. 2013. Journal of Investigative Medicine, 61(3):569-577.	Protocol paper only	1
43.	Dinenberg RE, McCaslin SE, Bates MN, Cohen BE. Social support may protect against development of posttraumatic stress disorder: findings from the Heart and Soul Study. 2014. American Journal of Health Promotion, 28(5): 294-297.	Not work- related	1
44.	Erbes CR, Polusny MA, Arbisi PA, Koffel E. PTSD symptoms in a cohort of National Guard soldiers deployed to Iraq: Evidence for nonspecific and specific components. 2012. Journal of Affective Disorders, 142(1): 269-274.	Not work- related	2
45.	Eskridge SL, Macera CA, Galarneau MR, Holbrook TL, Woodruff SI, MacGregor AJ, Morton DJ, Shaffer RA. Influence of combat blast-related mild traumatic brain injury acute symptoms on mental health and service discharge outcomes. 2013. Journal of Neurotrauma, 30(16): 1391-1397.	Not work- related	3
46.	Eskridge SL, Macera CA, Galarneau MR, Holbrook, TL, Woodruff SI, Macgregor AJ, Morton DJ, Shaffer RA. Combat blast injuries: Injury severity and posttraumatic stress disorder interaction on career outcomes in male servicemembers. 2013. Journal of Rehabilitation Research and Development, 50(1): 7-16.	Not work- related	4
47.	Fink DS, Gradus JL, Keyes KM, Calabrese JR, Liberzon I, Tamburrino MB, Cohen GH, Sampson L, Galea S. Subthreshold PTSD and PTSD in a prospective-longitudinal cohort of military personnel: Potential targets for preventive interventions. 2018. Depression & Anxiety, 35(11): 1048-1055.	Not work- related	5
48.	Fitch TJ, Yu X, Chien LC, Karim MM, Alamgir H. Traumatic life events and development of post-traumatic stress disorder among female factory workers in a developing country. 2018. International Journal of Social Psychiatry, 64(4): 351-358.	Not work- related	6
49.	Gilbertson MW, McFarlane AC, Weathers FW, Keane TM, Yehuda R, Shalev AY, Lasko NB, Goetz JM, Pitman RK, Harvard VA. Is trauma a causal agent of psychopathologic symptoms in posttraumatic stress disorder? Findings from identical twins discordant for combat exposure. 2010. Journal of Clinical Psychiatry, 71(10): 1324-1330.	Not work- related	7
50.	Horesh D, Solomon Z, Keinan G, Ein-Dor T. The clinical picture of late-onset PTSD: a 20-year longitudinal study of Israeli war veterans. 2013. Psychiatry Research, 208(3): 265-273.	Not work- related	8

51.	Goldmann E, Calabrese JR, Prescott MR, Tamburrino M, Liberzon I, Slembarski R, Shirley E, Fine T, Goto T, Wilson K, Ganocy S, Chan P, Serrano MB, Sizemore J, Galea S. Potentially modifiable pre-, peri-, and postdeployment characteristics associated with deployment-related posttraumatic stress disorder among ohio army national guard soldiers. Ann Epidemiol. 2012;22(2): 71-78.	No work- related exposure	1
52.	Banducci AN, McCaughey VK, Gradus JL, Street AE. The associations between deployment experiences, PTSD, and alcohol use among male and female veterans. 2019. Addictive Behaviors, 98: 106032,	Cross- sectional	1
53.	Huang, J. and Liu, Q. and Li, J. and Li, X. and You, J. and Zhang, L. and Tian, C. and Luan, R. Post-traumatic stress disorder status in a rescue group after the Wenchuan earthquake relief. 2013. Neural Regeneration Research, 8(20): 1898-1906.	Cross- sectional	2
54.	Jones M, Sundin J, Goodwin G, Hull L, Fear NT, Wessely S, Rona RJ. 2013. What Explains Post-Traumatic Stress Disorder (PTSD) in UK Service Personnel: Deployment or Something Else? Psychological Medicine, 43(8):1703-12.	Cross- sectional	3
55.	Rybojad B, Aftyka A, Baran M, Rzonca P. Risk Factors for Posttraumatic Stress Disorder in Polish Paramedics: A Pilot Study. 2016. Journal of Emergency Medicine, 50(2): 270-276.	Cross- sectional	4
56.	Liu B, Tarigan LH, Bromet EJ, Kim H. World Trade Center disaster exposure-related probable posttraumatic stress disorder among responders and civilians: a meta-analysis. 2014. PLoS ONE, 9(7): e101491.	Systematic review	1
	Schutte N, Bar O, Weiss U, Heuft G. Prediction of PTSD in police officers after six monthsa prospective study. 2012. Spanish Journal of Psychology, 15(3): 1339-1348.	Systematic review	2
58.	Milosavljevic M, Drakulic B, Crnobaric C, Perunicic I, Tosevski DL. Risk factor assessment for posttraumatic stress disorder in war veterans in former Yugoslavia. 2011. Psihijatrija Danas, 43(2): 141-153.	Not in English	1
59.	Giupponi G, Thoma H, Lamis D, Forte A, Pompili M, Kapfhammer HP. Posttraumatic stress reactions of underground drivers after suicides by jumping to arriving trains; feasibility of an early stepped care outpatient intervention. J Trauma Dissociation. 2019; 20(5):495-510.	No effect sizes	1
60.	Osofsky HJ, Osofsky JD, Arey J, Kronenberg ME, Hansel TC, Many MM. Hurricane Katrina's first responders: the struggle to protect and serve in the aftermath of the disaster. 2011. Disaster Medicine and Public Health Preparedness, 5: S214-S219.	No effect sizes	2
61.	Rosenblatt AS, Li R, Fortier C, Liu X, Fonda JR, Villalon A, McGlinchey RE, Jorge RE. Latent factor structure of PTSD symptoms in veterans with a history of mild traumatic brain injury and close-range blast exposure. 2018. Psychological Trauma: Theory, Research, Practice, and Policy, 442-450.	No effect sizes	3
62.	Sheffler JL, Rushing NC, Stanley IH, Sachs-Ericsson NJ. The long-term impact of combat exposure on health, interpersonal, and economic domains of functioning. 2016. Aging and Mental Health, 20(11): 1202-1212.	No effect sizes	4
63.	Solberg O, Birkeland MS, Blix I, Hansen MB, Heir T. Towards an exposure-dependent model of post-traumatic stress: longitudinal course of post-traumatic stress symptomatology and functional impairment after the 2011 Oslo bombing. 2016. Psychological Medicine, 46(15): 3241-3254.	No effect sizes	5
64.	Taymur I, Sargin AE, Ozdel K, Turkcapar HM, Calisgan L, Zamki E, Demirel B. Possible Risk Factors for Acute Stress Disorder and Post-Traumatic Stress Disorder After an Industrial Explosion. 2014. Noropsikiyatri Arsivi, 51(1): 23-29.	No effect sizes	6
65.	Wisnivesky JP, Teitelbaum S, Todd AC, Boffetta P, Crane M, Crowley L, De la Hoz RE, Dellenbaugh C, Harrison DJ, Herbert R, Kim H, Jeon Y, Kaplan J, Katz CL, Levin SM, Luft BJ, Markowitz S, Moline JM, Ozbay F, Pietrzak RH, Shapiro M, Sharma V, Skloot G, Southwick SM, Stevenson LA, Udasin IG, Wallenstein S, Landrigan PJ. Persistence of multiple illnesses in World Trade Center rescue and recovery workers: a cohort study. 2011. Lancet, 378(9794): 888-897.	No effect sizes	7

/bmjopen-2021-049

negative acts,

private Raumas and

sector (model 2),

OR: 1.10 [1.07 1.13]1

OR: 1.11 [1.07 1.5]²

OR: 1.10 [1.04 1.15]³

Elder care

44 45 46 and longitudinal

Follow-up period:

analyses)

4 years

2. Andersen,

2019 19

Age= 45.1(10.1) years

Type of job/company=

Employees working in

psychiatric wards, in the

First author,	Study (name,	Sample description (n,	Description of exposure	Description of	Adjustment	Effect estimates (e.g., HR, RR
Year;	design and	Country, Type of	assessment (way and	outcome (type of	on .	or OR with 95% confidence
	follow-up period)	job/company, relevant	year of baseline	symptoms, way of	25	interval). Super scripts refer
		inclusion/exclusion	exposure assessment	assessment, and	Au	to the models specified in the
		criteria, %Female, Age)	and description of	incidence over the	August 2	'adjustment' column
			categories)	follow-up period)	st 2)	
	Name: Armed	<u>n</u> =1,344,668	Exposure assessment:	Type of symptoms:	No 21.	PTSD incidence was in
	forces health		Self-reported	PTSD	-	general higher after the
	surveillance	Country=USA			ow	second, third and fourth
		() 4	Year of assessment:	Way of assessment:	nlo	deployment, compared to the
	Design:	<u>%Female</u> = 11%	between Oct 2001 and	Mental disorders	ade	first and fifth.
	Prospective		Dec 2010	assessed with ICD-9-	ð f	
	longitudinal	Age= The majority was		CM (309.81), reported	Downloaded from http://bmjopen.bmj.com/ on Apr	PTSD incidence was in
		<25, with lower numbers	Exposure categories: %	in military or civilian	n hi	general higher among males,
	Follow-up period:	of participants in the 25-	PTSD diagnosis were	hospitals	itp:	those in lowest age group,
	12 months post	29 and 30+ categories.	compared between		//br	health care workers and
	deployment		deployment number,	<u>Incidence</u> : -	njo	those with longer dwelling
		Type of job/company=	gender, age group,		per	time between the
1. Armed		Active components of	military occupation		ı.br	deployments.
Forces		the forces (on	(combat, health care	\mathbf{O}_{i}	nj.c	
Health		Afghanistan and Iran	and other) and	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	öm	No effect estimates were
Surveillance		missions).	'dwelling time' between		0	reported (only incidences).
Center,			employments.		۸ ۲	
2011 ²¹		<u>Inclusion/exclusion</u> = -		U/A	<u> </u>	
	Name: -	<u>n</u> = 2,678	Exposure assessment:	Type of symptoms:	Unadjusted (model	Work-related threats
			Self-reported	PTSD	1), adjusted for	All four sectors
	<u>Design:</u>	<u>Country</u> = Denmark			gender, gge,	PTSD at 2011
	Prospective		Year of assessment:	Way of assessment:	bullyingesexual	OR: 1.11 [1.07 1.14] ¹
	longitudinal (with	<u>%Female</u> = 66%	2011	Self-reported with the	harassm <u>e</u> nt,	OR: 1.10 [1.05 1.15] ²
	cross-sectional			Impact of Event Scale-	conflictsat work,	PTSD at 2015

Exposure categories:

Work-related violence

and threats on a 5 point

likert scale with 0=never

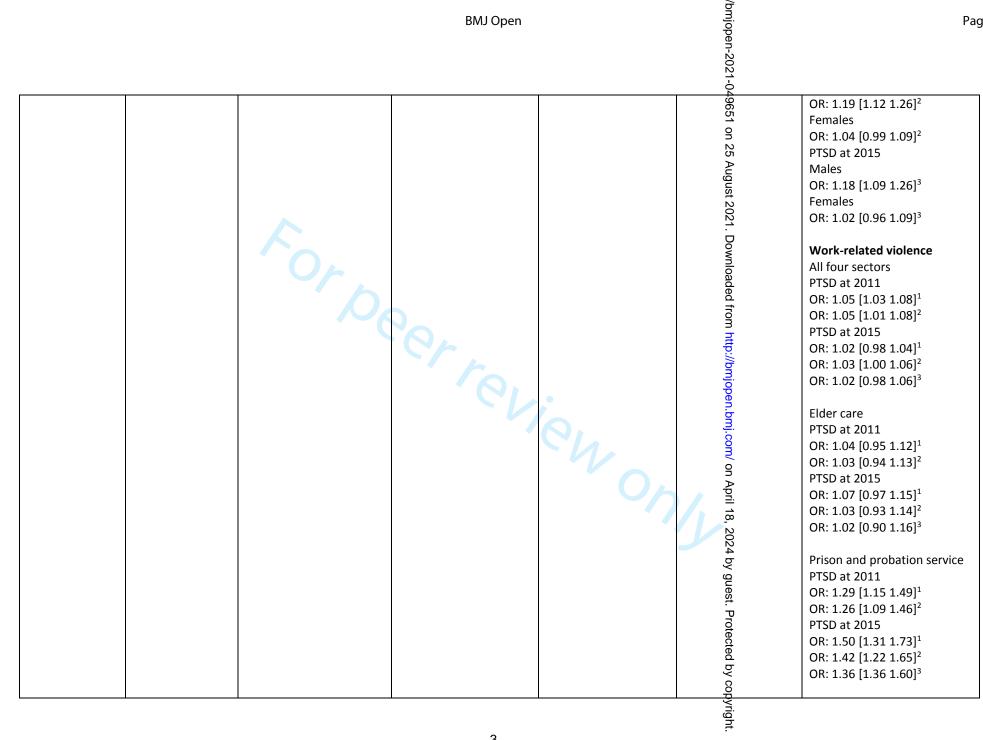
to 4=almost daily, with

Revised

incidences)

Incidence:14% (2

28		BMJ Open		/bmjopen-2	
	elder sector, at special schools and in the prison and probation service. Inclusion/exclusion=-	summary scores 0-24 and 0-44, respectively.		요 /bmjopen-2021-04錄孫on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyrig	PTSD at 2011 OR: 0.99 [0.88 1.23]¹ OR: 0.98 [0.82 1.18]² PTSD at 2015 OR: 1.12 [1.00 1.25]¹ OR: 1.12 [0.94 1.33]² OR: 1.22 [0.95 1.56]³ Prison and probation service PTSD at 2011 OR: 1.21 [1.14 1.28]¹ OR: 1.18 [1.08 1.27]² PTSD at 2015 OR: 1.73 [1.20 1.35]¹ OR: 1.25 [1.17 1.34]² OR: 1.22 [1.13 1.31]³ Psychiatry PTSD at 2011 OR: 1.14 [1.06 1.12]¹ OR: 1.19 [1.09 1.32]² PTSD at 2015 OR: 1.06 [0.99 1.13]¹ OR: 0.94 [0.83 1.07]³ Special schools PTSD at 2011 OR: 1.01 [0.93 1.09]¹ OR: 0.95 [0.85 1.05]² PTSD at 2015 OR: 1.08 [1.01 1.15]¹ OR: 1.06 [0.98 1.14]² OR: 1.07 [0.95 1.12]³ PTSD at 2011 Males
			<u></u>	<u> </u>	

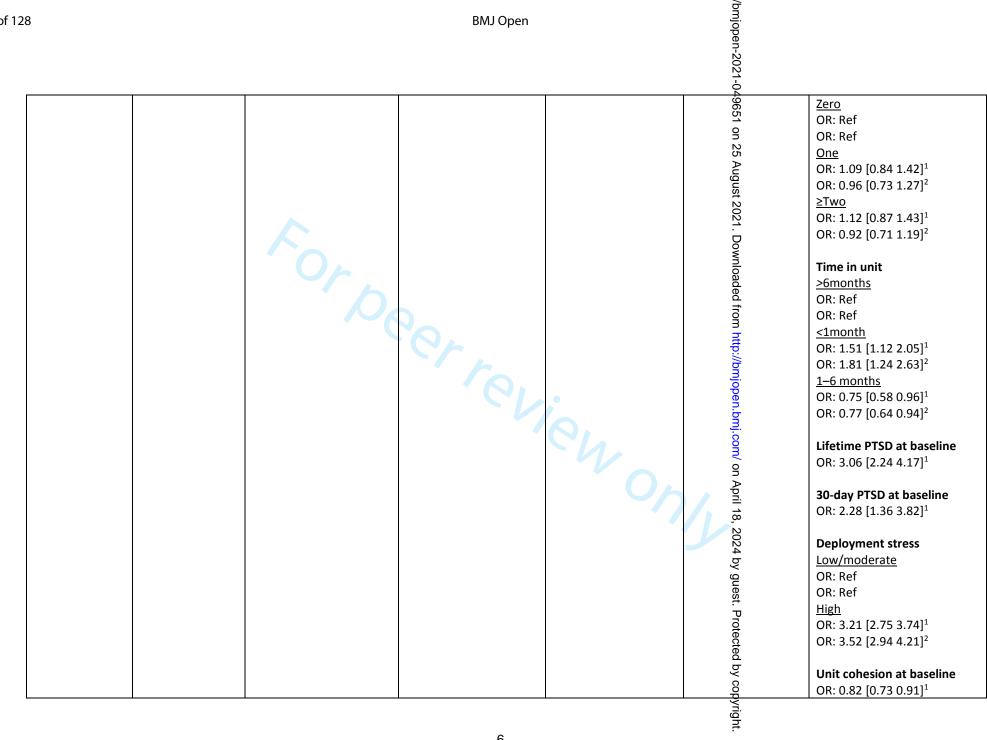


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3			BMJ Open		/bmjopeı	
					1-2021-04	
Nam	ne: Army	<u>n</u> =4,645	Exposure assessment:	Type of symptoms:	bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by each od by both the control of the contro	Psychiatry PTSD at 2011 OR: 1.08 [1.01 1.15] ¹ OR: 1.13 [1.03 1.24] ² PTSD at 2015 OR: 1.04 [0.98 1.10] ¹ OR: 1.05 [0.96 1.14] ² OR: 0.98 [0.88 1.10] ³ Special schools PTSD at 2011 OR: 1.04 [0.98 1.09] ¹ OR: 1.03 [0.97 1.10] ² PTSD at 2015 OR: 1.02 [0.97 1.07] ¹ OR: 1.02 [0.97 1.07] ² OR: 1.01 [0.42 1.08] ³ PTSD at 2011 Males OR: 1.06 [0.99 1.12] ² Females OR: 1.03 [0.99 1.07] ² PTSD at 2015 Males OR: 1.07 [0.99 1.14] ³ Females OR: 0.99 [0.95 1.05] ³ Age
	RRS study	<u> </u>	Self-reported	PTSD (30 days)	adjuste@for all	OR: 1.00 [0.99 1.02] ¹
		<u>Country</u> =USA			other exposures	OR: 1.00 [0.99 1.02] ²
<u>Desig</u>		% Famala=E%	Year of assessment: 2012	Way of assessment: Composite	(model ┧) and for lifetime⊈TSD at	Sex
	spective situdinal (with	<u>%Female</u> =5%	2012	International	baseline (model 2).	Female
basel		Age=26.9(0.2) years	Exposure categories:	Diagnostic Interview	<u>e</u>	OR: Ref
	surements 1-		Unit cohesion, stressful	screening scales (CIDI-	by	OR: Ref
		Type of job/company=	employment	SC) and a six-item	сор	<u>Male</u>
					by copyright.	

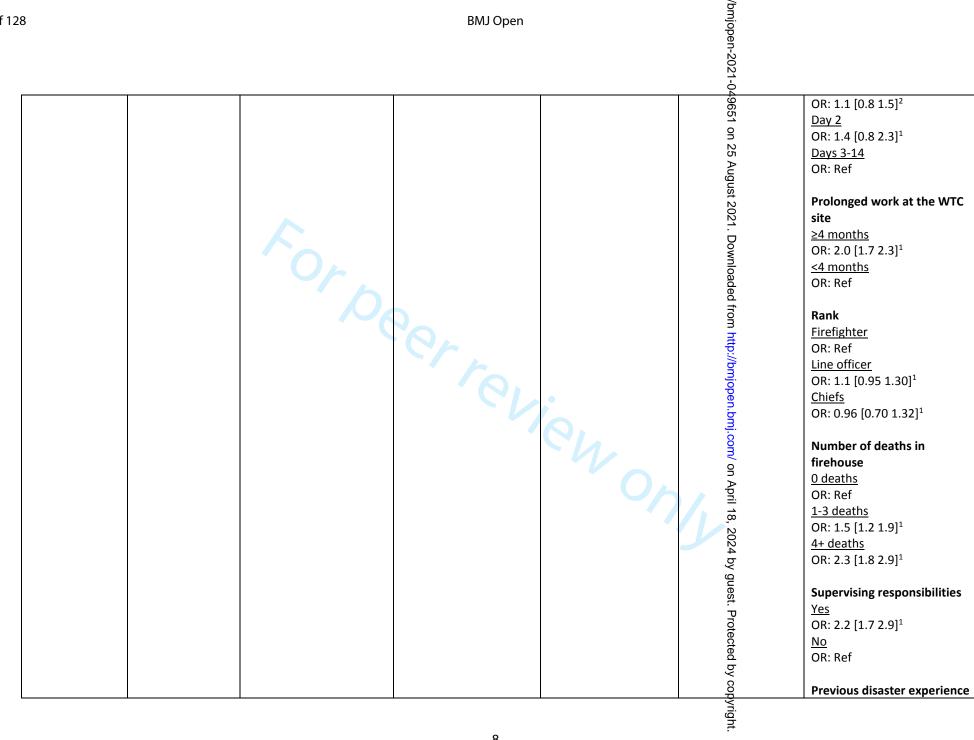
				-02	
the deployment)	Soldiers from three	characteristics and	screening version of	.96	OR: 0.73 [0.46 1.14] ¹
	combat teams employed	sociodemographic were	the PTSD Checklist	51	OR: 0.88 [0.51 1.51] ²
Follow-up period:	in Afghanistan	assessed	(PCL) to assess	on	
9 months post-			lifetime DSM-4 mental	25	Race
employment	Inclusion/exclusion= -		disorders	Au	White
				gu	OR: Ref
			Incidence: 11.9%	st 2	OR: Ref
			(lifetime)	02	Black
			,	1. [OR: 0.99 [0.67 1.48] ¹
				Ον	OR: 1.04 [0.72 1.49] ²
				vnlo	Asian
				pad	OR: 1.28 [0.77 2.12] ¹
				ed	OR: 1.38 [0.80 2.39] ²
				froi	Other
	Forde			3	OR: 1.49 [1.04 2.15] ¹
				ıttp	OR: 1.25 [0.86 1.82] ²
		-/ -		://b	
				mjc	Ethnicity
				эре	Non-Hispanic
				n.b	OR: Ref
				<u>, p.</u>	OR: Ref
				cor	Hispanic
				n/ c	OR: 1.15 [0.83 1.59] ¹
				on ,	OR: 1.22 [0.87 1.73] ²
			Uh	Αpr	
				≕ 1	Brigade Combat Team
				, N	Fort #1
				202	OR: Ref
				4 b	OR: Ref
				у д	Fort #2
				ues	OR: 1.15 [0.90 1.47] ¹
				st. F	OR: 1.31 [0.97 1.77] ²
				o.	Fort #3
				tec	OR: 1.00 [0.80 1.24] ¹
				ted	OR: 1.09 [0.82 1.45] ²
				by	2 2.05 [0.02 20]
				-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyric	Number of deployments
	I.	I .	<u>I</u>		The second of th



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		BMJ Open		/bmjopen		Pag
Name: FDNY-WTC-MMP Design: Prospective longitudinal with baseline measurement within 6 months from the disaster. Follow-up period: 2.9 years	n=5,656 Country= USA %Female= 0% Age= - Type of job/company= New York fire department rescue workers who were involved in the 9/11 WTC disaster Inclusion/exclusion= Fire fighters who retired during the study, who arrived at the disaster site >14 days after the recue, and females; firefighters	Exposure assessment: Demographic and retirement from employee databases, all other information from self-reports. Year of assessment: 2001 Exposure categories: -	Type of symptoms: Probable PTSD Way of assessment: Self-reported using PTSD checklist (PCL-m) Incidence:16%	Univariate adjusting Application in the univariate statistic and incomplete with the univariate and univariate adjusting Application in the univariate and u	OR: 0.74 [0.65 0.84] ² Age 20-29 years OR: Ref 30-39 years OR: 1.0 [0.8 1.3] ¹ 40-49 years OR: 1.0 [0.8 1.3] ¹ 50-59 years OR: 0.6 [0.4 1.1] ¹ 60+ years OR: - Continuous OR: 0.98 [0.97 1.00] ² Education High School OR: Ref Some College OR: 1.1 [0.9 1.3] ¹ College OR: 1.1 [0.9 1.3] ¹ Post-College OR: 1.2 [0.8 1.8] ¹ Living with a partner Yes OR: Ref	Pag
				2024 by gues		
4. Berninger, 2010 ²²				st. Protected by cc	Arrival Group Morning of 9/11 OR: 4.8 [3.0 7.5] ¹ OR: 2.0 [1.3 2.9] ² Afternoon of 9/11 OR: 2.3 [1.5 3.5] ¹	



BMJ Open

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		BMJ Open		mjopen-20	Pa
Name: Army STARSS study Design: Retrospective longitudinal Follow-up periods -	n= 14,254 for AAS and 25,629 for NSS. Country= USA %Female= 12% for AAS and 17% for NSS Age= 29.0(0.1) for AAS and 21.0(0.0) for NSS Type of job/company= Soldiers at all stages of their activity (AAS substudy) and new recruits (NSS sub-study) Inclusion/exclusion= -	Exposure assessment: Self-reported Year of assessment: 2011-2013 Exposure categories: Deployment-related and lifetime stress were assessed (the former only for the AAS cohort).	Type of symptoms: Probable PTSD (lifetime and past 30-day prevalence) was assessed using the PTSD Checklist (PCL) using DSM-4 criteria Way of assessment: Self-reported Incidence:-	/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyri	Yes OR: 1.4 [1.2 1.6] ¹ No OR: Ref Duration of work at WTC site (per month) OR: 1.1 [1.1 1.2] ² Reported increase in alcohol OR: 1.3 [1.0 1.7] ² Baseline probable PTSD OR: 5.6 [4.4 7.0] ² Diversity of Deployment- Related Traumatic Stress Score [0-15] 30-day PTSD OR: 1.15 [1.13 1.16] (AAS) Lifetime PTSD OR: 1.17 [1.16 1.18] (AAS) Cumulative Deployment- Related Traumatic Stress Score [0 60] 30-day PTSD OR: 1.03 [1.03 1.04] (AAS) Lifetime PTSD OR: 1.00 [0.99 1.00] (AAS) Diversity of Lifetime Traumatic Stress Score 30-day PTSD OR: 1.14 [1.13 1.16] (AAS) OR: 1.34 [1.30 1.38] (NSS) Lifetime PTSD OR: 1.16 [1.15 1.17] (AAS) OR: 1.34 [1.31 1.38] (NSS)

.8				BMJ Open		bmjopen-2021-0	
		ı	I	I	I	1-2021-049	Cumulative Lifetime
6.	Brundage, 2015 ²⁴	Name: Defense Medical Surveillance System (DMSS) Design: Prospective longitudinal Follow-up period: 36 months post- deployment.	n= 2,020,340 (Iraq/Afghanistan) and 529,609 (Korea/Japan) Country= USA %Female= - Age= - Type of job/company= Individuals who served in army, air force, navy and marine. Those who were deployed in Iraq and Afghanistan were compared with a reference group who returned from assignments in Korea and Japan.	Exposure assessment: Deployment administration Year of assessment: 2003-2014 Exposure categories: Iraq/Afghanistan vs Korea/Japan, and occupation. Also other factors were assessed but where not considered for this review.	Type of symptoms: PTSD Way of assessment: Diagnosis using ICD-9 criteria. Incidence: -	49651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by gues	Traumatic Stress Score 30-day PTSD OR: 1.02 [1.02 1.03] (AAS) OR: 0.99 [0.98 1.01] (NSS) Lifetime PTSD OR: 1.02 [1.01 1.02] (AAS) OR: 1.00 [0.99 1.01] (NSS) There were 4.85 diagnoses per 100 deployments among those who served in lraq/Afghanistan, this was 1.04 among those who went to Japan/Korea (with a 4.66 ratio between the two groups). Diagnosis per 100 deployments were highest among combat specific (5.62) and health care (8.52) occupations who went to lraq/Afghanistan, compared to others (4.17).
	2013	Name: Defence	<u>Inclusion/exclusion</u> = - <u>n</u> = 1.35 million	Exposure assessment:	Type of symptoms:	Unadjusted (model	Sex
		Manpower Data		Deployment	PTSD	1) and adjusted for	<u>Female</u>
		Center (DMDC)	<u>Country</u> = USA	administration		all other exposures	RR: 1.65 [1.54 1.77] ¹
7.	Cameron,	Database and			Way of assessment:	(model 🖺.	RR: 1.92 [1.84 2.00] ²
1	2019 ²⁵	Defense Medical	<u>%Female</u> = 12%	Year of assessment:	Data from the	by	Male

Surveillance		1999-2008	Defence Medical	196	RR: Ref.
System (DMSS)	<u>Age</u> = -		Surveillance System	51	RR: Ref.
		Exposure categories:	(DMSS), with ICD-9-	on	
Design:	Type of job/company =	Rank and service type.	CM coded diagnoses,	25	Age
Retrospective	Active duty service		were used.	Αc	< 20
longitudinal	members between 1999			nBr	RR: Ref.
i o i Bicaramia.	and 2008.		Incidence: 52,771	st 2	RR: Ref.
Follow-up period:	aa 2000.		incident cases (~4%)	202	<u>20–24</u>
-	Inclusion/exclusion= -		moracine cases (170)	<u>-</u>	RR: 1.41 [1.25 1.60] ¹
	inclusion, exclusion			Do	RR: 1.36 [1.27 1.46] ²
				vnl	25–29
				oac	RR: 1.36 [1.20 1.54] ¹
				ded	RR: 1.52 [1.41 1.65] ²
				fro	30–34
	7-7	Per tev		-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18,	RR: 1.00 [0.87 1.15] ¹
		104		http	RR: 1.37 [1.25 1.50] ²
				o://k	35–39
				omj.	RR: 0.88 [0.76 1.02] ¹
		' (2)		ope	RR: 1.37 [1.24 1.52] ²
				en.l	> 39
				om	RR: 0.93 [0.80 1.08] ¹
				j.cc	
)m/	RR: 1.68 [1.51 1.87] ²
				on	Bass
				Ap	Race
) j <u>r</u> i	Black
				18,	RR: Ref.
				20	RR: Ref.
				24	Other
				by	RR: 1.32 [1.18 1.47] ¹
				gut	RR: 1.45 [1.36 1.54] ²
				est	<u>White</u>
				Pr	RR: 1.35 [1.25 1.47] ¹
				2024 by guest. Protected by copyri	RR: 1.58 [1.51 1.66] ²
				cte	
				D D	Marital Status
				у с	Married
1	1			×	RR: 1.13 [1.06 1.20] ¹

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		I			- 2	
		Country= USA	administration		all remagning	OR: 4.9 [3.0 7.9] ¹
	Design:			Way of assessment:	exposures in the	OR: 4.0 [2.5 6.6] ²
	Prospective	<u>%Female</u> = 0%	Year of assessment:	Self-reported using	model (နာodel 2).	afternoon of 9/11
	longitudinal		2001	the PTSD checklist	25	OR: 2.4 [1.5 3.7] ¹
		Age= 47.0 (6.9) years		(PCL-17), using a cut-	Aug	OR: 2.1 [1.3 3.3] ²
	Follow-up period:		Exposure categories:	off >= 39 (range 17-	snb	<u>day 2</u>
	4 years post-	Type of job/company=	Retirement status, rank,	85).	2	OR: 1.7 [1.0 2.8] ¹
	attack.	New York fire	and exposure.		021	OR: 1.4 [0.9 2.4] ²
		department firefighters		Incidence: 22%		<u>day 3 to day 14</u>
		who were involved in the			Ŏ W	OR: Ref.
		9/11 WTC attacks.			'nlo	OR: Ref.
					ă d	
		Inclusion/exclusion= Fire			ed -	Retirement status
		marshals, females, those			fror	Disability
		who retired due to			ם ב	OR: 1.9 [1.5 2.4] ¹
		mental health disability			[OR: 1.7 [1.4 2.2] ²
		and those who did not	er ter		//b	Non-disability
		first arrive at the disaster			nj _o	OR: Ref.
		site were excluded.			ре	OR: Ref.
					n.b	
				\bigcirc	₫.	AUDIT score
					O	≥8
					√ c	OR: 2.0 [1.5 2.5] ¹
					Ď,	OR: 1.9 [1.5 2.4] ²
				UA	pri	<u><8</u>
					1 12	OR: Ref.
					, w N	OR: Ref.
					02	
					25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyr	Age on 9/11 [in years]
					y 9	<u><55</u>
					ues	OR: 2.0 [1.4 3.0] ¹
					 	OR: 1.5 [1.0 3.0] ²
					rot	≥55
					iect	OR: Ref.
					:ed	OR: Ref.
					by	
					8	Age on 9/11 - in years
<u> </u>	<u> </u>	<u> </u>	1	l	' 	

9. Ciarleglio,

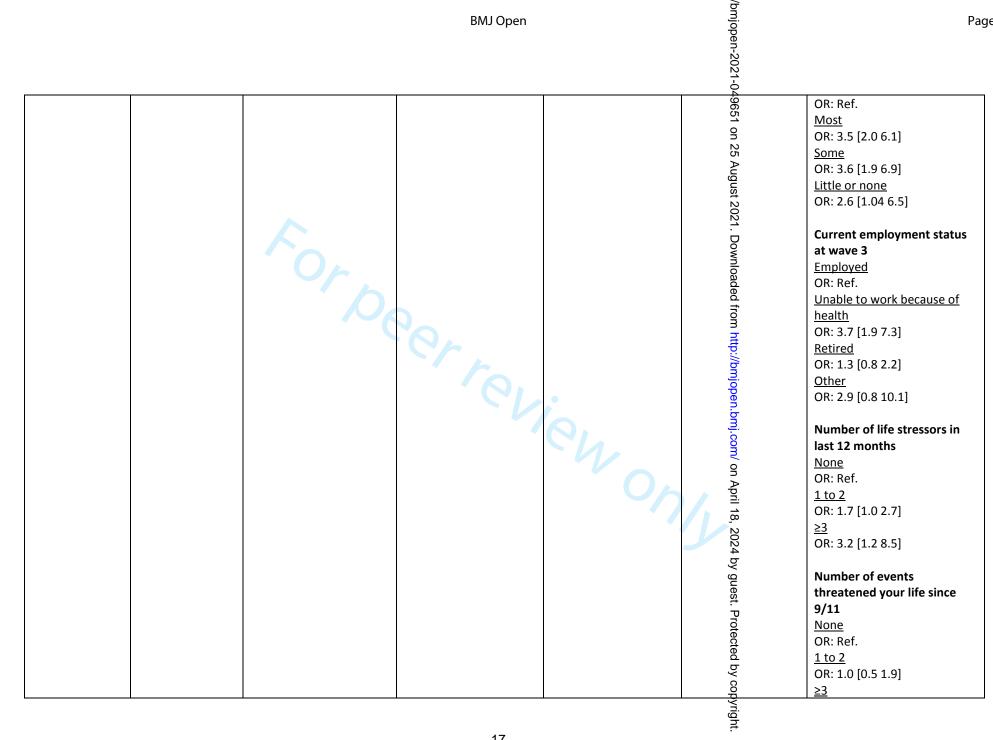
2018 27

					1- ₀	
					49651 on	Continuous OR: 1.0 [1.0 1.0] ¹
			Per rev		1-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protective in the contraction of the contraction o	OR: 1.0 [1.0 1.0] ¹ Marital status Married OR: 0.8 [0.6 1.2] ¹ Living with a partner OR: 1.1 [0.6 2.1] ¹ Never married OR: 0.9 [0.5 1.6] ¹ Separated/widowed/divorced OR: Ref. Marital status change since 9/11 Status change OR: 1.3 [0.9 1.9] ¹ No change OR: Ref. Previous profession No other profession OR: 1.2 [0.9 1.4] ¹
				Oh	April 18, 20	Other professions OR: Ref. Rank
)24 1	Chiefs OR: 0.5 [0.3 0.9] ¹
					у g	Captains and lieutenants
					ues	OR: 0.8 [0.6 1.0] ¹
					t. Pr	<u>Firefighters</u>
		077		- .	ot er	OR: Ref.
	Name: VU	<u>n</u> = 375	Exposure assessment:	Type of symptoms:	Multivagate models	Age in years
	Cooperative	Country - LICA	Self-reported	PTSD	adjusting for all other exposures.	OR: 1.04 [0.99 1.09]
,	Studies Program	Country= USA	Vacuation and	May of accommon to	other exposures.	Candan
	Study, combined		Year of assessment:	Way of assessment:	соруг	Gender
					÷	

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with data from	%Female= 5%	2003-2005	Using a clinically	196	Male
Neurocognition			administered PTSD	51	OR: Ref.
Deployment	Age= 35.1 (5.9) years	Exposure categories:	scale.	on	Female
Health Study		Deployment history and		25	OR: 0.31 [0.07 1.53]
(NDHS).	Type of job/company=	stress exposure.	Incidence: 24%	₽	,
(1213)	Army soldiers who were		(prevalence)	nBr	Number of deployments
Design:	deployed in Iraq		(prevarence)	St 2	Single deployment
Retrospective	acpioyea iii ii aq			202	OR: Ref.
longitudinal	Inclusion/exclusion= -				Multiple deployments
longitudinar	IIICIdSIOII/ EXCIdSIOII			Do	OR: 0.83 [0.27 2.57]
Follow-up period:				wn	OK. 0.83 [0.27 2.37]
Between 5.7				oa	Months since most recent
months (baseline)				dec	
and 7.5 months	(),			d fro	deployment
	/ _ /	2		m	OR: 1.00 [0.98 1.02]
post-deployment				htt	
(long-term				p://	Composite emotional health
follow-up).				bm d	factor post-deployment
		10.		jop	OR: 1.09 [0.79 1.50]
		Perter		ien	
				.bm	Mental health treatment
			\mathcal{O}_{I}	ıj.c	received post-deployment
			11.	om	<u>No</u>
				O.	OR: Ref.
				∀ ר	<u>Yes</u>
			U/A	pril	OR: 4.12 [2.18 7.80]
				18	
				,30 N2	Early life events summary
				02,	score
					OR: 0.92 [0.84 1.00]
				/ g	
				ues	Combat and post-battle
				**	experiences
				orot	OR: 0.99 [0.95 1.03]
				tec	
				ted	Deployment concerns
				by	summary score
				-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyri	OR: 1.01 [0.98 1.04]
				- Py r	C. 1.01 [0.30 1.04]

28			BMJ Open		/bmjopen-2021-0	
					-2021-0-	
					149651 on 25 August 2021.	Life and family concerns OR: 0.99 [0.94 1.03] Post-deployment life events summary score OR: 1.07 [0.96 1.19]
		<i>F</i>			21. Dow	Post-war-zone social support OR: 0.92 [0.89 0.95]
	Name: World Trade Center Health Registry Design: Prospective longitudinal Follow-up period: 10 years	n= 2,204 Country= USA %Female= 13% Age= 38 (median) Type of job/company= Police responders to the 9/11 WTC attacks Inclusion/exclusion= Those with at least one shift at the disaster site, those without pre-9/11 PTSD and with follow-up	Exposure assessment: Self-reported Year of assessment: 2001 Exposure categories: Demographic, injury, stressors, life threatening event, support.	Type of symptoms: Probable PTSD Way of assessment: Self-reported using a combination of the PCL checklist and DSM-4 criteria. Incidence: 11% (prevalence)	Adjusting for all other eyed from http://bmjopen.bmj.com/ on April 18, 20	Age group at 9/11 18-44 OR: Ref. 45-69 OR: 0.6 [0.3 1.3] Gender Male OR: Ref. Female OR: 1.3 [0.7 2.5] Hispanic No OR: Ref. Yes OR: 1.2 [0.7 2.0]
10. Cone, 2015		measurements.			2024 by guest. Protected by copyrig	Household gross income at wave 3 ≥75K OR: Ref. <75K OR: 2.0 [1.2 3.4] Having social support All of the time



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					:1- ₀	
					4965	OR: 3.3 [1.9 5.6]
		<u>n</u> = 217 exposed and			21-049651 on 25 August 2021. Downloaded from http://b	Number of injuries sustained during the 9/11 attacks None OR: Ref. One OR: 1.1 [0.6 2.0] Two or more OR: 1.4 [0.6 3.4] Report of unmet mental health care needs at wave 3 No OR: Ref.
			C/-		http://	<u>Yes</u>
	Names National	n 217 avecand and	Fire source seeses seet.	Time of a montanes	Univariate and	OR: 9.5 [5.3 16.9]
	Name: National Comorbidity	<u>n</u> = 217 exposed and 2,110 unexposed.	Exposure assessment: Self-reported	Type of symptoms: PTSD (according to	multivage and	Exposure No exposure
	Survey	z,110 unexposed.	Sell-reported	DSM-4 criteria)	analysesadjusting	OR: Ref
	Replication (NCS-	Country=USA	Year of assessment:	DSIVI-4 CITCETIA)	for age of exposure,	On. Rei
	R)	<u>country</u> our	2001-2002	Way of assessment:	age of onset	Exposure to
	,	%Female= 0%		Self-reported (no	diagnoses, race	peacekeeping/relieve work
	Design:	<u>701 0111010</u> 070	Exposure categories:	specific questionnaire		and combat
	Retrospective	Age= 55.0(0.9) for	Participants who were	mentioned)	pri.	OR: 11.2 [2.9 43.2]
	longitudinal	exposed workers, 43.8	exposed to combat and		128	
		(0.9) for non-exposed	peacekeeping/relieve	<u>Incidence</u> :	20	Exposure to combat only
	Follow-up period:	workers	work or combat only vs	29/(217+2110)=1%	024	OR: 7.3 [3.3 15.8]
	-		non-exposed		by	
		Type of job/company=	participants.		gue	According to the authors the
		Participants employed in			est.	results remained the same in
		combat or service as			Pro	multivariate analyses (data
		peacekeeper or relief worker.			otec	not reported)
		WOIKEI.			ted	
11. Connorton,		Inclusion/exclusion=			by	
2011 ²⁹		Females were excluded			April 18, 2024 by guest. Protected by copyright.	
	1	T. S. Hares Here exchanged	I	I	У Угі.	I
					ight	
			10		:	

				<u> </u>	
Name: Weill	<u>n</u> = 2,960	Exposure assessment:	Type of symptoms:		Occupational exposure
Cornell 9/11		Self-reported	PTSD	baseline TSD and	<u>No</u>
Screening	Country= USA			demographic	OR: Ref.
Program		Year of assessment:	Way of assessment:	variables	<u>Yes</u>
	<u>%Female</u> = -	2002-2004	Using the CAPS	Αu	OR: 1.31 [1.13 1.51]
Design:			standardized clinical	gus	
Prospective	<u>Age</u> = -	Exposure categories:	interview and using	st 2	
longitudinal		Occupational exposure	the PCL-C	02	
	Type of job/company=		questionnaire using		
Follow-up period:	9/11 WTC disaster		DSM-4 criteria. CAPS	Jo _×	
Up to 4 years.	recovery workers.		data were used for	/nlc	
. ,			exposure-outcome) ad	
	Inclusion/exclusion= -		assessment.	e d	
				fror	
			Incidence: 9%, 5% and		
				n t p	
		- / L	•	://b	
			•	mj.	
) pe	
				n.b	
			_	<u>3</u> .	
				8	
Name: HERRICK	n= 3600	Exposure assessment:	Type of symptoms:	Unadjusted (model	Deployment
	_			, <u> </u>	Not deployed
•	Country= UK				OR: Ref.
. ,			Way of assessment:		OR: Ref.
Design:	%Female= -	Year of assessment:	-		Regulars
Prospective		2003	the PCL-C		OR: 1.03 [0.79 1.36] ¹
longitudinal	Age= -		questionnaire.	4 b	OR: 1.13 [0.82 1.54] ²
_	_	Exposure categories:		/ 9	Reservists
Follow-up period:	Type of job/company=	Deployment, rank,	Incidence: 4%	ser	OR: 2.90 [1.37 6.12] ¹
-	Armed forces who were			.÷ .÷	OR: 2.83 [1.23 6.51] ²
	deployed in Iraq and	and time since		rot	
				ect	Location of deployment
	_	, ,		ed	Not deployed in
	forces who were not			by	Iraq/Afghanistan
			1	_	
	Cornell 9/11 Screening Program Design: Prospective longitudinal Follow-up period: Up to 4 years. Name: HERRICK cohort (and other samples) Design: Prospective longitudinal	Cornell 9/11 Screening Program Design: Prospective longitudinal Follow-up period: Up to 4 years. Name: HERRICK cohort (and other samples) Design: Prospective longitudinal Name: HERRICK cohort (and other samples) Design: Prospective longitudinal Design: Prospective longitudinal Follow-up period: - Type of job/company= Armed forces who were deployed in Iraq and Afghanistan, who were compared to armed	Cornell 9/11 Screening Program Design: Prospective longitudinal Name: HERRICK cohort (and other samples) Design: Prospective longitudinal Design: Follow-up period: Up to 4 years. Name: HERRICK cohort (and other samples) Design: Prospective longitudinal Name: HERRICK cohort (and other samples) Design: Prospective longitudinal Age = - Follow-up period: Inclusion/exclusion = - Year of assessment: Deployment administration Year of assessment: Deployment, rank, number of deployments and time since deployment.	Cornell 9/11 Screening Program Country= USA Year of assessment: 2002-2004 Using the CAPS Standardized clinical interview and using the PCL-C questionnaire using DSM-4 criteria. CAPS data were used for exposure-outcome assessment.	Name: Weill Cornell 9/11 Self-reported Self-reported

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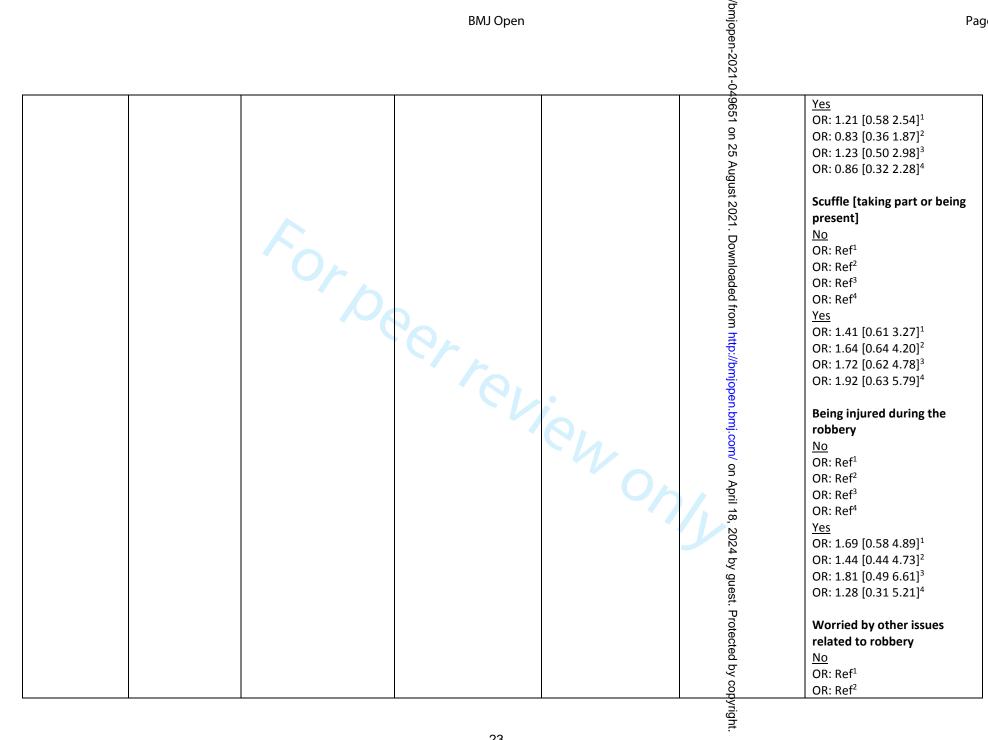
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<u>Des</u> Ret		~O_			:1-049651 on 25 August 2021. Downloaded fro	OR: 1.19 [0.76 1.86] ¹ OR: 1.18 [0.75 1.86] ² <u>Up to 3 years</u> OR: 1.95 [1.16 3.27] ¹ OR: 1.80 [1.05 3.10] ² <u>Up to 4 years</u> OR: 1.98 [1.08 3.65] ¹ OR: 1.88 [0.98 3.62] ² <u>Up to 5 years</u> OR: 1.59 [0.99 2.57] ¹ OR: 1.53 [0.92 2.55] ²
<u>Des</u> Ret		FO ₂				OR: 1.18 [0.75 1.86] ² <u>Up to 3 years</u> OR: 1.95 [1.16 3.27] ¹ OR: 1.80 [1.05 3.10] ² <u>Up to 4 years</u> OR: 1.98 [1.08 3.65] ¹ OR: 1.88 [0.98 3.62] ² <u>Up to 5 years</u> OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		Forn			on 25 August 2021. Downloac	Up to 3 years OR: 1.95 [1.16 3.27] ¹ OR: 1.80 [1.05 3.10] ² Up to 4 years OR: 1.98 [1.08 3.65] ¹ OR: 1.88 [0.98 3.62] ² Up to 5 years OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		Corp			25 August 2021. Downloac	OR: 1.95 [1.16 3.27] ¹ OR: 1.80 [1.05 3.10] ² Up to 4 years OR: 1.98 [1.08 3.65] ¹ OR: 1.88 [0.98 3.62] ² Up to 5 years OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		Corp			August 2021. Downloac	OR: 1.80 [1.05 3.10] ² <u>Up to 4 years</u> OR: 1.98 [1.08 3.65] ¹ OR: 1.88 [0.98 3.62] ² <u>Up to 5 years</u> OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		For			igust 2021. Downloac	Up to 4 years OR: 1.98 [1.08 3.65] ¹ OR: 1.88 [0.98 3.62] ² Up to 5 years OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		Ford			st 2021. Downloac	OR: 1.98 [1.08 3.65] ¹ OR: 1.88 [0.98 3.62] ² Up to 5 years OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		Ford			.021. Downloac	OR: 1.88 [0.98 3.62] ² Up to 5 years OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		FOLD			1. Downloac	<u>Up to 5 years</u> OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		TOP			ownloac	OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		Orbo			/nloac	OR: 1 53 [0 92 2 55]2
<u>Des</u> Ret					ac	UN. 1.JJ [U.JZ Z.JJ]
<u>Des</u> Ret					<u>-</u>	Up to 6.5 years
<u>Des</u> Ret					ed .	OR: 1.79 [0.98 3.26] ¹
<u>Des</u> Ret					fror	OR: 1.89 [0.99 3.60] ²
Ret	ame: -	<u>n</u> = 120	Exposure assessment:	Type of symptoms:	Unadjus <mark>t</mark> ed	Combat exposure scale [1 5]
Ret			Self-reported.	PTSD symptoms	t p	OR: 1.98 [1.50, 2,62]
	esign:	Country= Portugal	h		//br	
lonį	etrospective		Year of assessment: -	Way of assessment:	njo	Sense of coherence
	ngitudinal	<u>%Female</u> = 0%		Self-reported using	per	OR: -5.08 [-3.32, -7.78]
			Exposure categories:	the Impact of Event	ı.br	
<u>Foll</u>	ollow-up period:	Age= 64 [59-72]	Combat exposure,	Scale Revised (with a	nj.c	Observation of abusive
-			abusive violence, sense	cut-off score: >=33)	om	violence
		Type of job/company=	of coherence.		/ or	<u>No</u>
		Colonial war veterans		Incidence: 41%	. ∠	OR: Ref.
				(prevalence)	prii	<u>Yes</u>
		Inclusion/exclusion=			p://bmjopen.bmj.com/ on April 18,	OR: 8.36 [4.56, 15.35]
		Participants who			20	
		received psychiatric and)24	Participation in abusive
		psychological treatment			by	violence
		during the last 5 years,			gue	<u>No</u>
		and no history of			est.	OR: Ref.
		traumatic brain injury,			P	Yes
		neurological disorders or			ote	OR: 3.32 [1.81, 6.08]
14. Ferrajao,		physical disability were			2024 by guest. Protected	
2016 ³²		included.	Exposure assessment:	Type of symptoms:	Adjusting for all	Number of robberies during
15. Fichera, Nar		n= 383				

128			BMJ Open		/bmjopen-2	
2015 33	Design: Prospective longitudinal, with baseline 7-15 days post- robbery Follow-up period: 45 days after the first session	Country= Italy %Female= 52% Age= 43 (9) years Type of job/company= Employees of a large bank who were victims of robberies. Inclusion/exclusion= Participants who had voluntarily joined and employer sponsored post-robbery support	Self-reported (questionnaires and interviews) Year of assessment: 2010-2012 Exposure categories: Personal characteristics and characteristics of the robberies	PTSD Way of assessment: Self-reported using the Impact of Events Scale (IES). Incidence: 14%	other essoures (model 1), when additionally adjusting for baseline ptsD (models in which random intercepts were adopted from http://b	working life OR: 1.25 [1.07 1.44] ¹ OR: 1.15 [0.97 1.36] ² OR: 1.27 [1.07 1.51] ³ OR: 1.18 [0.97 1.44] ⁴ Gender Males OR: Ref ¹ OR: Ref ² OR: Ref ³ OR: Ref ⁴ Females OR: 0.63 [0.31 1.29] ¹ OR: 0.72 [0.33 1.58] ² OR: 0.77 [0.34 1.78] ³ OR: 0.85 [0.33 2.13] ⁴
		program.		ien on	nloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyrig	Being cashier No OR: Ref¹ OR: Ref² OR: Ref⁴ Yes OR: 0.52 [0.22 122]¹ OR: 0.94 [0.36 2.42]² OR: 0.40 [0.14 1.07]³ OR: 0.76 [0.25 2.25]⁴ Physical contacts with robbers No OR: Ref² OR: Ref² OR: Ref² OR: Ref³ OR: Ref³ OR: Ref³ OR: Ref⁴



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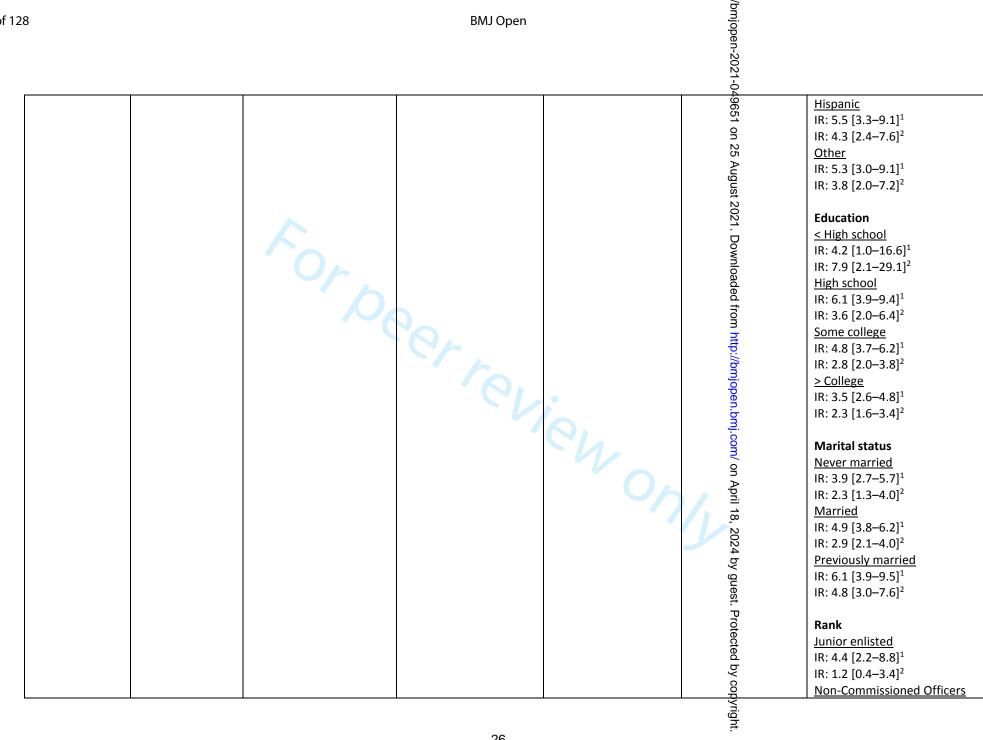
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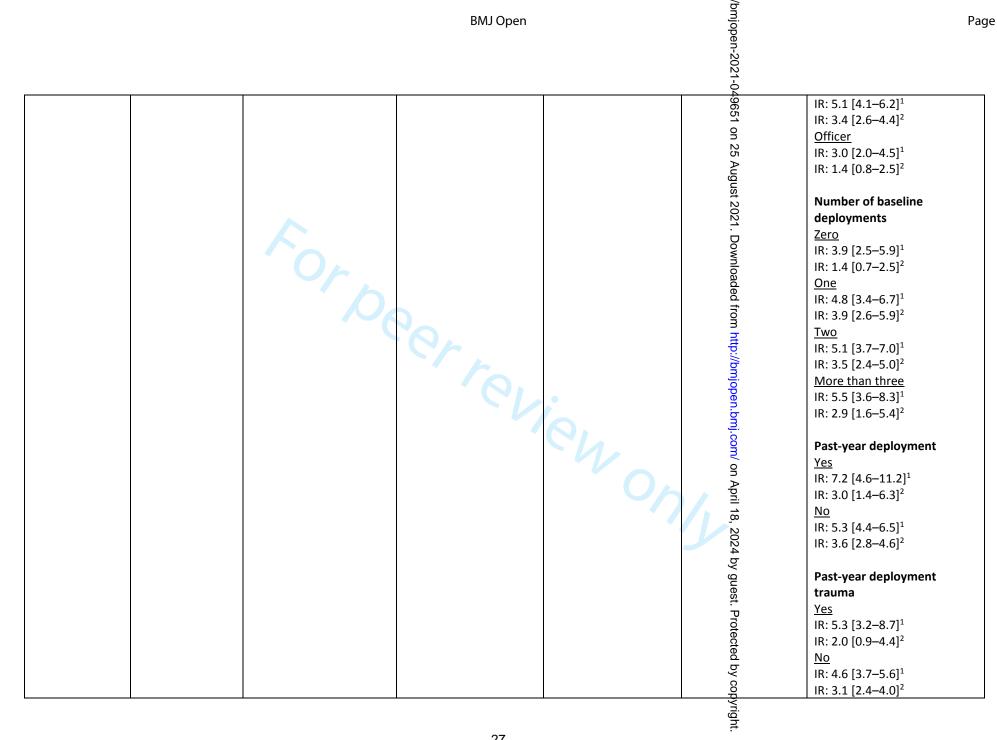
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Name: Reserve and National Guard (RNG) study. Name: Reserve and National Guard (RNG) study. Mame: Reserve and National Guard (RNG) Mame: Reserve and Nati						Ó		
Incidence: 4.7 and 2.9 per 100 person-year for sensitive and specific definition, respectively. Sex Male IR: 4.6 [3.8–5.7]¹ IR: 3.2 [2.5–4.2]² Female IR: 4.9 [3.2–7.4]¹ IR: 1.4 [0.7–2.8]² Race/ethnicity Non-Hispanic, white IR: 4.3 [3.4–5.3]² IR: 2.4 [1.8–3.3]² IR: 2.4 [1.8–3		and National Guard (RNG) study. Design: Prospective longitudinal Follow-up period:	Country= USA %Female= 18% Age= - Type of job/company= Army reservists	Self-reported Year of assessment: 2010 Exposure categories: Personal characteristics, deployment history and	Way of assessment: Self-reported using the PCL-C checklist, based on DSM-4 criteria. Criteria that sensitive and specific were used leading to two different PTSD definitions. Incidence: 4.7 and 2.9 per 100 person-year for sensitive and specific definition,	using the sensitive (model s) and specific (model 2)	OR: Ref ³ OR: Ref ⁴ Yes OR: - OR: 1.11 [1.07 1.15] ² OR: - OR: 1.11 [1.07 1.16] ⁴ Effects in incidence rate (IR) per 100/per-years Age 18-24 years IR: 4.8 [3.0-7.5] ¹ IR: 1.9 [0.8-4.3] ² 25-34 years IR: 4.4 [3.2-6.1] ¹ IR: 2.9 [1.9-4.4] ² >35 years IR: 4.9 [3.8-6.3] ¹ IR: 3.4 [2.5-4.7] ² Sex Male IR: 4.6 [3.8-5.7] ¹ IR: 3.2 [2.5-4.2] ² Female IR: 4.9 [3.2-7.4] ¹ IR: 1.4 [0.7-2.8] ² Race/ethnicity Non-Hispanic, white IR: 4.3 [3.4-5.3] ¹ IR: 2.4 [1.8-3.3] ²	
Q IR: 4.3 [3.4–5.3] ¹						rotec		
日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日						cted		
NR: 6.4 [4.0–10.2] ¹						by		
16. Fink, 2016 ³⁴ R: 4.6 [2.6–8.2] ²	16. Fink, 2016 ³⁴					Сору		



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		BMJ Open		/bmjopen-2021	Page
Design: Prospect longitud Follow-u 40.3 mon (median)	minal. Section Section Section	Self-reported. Year of assessment: 2004-2006. Exposure categories: Personal characteristics, service, rank and deployment history.	PTSD symptoms (delayed onset) Way of assessment: Self-reported using the PCL-C checklist. Incidence: 3.5%	1) and resultivariate (model adjusting for service, rank, deployment characters), anxiety. For service, and general general disorders, and general disorders, and subthreshold PTSD all at phisse 1.	Male OR: Ref. Female OR: 1.46 [0.64 3.36]¹ Age <35 OR: Ref. ≥35 OR: Ref. ≥35 OR: 0.71 [0.38 1.34]¹ Marital status In a relationship OR: Ref. Single, divorced, separated, widowed OR: 0.92 [0.39 2.14]¹ Service Naval services OR: 0.40 [0.14 1.19]¹ OR: 0.45 [0.16 1.28]² Army OR: Ref. OR: Ref. OR: Ref. OR: Ref. Royal Air Force OR: 0.23 [0.07 0.81]¹ OR: 0.53 [0.15 1.87]² Rank Officer OR: 0.17 [0.05 0.57]¹ OR: 0.21 [0.06 0.72]²
				cted by cop	Other rank OR: Ref. OR: Ref.

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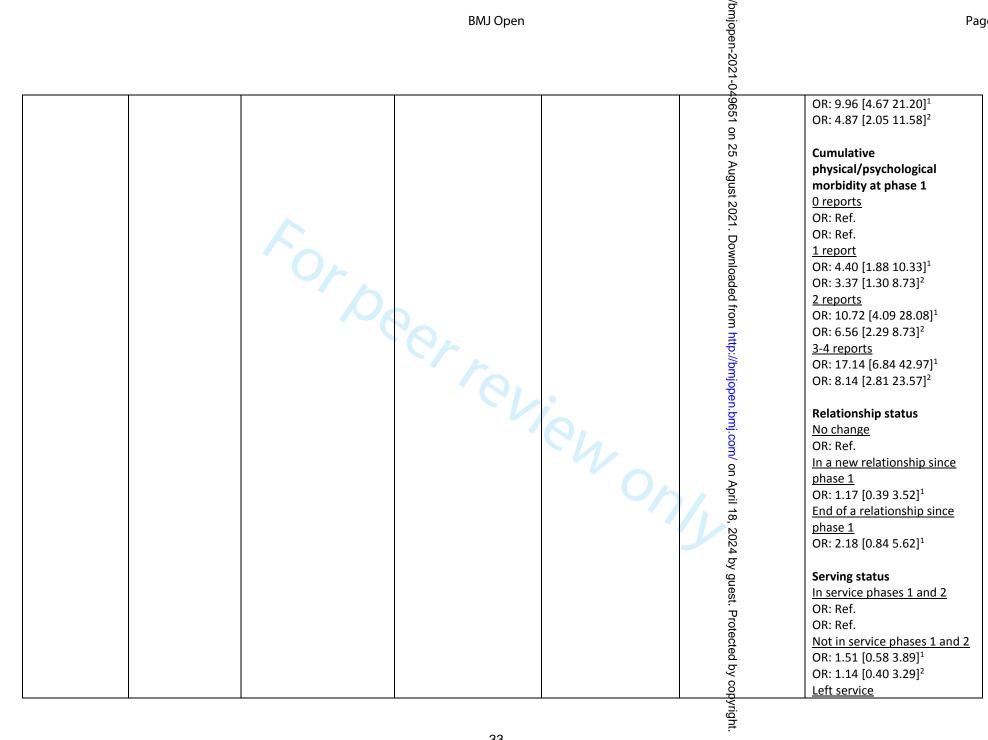
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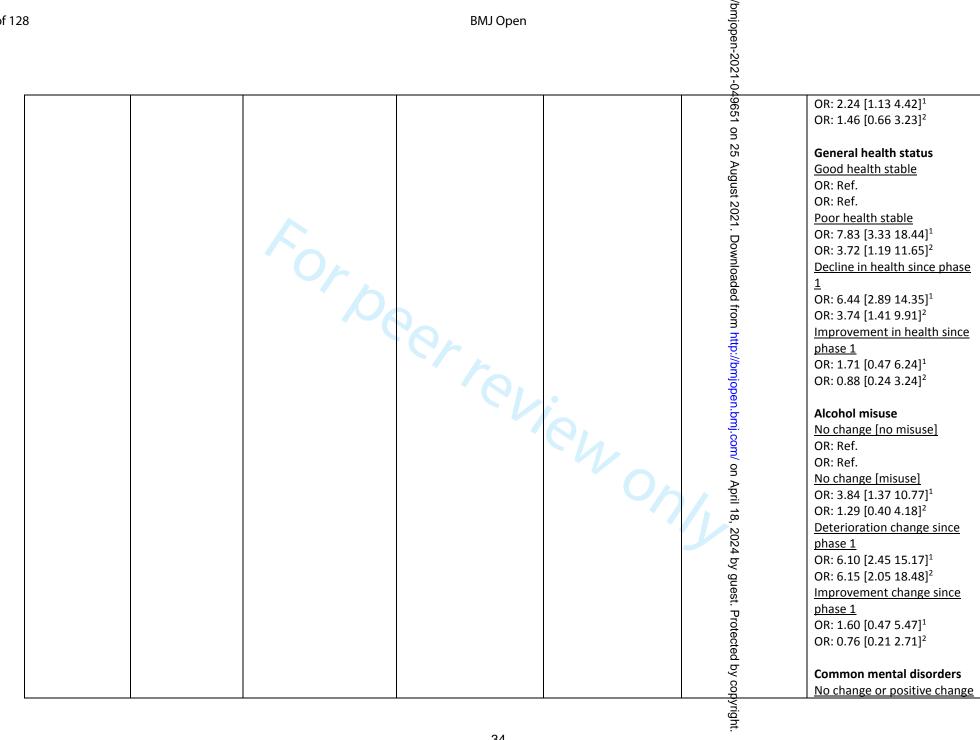
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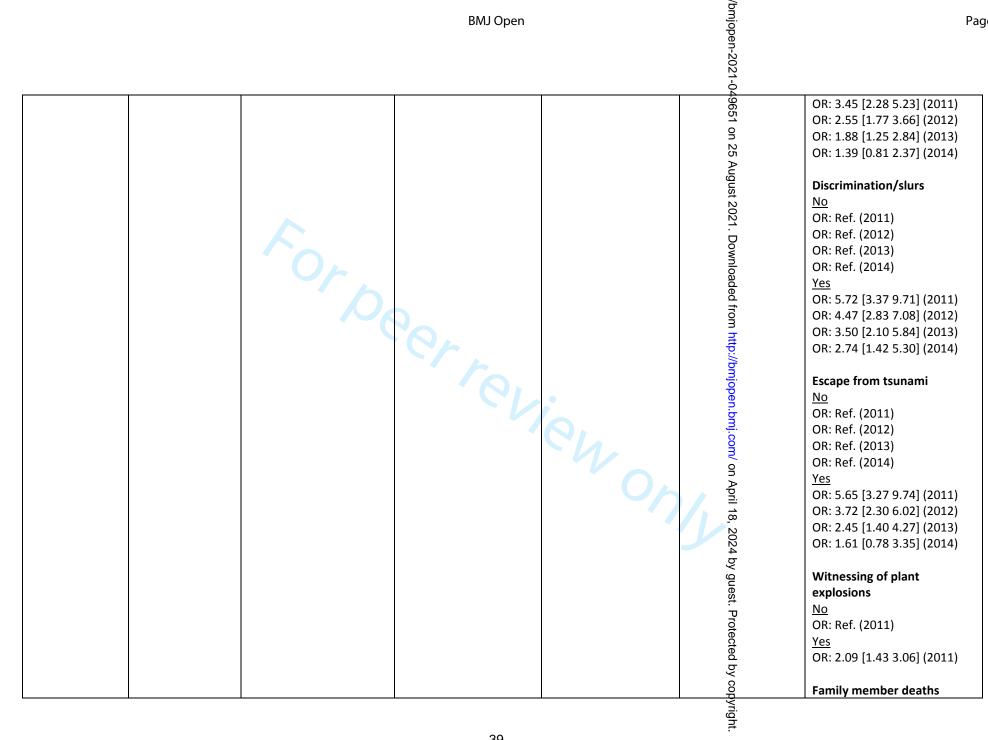
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			BMJ Open		/bmjopen-20	Page
18. Green, 2016	Name: Project VALOR Design: Retrospective longitudinal Follow-up period: -	n= 738 Country= USA %Female= 51% Age= 37.7 (9.9) years. Type of job/company= Iraq and Afghanistan army and marine corps veterans. Inclusion/exclusion= Participants who had undergone mental health evaluation at a veterans facility were included. Participants with probable PTSD and females were oversampled to get a	Exposure assessment: Self-reported Year of assessment: - Exposure categories: Deployment risk and resilience.	Type of symptoms: PTSD Way of assessment: Using a structured clinical interview with DSM-4 criteria. Incidence: 73% and 68% for females and males, respectively.	/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyri	OR: Ref. OR: Ref. Negative change since phase 1 OR: 6.29 [3.24 12.21]¹ OR: 7.12 [3.07 16.52]² Multiple physical symptoms No change or improvement OR: Ref. OR: Ref. Decline in health since phase 1 OR: 9.73 [4.56 20.76]¹ OR: 7.85 [2.86 21.52]² Age OR: 1.01 [0.81 1.03] Race White OR: Ref. Black OR: 1.83 [0.76 4.41] Other OR: 0.46 [0.19 1.11] Combat experiences OR: 1.03 [1.00 1.07] Aftermath of battle OR: 1.03 [1.00 1.06] Social support OR: 0.96 [0.93 0.98] Length of deployment OR: 0.97 [0.92 1.03]

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					₉ n-2021	
		good representation of	I		I-049	T
		these groups in the final			65	Deployment phase
		sample. Only participants			o o	
					1 2	Insurgency OR: Ref.
		with one deployment were included.			50 D	
		were included.			ugu	<u>Invasion</u>
					ıst	OR: 0.38 [0.16 0.91]
					20	Surge
	Name of Maintal	n 1 022	F.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Turn of summators	<u>~</u>	OR: 0.44 [0.21 0.93]
	Name: Mental Health and Work	<u>n</u> = 1,933	Exposure assessment:	Type of symptoms:	Unadjusted (model	Presence during attack
		Country November	Deployment	PTS symptoms	1) and reultivariate	Not present during attack
	Environment	<u>Country</u> = Norway	administration	\A/	(model 좕) with age	10 months
	Factors in the	0/5	V	Way of assessment:	and gender and	OR: Ref. ¹ OR: Ref. ²
	Aftermath of the	<u>%Female</u> = 58%	Year of assessment:	Self-reported using a	traumat li c	
	Oslo Terrorist	A = - 45 4/40 0)	2011	Norwegian version of	experiegces,	22 months
	Attack	<u>Age</u> = 45.4(10.9) years	(A)	the Posttraumatic	education level and	OR: Ref. ¹
	Davis	Towns of interference	Exposure categories:	Stress Disorder	leaders position.	OR: Ref. ²
	Design:	Type of job/company=	Mental health,	Checklist – Specific	, and a second	34 months
	Prospective	Employees of the	exposure, work,	(PCL-C), using DSM-4	jop	OR: Ref. ¹
	longitudinal	ministries at the moment	perceived safety and	criteria.	en.	OR: Ref. ²
		of the Oslo terrorist	psychosocial variables.	50/ 40/	bm	
	Follow-up period:	attack.		<u>Incidence</u> : 6%, 4%,	j.cc	Present during attack
	10, 22 and 34	,		and 4% during the) M	10 months
	months after the	<u>Inclusion/exclusion</u> = -		three follow-up	on on	OR: 8.4 [5.6 12.6] ¹
	attack			periods, respectively.	₽	OR: 9.3 [6.1 14.2] ²
					<u> </u>	22 months
					18,	OR: 6.9 [4.3 11.2] ¹
				•	20:	OR: 8.9 [5.2 15.3] ²
40					24	34 months
19. Hansen, 2017 ³⁷					mjopen.bmj.com/ on April 18, 2024 by gu	OR: 8.8 [5.2 15.1] ¹
2017	Name	- F52 in analyst success	F	T of a	<u> </u>	OR: 10.0 [5.4 18.6] ²
	Name: -	\underline{n} = 552 in combat group,	Exposure assessment:	Type of symptoms:	Univariate (model	Combat status
	Dociana	391 in control group	Deployment	PTSD symptoms (using	1) and adjusted for	Control group
	Design:	Country- LIV	administration	a cut-off >=50)	gender, gige, rank	Short-term
20 Herrier	Prospective	<u>Country</u> = UK	Voor of accessors	May of accomment	and service (model	OR: Ref
20. Harvey,	longitudinal	0/Famala_ 170/ in	Year of assessment:	Way of assessment:	2). ä. by	OR: Ref
2012 38		<u>%Female</u> = 17% in	2003	17-item National	р, сор,	Long-term

			BMJ Open		/bmjopen-2021-0	Pag
	Follow-up period: 16 months and 4.8 year post- deployment	combat group, 19% in control group Age= 39.4(7.9) in combat group, 42.0(8.9) in control group	Exposure categories: Combat versus control group	Centre for PTSD Checklist (PCL-C) Incidence: Short term: 2.2% in control group and 6.3% in the combat group. Long-	021-049651 on 25 August 2021. Downloaded	OR: Ref OR: Ref Combat group Short-term OR: 3.01 [1.36 6.64] ¹ OR: 2.91 [1.34 6.31] ²
		Type of job/company= Military personnel that were and were not deployed in the Iraq war Inclusion/exclusion= -		term: 2.0% in the control group and 5.1 in the combat group.	_	Long-term OR: 2.62 [1.12 6.16] ¹ OR: 2.42 [1.04 5.62] ²
	Name: -	<u>n</u> = 675	Exposure assessment: Self-reported	Type of symptoms: PTSD, grouped into	from htt	64.5% of the participants in the 1983 PTSD group
	Design: Prospective longitudinal Follow-up period: 1, 2 and 20 years post-war	Country= Israel %Female= - Age= - Type of job/company= War veterans from the Lebanon war Inclusion/exclusion= -	Year of assessment: 1983 Exposure categories: Combat exposure was self-reported.	four groups: no-PTSD, 1983 PTSD, 1984 delayed onset PTSD and 2002 delayed onset PTSD. Way of assessment: Self-reported using the PTSD inventory, using DSM-3 criteria. Incidence: 16.5%	rom http://bmjopen.bmj.com/ on April 18, 2024 by guest.	reported extreme exposure to danger, compared to 24.5% of the no-PTSD group, 35.8% of the 2002 delayed onset PTSD group and 41.4% of the 1984 delayed onset PTSD group. Whereas 27.9% of the participants in the no-PTSD group reported extreme battles severity, 48.2% of the participants in the 1983 PTSD group reported extreme battles severity. In comparison, 39.6% of the
21. Horesh, 2011 ³⁹ 22. Hourani,	Name: -	<u>n</u> = 2116	Exposure assessment:	Type of symptoms:	y guest. Protected by copy	participants in the 2002 delayed onset PTSD group and 34.5% of the participants in the 1984 delayed onset PTSD group reported extreme battles severity. Those with PTSD symptoms

3			BMJ Open		bmjopen-2021-0	
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2012 40			Self-reported	PTSD symptoms	149651	also were more likely to
	Design:	Country= USA			51	report a previous trauma
	Prospective		Year of assessment:	Way of assessment:	on .	during their lifetime a
	longitudinal	<u>%Female</u> = -	2010	Self-reported using	25	baseline. High comba
				the National Centre	on 25 August 2021. Downloaded from http://	exposure scale scores were
	Follow-up period:	<u>Age</u> = -	Exposure categories:	for PTSD Checklist	snf	associated with PTSD
	6 months		Exposures like number	(PCL-C) of the	t 20	Baseline social support wa
		Type of job/company=	of deployments and	Department of	021	associated with PTSD.
		Marines	stress were used.	Veterans Affairs –		
				Civilian Version.	W	
		Inclusion/exclusion=			nlo	
		Participants who		<u>Incidence</u> : Baseline	ade	
		transitioned from active		prevalence 28%,	ă Ť	
		military duty to civilian		follow-up incidence	rom	
		life were for a minimum		10%) H	
		of 2 months were			it	
		included.	- 1 h		9	
	Name: Fukushima	<u>n</u> = 1,417	Exposure assessment:	Type of symptoms:	Adjusted for age,	Experience of life-
	Nuclear Energy		Self-reported	PTSD symptoms (using	gender <mark>a</mark> nd job	threatening danger
	Worker's Support	<u>Country</u> = Japan		a cut-off >=25)	location	<u>No</u>
	(NEWS) Project.		Year of assessment:	N_{i}).c	OR: Ref. (2011)
		<u>%Female</u> = 5%	2011	Way of assessment:	om	OR: Ref. (2012)
	<u>Design:</u>			Self-reported using	Or Or	OR: Ref. (2013)
	Prospective	Age= 39.3 years	Exposure categories:	the Japanese version	> >	OR: Ref. (2014)
	longitudinal		Sociodemographic,	of the Impact of Event	pr <u>ii</u>	<u>Yes</u>
		Type of job/company=	disaster-related	Scale-Revisited (IES-R),	nj.com/ on April 18,	OR: 4.32 [2.89 6.48] (2011)
	Follow-up period:	Employers of the Tokyo	experiences and	using DSM-4 criteria.		OR: 3.47 [2.43 4.95] (2012)
	Baseline at 2-3	Electric Power Company	psychological distress.)24	OR: 2.78 [1.87 4.14] (2013)
	months post-	in Fukushima.		Incidence: 26%	by	OR: 2.23 [1.34 3.72] (2014)
	disaster, with				gu	
	follow-up 3 years	<u>Inclusion/exclusion</u> = -			2024 by guest.	Major property loss
	after that.				_D	<u>No</u>
					rote	OR: Ref. (2011)
					cte	OR: Ref. (2012)
					b b	OR: Ref. (2013)
23. Ikeda, 2017					Protected by copyrig	OR: Ref. (2014)
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Name: - Design: Retrospective longitudinal Follow-up period: -	n= 453 Country= USA %Female= 24% Age= - Type of job/company= Traumatic surgeons Inclusion/exclusion =	Exposure assessment: Self-reported Year of assessment: Exposure categories: Personal characteristics, and exposure at work.	Type of symptoms: PTSD (symptoms and diagnosed PTSD - only diagnosed PTSD was extracted for this review) Way of assessment: Self-reported using the PCL checklist (with a cut-off score >=44). Incidence: 15% (prevalence)	del for ending sur popen-2021-049651 on 25 August 2021. Downloaded from http://em.japen.simj.com/ on April 18, 2024 by guest. Protected by copyright. Un) all odde uses and the sure population of the sure population of the sure population.	No OR: Ref. (2011) Yes OR: 1.60 [0.80 3.19] (2011) Colleague deaths No OR: Ref. (2011) Yes OR: 2.08 [1.33 3.26] (2011) Home evacuation No OR: Ref. (2011) Yes OR: 1.49 [1.03 2.15] (2011) Age ≤51 years OR: Ref.¹ OR: Ref.² ≥51 years OR: 1.8 [0.7 3.4]¹ Gender Female OR: Ref.¹ OR: Ref.² Male OR: 2.1 [1.4 4.6]¹ OR: 1.8 [0.9 5.3]² Marital status Other OR: Ref.¹ Single OR: 1.2 [0.4 2.8]¹

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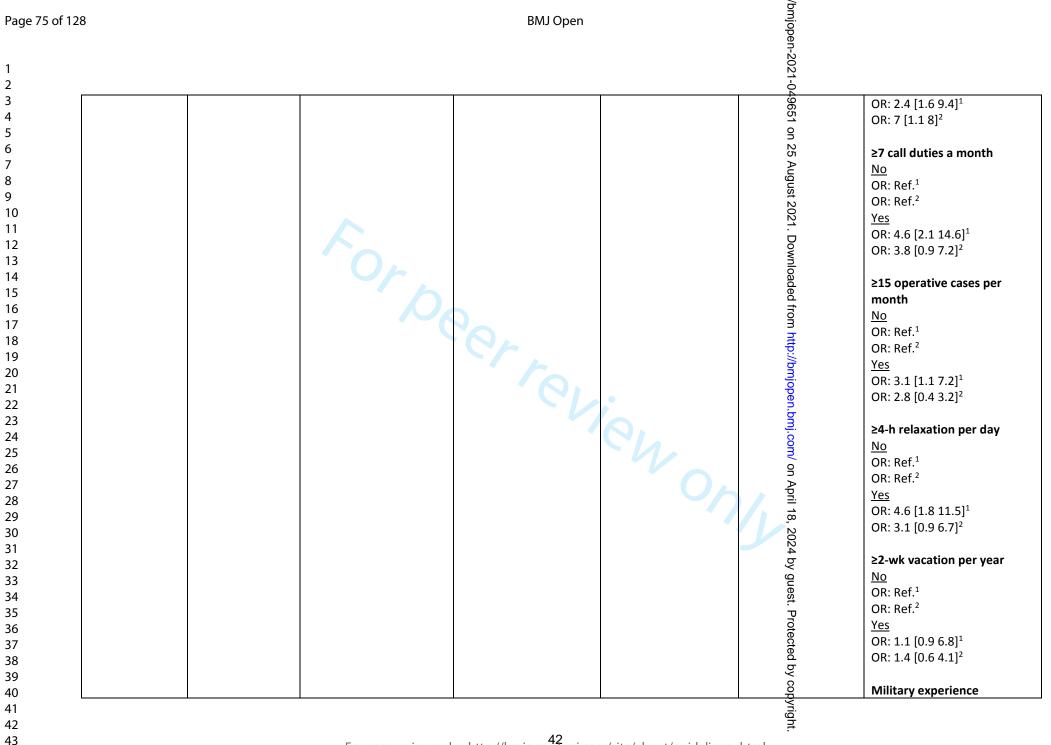
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Page 74 of 128



			T	T	1-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyri	I No.
)65	No
					7	OR: Ref. ¹
) N	OR: Ref. ²
					25 /	<u>Yes</u>
					Juç	OR: 1.4 [0.8 5.6] ¹
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					2021	War deployment
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)nlc	OR: Ref. ²
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]	
					# D	Smoking
			- / h		//br	<u>No</u>
					njo	OR: Ref. ¹
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		To poo			<u>n</u> j.	
				\'I1.	Ä	Alcohol
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					⊃ >	OR: Ref. ¹
					prii	<u>Yes</u>
					18	OR: 1.1 [0.5 2.3] ¹
					20	
					24	Annual income >\$300,000
					by	<u>No</u>
					gue	OR: Ref. ¹
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			_		P P	OR: 3.6 [0.9 8.4] ¹
	Name: -	<u>n</u> = 675 (369 who were	Exposure assessment:	Type of symptoms:	- ote	Severity of battles
		diagnosed with a combat	Self-reported	PTSD	Cte.	OR: 0.96 [0.63 1.48] (comba
	Design:	stress reaction and 306		l	d b	stress reaction)
25. Karstoft,	Prospective	without)	Year of assessment:	Way of assessment:	Ö V	OR: 0.87 [0.55 1.36] (no
2013 43	longitdinal		1983	Self-reported using	O P	combat stress reaction)

			BMJ Open		bmjopen-2021-0	
					ĸ.	
		<u>Country</u> = Israel		the PTSD inventory,	49651	
	Follow-up period:		Exposure categories:	using DSM-3 criteria.	51	Life threatening war
	1, 2 and 20 years	<u>%Female</u> = 0%	Exposures such as the	Latent growth) N	OR: 1.90 [1.08 3.35] (comba
	post-war.		severity of battles, life	modelling was used to	on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18,	stress reaction)
		<u>Age</u> = 25.8(4.7)	threatening war, unit	identify PTSD	- Suv	OR: 0.95 [0.64 1.43] (no
			atmosphere and social	subgroups. For the	Just	combat stress reaction)
		Type of job/company=	support were assessed.	current review we	t 20	
		Combat veterans who		only assessed the)21	Unit atmosphere
		were on active duty in		'delayed onset' PTSD	D	OR: 1.08 [1.00 1.17] (comba
		the Lebanon war.		group, as this reflects	OWI	stress reaction)
				incidence of PTSD.	nlog	OR: 1.02 [0.96 1.09] (no
		Inclusion/exclusion= -			ade	combat stress reaction)
				<u>Incidence</u> : -	ä. ±	
					rom	Social support
					ht.	OR: 0.58 [0.25 1.31] (comba
					tp:/	stress reaction)
					/bm	OR: 0.66 [0.29 1.53] (no
			//		<u> </u>	combat stress reaction)
	Name: -	<u>n</u> = 675 (369 who were	Exposure assessment:	Type of symptoms:	- œn	Severity of battles
		diagnosed with a combat	Self-reported	PTSD	.bm	OR: 1.01 [0.67 1.35] (comba
	<u>Design:</u>	stress reaction and 306		\sim	nj. c	stress reaction)
	Prospective	without)	Year of assessment:	Way of assessment:	, m	OR: 0.87 [0.57 1.32] (no
	longitudinal		1983	Self-reported using	or or	combat stress reaction)
		<u>Country</u> = Israel		the PTSD inventory,		
	Follow-up period:		Exposure categories:	using DSM-3 criteria.	orii	Life threatening war
	1, 2 and 20 years	<u>%Female</u> = 0%	Exposures such as the	Latent growth	18,	OR: 1.91 [1.07 3.24] (comba
	post-war.		severity of battles, life	modelling was used to	20	stress reaction)
		<u>Age</u> = 25.8(4.7)	threatening war, coping	identify PTSD	124	OR: 1.01 [0.68 1.50] (no
			were assessed.	subgroups. For the	by	combat stress reaction)
		Type of job/company=		current review we	gu	
		Combat veterans who		only assessed the	est	Locus of control
		were on active duty in		'delayed onset' PTSD	Р	OR: 1.12 [0.93 1.35] (comba
		the Lebanon war.		group, as this reflects	ote.	stress reaction)
				incidence of PTSD.	cte	OR: 0.88 [0.73 1.05] (no
		Inclusion/exclusion= -			ğ	combat stress reaction)
26. Karstoft,				<u>Incidence</u> : -	2024 by guest. Protected by copyrig	
2015 44					Ö	Problem-focused coping

Name: - 1= 980 Exposure assessment: Type of symptoms: Type of light/company Subway drivers employed by a public company in Seoul inclusion/exclusion = Participants currently on sick leave and female drivers were excluded. Participants were excluded. Participants were excluded. Participants were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave an						- 0	
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				Exposure categories:	The Korean version of	1) and lifetime	<u>Yes</u>
were in their 40s. Type of job/company= Subway drivers employed by a public company in Seoul Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Participants currently on sick leave and female drivers were excluded. 2). OR: 2.06 [0.94 4.55]² Number of person under train experiences 0 experien		Follow-up period:	Age = Most participants	Person under train	the Composite	prevalence (model	OR: 1.54 [0.52 4.55] ¹
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Company in Seoul DSM-4 criteria. DSM-1 cri			employed by a public		diagnose PTSD, using	o o	
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OR: 2.36 [0.57 9.70] ¹ OR: 3.57 [1.32 3.65] ² Severity of victim's injury Alive OR: Ref OR: Ref OR: Ref Death OR: 2.49 [0.27 23.27] ¹			drivers were excluded.			024	
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	27. Kim, 2014 ⁴⁵					L g	OR: 2.49 [0.27 23.27] ¹

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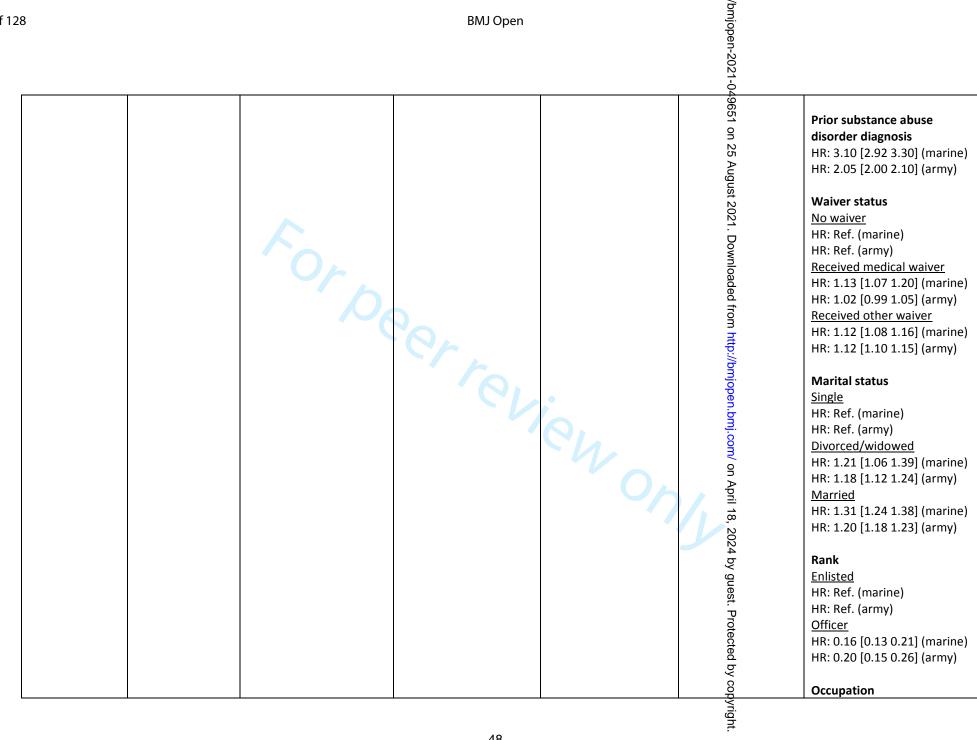
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Manp Cente Caree and A Medic Perso (CHAN the Ex Medic Encou Datab Desig Prosp longit Follow	power Data er (DMDC), er History Archival ical onnel System AMPS), and Expeditionary ical ounter base (EMED)	n= 332,093 (marine) and 773,359 (army) Country= USA %Female= 7% (marine) and 17% (army) Age= 20.0 (3.9) (marine) and 21.7 (2.1) (army) Type of job/company= All service members who went into the army or navy between 2001 and 2011. Inclusion/exclusion= -	Exposure assessment: Military databases Year of assessment: 2001-2011 Exposure categories: Personal and deployment characteristics.	Type of symptoms: PTSD Way of assessment: Diagnosed PTSD obtained from military records. Incidence: 4.3% (marine); 7.6% (army).	for winder with the state of th	OR: 1.71 [0.48 6.14]¹ OR: 1.89 [0.75 4.75]² Person under train experience of colleague No OR: Ref.¹ OR: Ref.² Yes OR: 0.55 [0.12 2.47]² OR: 2.84 [1.32 6.12]² Sex Female HR: Ref. (marine) HR: Ref. (army) Male HR: 0.40 [0.36 0.44] (marine) HR: 0.57 [0.55 0.59] (army) Age at accession HR: 0.99 [0.98 1.00] (marine) HR: 1.01 [1.00 1.01] (army) Race White HR: Ref. (army) Non-white HR: 0.95 [0.91 1.00] (marine) HR: 0.96 [0.94 0.98] (army) Ethnicity Non-Hispanic HR: Ref. (marine) HR: Ref. (army) Hispanic HR: Ref. (army) Hispanic HR: 0.80 [0.75 0.84] (marine) HR: 0.86 [0.84 0.89] (army)



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					.1-0	
					8, 2024 by gues	Combat specialist HR: Ref. (marine) HR: Ref. (army) Communications/intelligence HR: 0.54 [0.48 0.62] (marine) HR: 0.73 [0.70 0.77] (army) Craft/repair specialist HR: 0.46 [0.40 0.54] (marine) HR: 0.62 [0.60 0.65] (army) Functional support/other HR: 0.46 [0.41 0.51] (marine) HR: 0.56 [0.53 0.59] (army) Service and supply HR: 0.77 [0.68 0.87] (marine) HR: 0.84 [0.80 0.88] (army) Healthcare specialist HR: 1.03 [0.98 1.08] (army) Cumulative years deployed HR: 2.04 [1.93 2.15] (marine) HR: 1.74 [1.71 1.76] (army) Unit cumulative high deployment stress rate (per 100) HR: 1.04 [1.03 1.05] (marine) HR: 1.05 [1.04 1.06] (army) Unit stability HR: 1.11 [0.92 1.33] (marine) HR: 0.69 [0.64 0.74] (army)
	Name: Defence	<u>n</u> = 8,064 (3,416 health	Exposure assessment:	Type of symptoms:	Univariate (model	Health Care Occupation
	Manpower Data	care profession, 4,648 no	Self-reported.	PTSD	1) and multivariate	No
	Center (DMDC)	health care profession)			(model 4) adjusting	OR: Ref. (1 deployment)
			Year of assessment:	Way of assessment:	for all remaining	OR: Ref. (2 deployments)
29. MacGregor,	<u>Design:</u>	<u>Country</u> = USA	2001-2008	Diagnosed, according	exposures	OR: Ref. (3 deployments)
2015 47	Prospective			to ICD-9-CM criteria,	Ö	<u>Yes</u>
					yrig	

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longitudinal	<u>%Female</u> = 0%	Exposure categories:	from inpatient and	1-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyright.	OR: 2.02 [1.45 2.80] ¹ (1
Fallow up poriod.	Aga- Danging from 27.0	military occupation,	outpatient databased.	0	deployment)
Follow-up period:	<u>Age</u> = Ranging from 27.9	combat rank,	Incidence: Dencine	2	OR: 2.27 [1.26 4.08] ¹ (2
Up to 60 days.	(5.7) to 30.2 (7.0) in	deployment specific variables	Incidence: Ranging from 1.9% to 17.9%	δi >	deployments)
	various participating	variables		lgu	OR: 4.37 [1.25 15.28] ¹ (3
	groups.		for various	ust	deployments)
	Towns of interference		participating groups.	20:	
	Type of job/company=			21.	Age
	Navy personnel with one,			Do	OR: 0.97 [0.94 0.99] ¹ (1
	two or three			Š	deployment)
	deployments in Iraq			loa	OR: 0.97 [0.93 1.02] ¹ (2
	and/or Afghanistan.			de	deployments)
				d fr	OR: 0.94 [0.86 1.03] ¹ (3
	Inclusion/exclusion=			om	deployments)
	Participants who			ht	
	completed a health			[p://	Rank
	assessment within 60			ď	Enlisted
	days post-deployment			jop	OR: Ref.
	were included. Women			ě	OR: Ref.
	were excluded			.bm	<u>Officer</u>
			\mathbf{O}_{I}	<u>ئ.</u> 0	OR: 0.35 [0.18 0.65] ¹ (1
) B	deployment)
				or	OR: 0.54 [0.12 2.47] ¹ (2
				Αβ	deployments)
)	Married
				, , , o	No
				202	OR: Ref. (1 deployment)
				4 5	OR: Ref. (2 deployments)
				9	OR: Ref. (3 deployments)
				uex	Yes
				št. F	OR: 0.93 [0.67 1.30] ¹ (1
				oro:	deployment)
				tec	OR: 0.54 [0.32 0.89] ¹ (2
				ted	deployments)
				by	OR: 0.96 [0.36 2.56] ¹ (3
				8	deployments)

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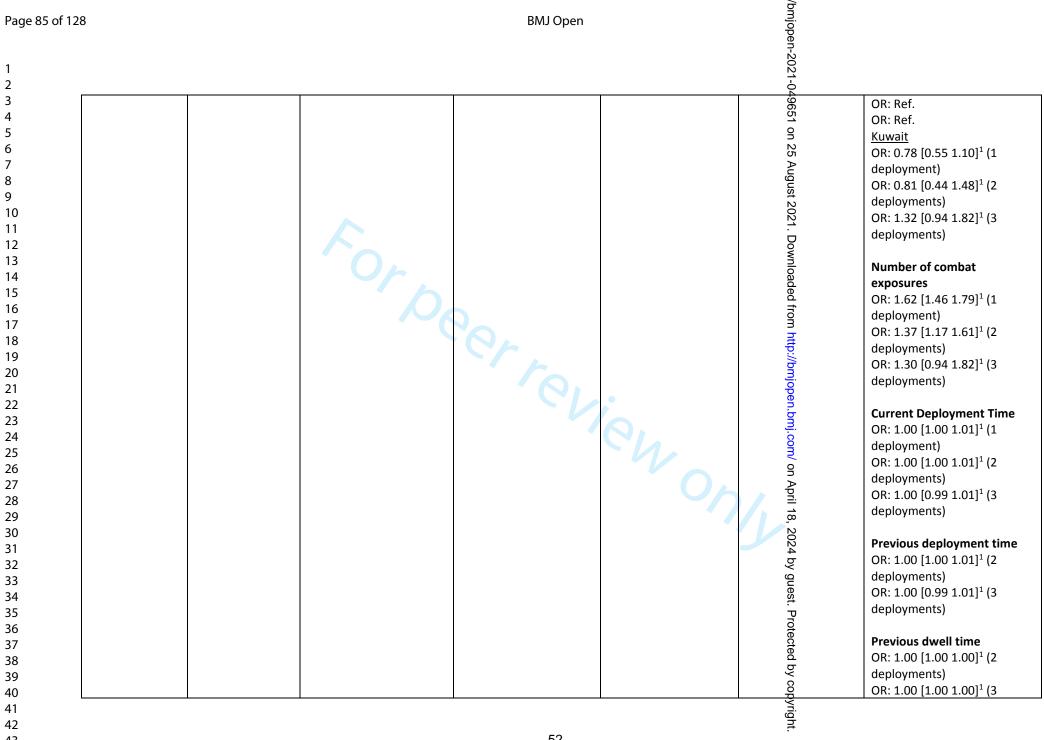
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3		BMJ Open		′bmjope	
				ʻbmjopen-2021-0.	
Name: Defence Manpower Data Center (DMDC) Design: Prospective longitudinal Follow-up period: 4 years	n=65,704 Country= USA %Female= - Age= 22 (19-53) Type of job/company= Marine corps personnel deployed to Iraq or Kuwait. Inclusion/exclusion= Deployments between 4 and 8 months were considered. Special forces and participants with earlier mental health issues were excluded. Only those with more than one deployment were analysed.	Exposure assessment: Deployment adminstration Year of assessment: 2003-2007 Exposure categories: Dwell-to-deployment ratios were categorised into <1:1, 1:1 and 2:1.	Type of symptoms: PTSD Way of assessment: Diagnosed PTSD with ICD-9-CM criteria were obtained from impatient and outpatient registers Incidence: 1.5%	e a k of or an a k of or a k of or an a k of	Exposed to wounded/dead enemy No OR: Ref.¹ Yes OR: 1.79 [1.38 2.34]¹ Dwell to deployment ratio <1:1 OR: Ref. 1:1 OR: 0.83 [0.60 1.13] 2:1 OR: 0.47 [0.32 0.70]
Name: Department of Veterans Affairs 31. Maguen, 2012 49 (VA) database	<u>n</u> = 968 <u>Country</u> = USA %Female= 12%	Exposure assessment: Department of Veterans Affairs administrative data (including self- reports)	Type of symptoms: PTSD Way of assessment: Using the self-	Univariate (model 1) and raultivariate (model 2), adjusting for age, Gex, race, marital status, unit,	Number of exposures None OR: Ref. OR: Ref. One
		, , ,		copyright.	·

			BMJ Open		ʻbmjopen-2021	P
			T		-02	00 400 (0.0 7.0)
	Design:	20.2(0.4)		reported Primary Care	branch f service,	OR: 4.93 [3.3 7.3] ¹
	Retrospective	<u>Age</u> = 30.3(8.4) years	Year of assessment:	PTSD Screen (PC-	rank and number of	OR: 4.67 [3.1 7.1] ²
	longitudinal		2007-2010	PTSD) screening	deployments.	Two +
		Type of job/company=		instrument	55 >>	OR: 6.96 [5.1 9.6] ¹
	Follow-up period:	War veterans who have	Exposure categories:		guv	OR: 6.15 [4.4 8.7] ²
	11 days	been deployed in Iran	Exposure to traumatic	<u>Incidence</u> : -	August 2021. Downloaded from http://bmjopen.bmj.cc	
		and Afghanistan.	brain injury		20	Type of exposure
			mechanisms		21.	None
		Inclusion/exclusion=			D	OR: Ref.
		Participants with either) Wr	OR: Ref.
		no head injury or a head			llo _e	Blast only
		injury with traumatic			<u>ā</u>	OR: 5.13 [3.2 8.2] ¹
		brain injury were			d fr	OR: 4.72 [2.9 7.7] ²
		included, but not those			om	Blast plus
		with head injury without			b <u>t</u>	OR: 7.45 [5.4 10.3] ¹
		brain damage.			h:/	OR: 6.52 [4.6 9.3] ²
					/bm	1 Non blast
			10 .		Ji Q	OR: 4.53 [2.4 8.6] ¹
					у́еn	OR: 4.60 [2.4 8.8] ²
					.bm	2+ Non blast
				\mathbf{O}_{I}	با <u>ن</u> ص.ور	OR: 2.94 [1.17 7.4] ¹
				11.	ă .	OR: 3.36 [1.32 8.6] ²
	Name:	<u>n</u> = 329,049	Exposure assessment:	Type of symptoms:	Univariate models	Age
	Department of		Deployment data	PTSD	were conducted for	<u>16–24</u>
	Veterans Affairs	Country= USA			females <u>∃</u> model 1)	RR: Ref.
	(VA) database		Year of assessment:	Way of assessment:	and males (model 2)	RR: Ref.
		<u>%Female</u> = 12%	2001	PTSD obtained from	separately.	<u>25–29</u>
	<u>Design:</u>			medical health)24	RR: 1.05 [0.99 1.11] ¹
	Retrospective	<u>Age</u> = 31.2(9.0)	Exposure categories:	records of those who	by	RR: 0.96 [0.94 0.97] ²
	longitudinal		Demographic and	visited veteran	by guest.	<u>30–39</u>
		Type of job/company=	military service data.	facilities from 2002 to	est	RR: 1.24 [1.17 1.32] ¹
	Follow-up period:	War veterans who have		2008. Diagnosis was	P	RR: 0.98 [0.96 0.99] ²
	-	been deployed in Iran		done with ICD-9-CM	ote.	<u>40–71</u>
		and Afghanistan.		criteria.)cte	RR: 1.21 [1.13 1.30] ¹
					j ğ	RR: 0.79 [0.77 0.81] ²
32. Maguen,		Inclusion/exclusion= -		Incidence: 17% among	Protected by copyrig	
2010 ⁵⁰				females, 22% among	Ö	Race/Ethnicity

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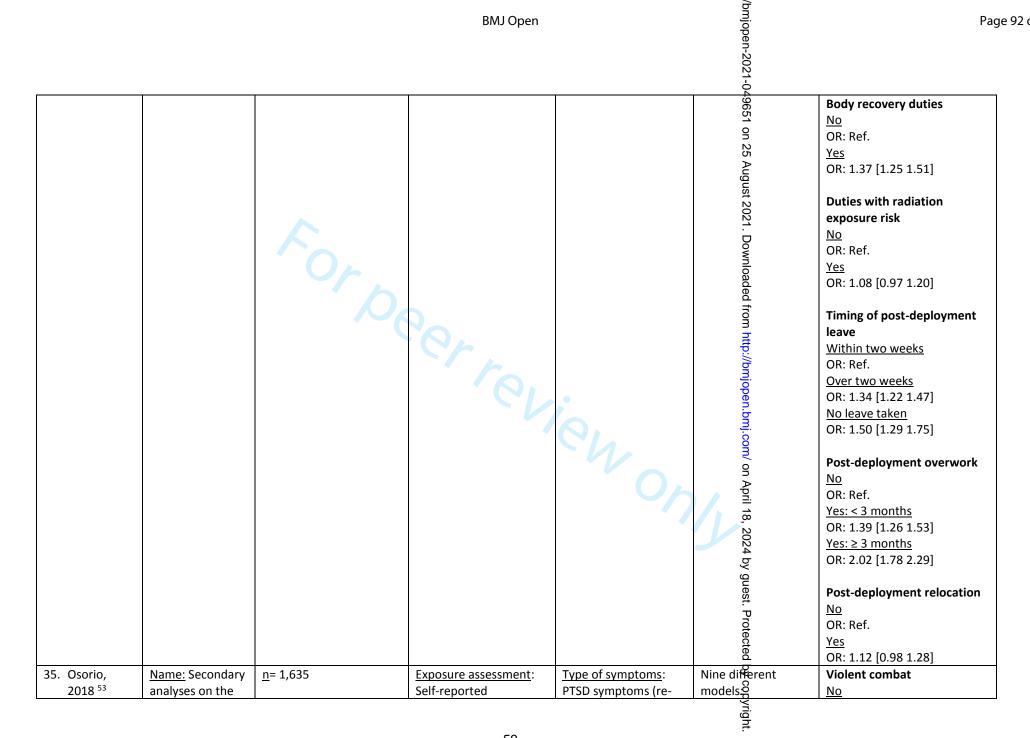
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28			BMJ Open		/bmjopen-	
28	Name: - Design: Prospective longitudinal, with baseline measurements one month post- deployment. Follow-up period: 6 and 12 months post-deployment.	Inclusion/exclusion= Participants with a history in traumatic brain injury or other neurological or mental disorders were excluded. n= 56,753 Country= Japan %Female= 3% Age=- Type of job/company= Members of the ground defence force at 2011 Great East Japan Earthquake. Inclusion/exclusion= -	Exposure assessment: Self-reported Year of assessment: - Exposure categories: Information on personal attributes and mission duties.	respectively. Type of symptoms: PTSD symptoms (using a cut-off: >- 25) Way of assessment: Self-reported with the Impact of Event Scale-Revised (IES-R). Incidence: 2283/56753=4%	bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2	Age OR: 1.39 [1.27 1.52] Sex Male OR: Ref. Female OR: 1.61 [1.29 2.00] Rank Enlisted/private OR: Ref. Officer OR: 0.77 [0.67 0.88] Administrative official OR: 1.24 [0.82 1.87] Deployment length ≤ 1 month OR: Ref. 1-3 months
				0/7	on April 18, 2024 by gu	< 1 month
34. Nagamine, 2018 ⁵²					2024 by guest. Protected by copyri	Personally affected No OR: Ref. Yes OR: 2.19 [1.95 2.44]



28			BMJ Open		bmjop	
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	Battlemind RCT.	Country= UK		experience is	Model 18	RR: Ref. ¹
			Year of assessment:	extracted for this	Unadjusted	RR: Ref. ²
	Design:	<u>%Female</u> = 2%	2009	review - in the paper	Model 2 Adjusted	RR: Ref. ³
	Prospective			also: avoidance,	Model 3 Adjusted	RR: Ref. ⁴
	longitudinal	Age= 39% was younger	Exposure categories:	numbing, arousal and	for proxemity to	RR: Ref. ⁵
		than 25 years.	Violent combat	anxious is reported)	woundigg or death.	RR: Ref. ⁶
	Follow-up period:	·	situations, proximity to		Model 45Adjusted	RR: Ref. ⁷
	4-6 months post	Type of job/company=	wounding or death and	Way of assessment:	for encountering	RR: Ref. ⁸
	deployment.	Members of three	encountering explosive	Using the National	explosive devices.	RR: Ref. ⁹
		branches of the army	devices.	Center for	Model 🧏 adjusted	<u>Yes</u>
		forces, returning from		Posttraumatic Stress	for PTS ਨ੍ਰੇ re-	RR: 2.43 [1.95 3.02] ¹
		deployment in		Disorders Checklist –	experiegcing,	RR: — ²
		Afghanistan.		Civilian Version (PCL-	avoidan <u>e</u> e,	RR: 1.56 [1.21 2.01] ³
				C). PTSD in general,	numbin © , or	RR: 2.04 [1.62 2.58] ⁴
		Inclusion/exclusion= -		but also avoiding,	arousal.	RR: 1.81 [1.43 2.29] ⁵
				numbing and arousal	Model 🔂 Adjusted	RR: 2.63 [2.10 3.31] ⁶
			- h	behaviour were	for distress.	RR: 2.32 [1.85 2.89] ⁷
			10.	reported. For this	Model 爱 ·Adjusted	RR: 2.36 [1.89 2.95] ⁸
				review we only	for alconol.	RR: 1.35 [1.01 1.81] ⁹
				extracted PTSD.	Model & Ranks,	
				N.	deployment and	Proximity to wounding or
				Incidence: 34%	gender.	death
					Model & Adjusted	<u>No</u>
					for violent combat,	RR: Ref. ¹
					proximi <u>≅</u> ⁄ to	RR: Ref. ²
					wounding or death,	RR: Ref. ³
					encountering	RR: Ref. ⁴
					explosive devices,	RR: Ref. ⁵
					PTSD ree	RR: Ref. ⁶
					experiescing,	RR: Ref. ⁷
					avoidan <mark>@</mark> e,	RR: Ref. ⁸
					numbinള arousal,	RR: Ref. ⁹
					distress	<u>Yes</u>
					consumotion, rank,	RR: 3.01 [2.42 3.74] ¹
					gender, deserves,	RR: 2.42 [1.89 3.11] ²
					deployment.	RR: — ³
					opyright.	RR: 2.62 [2.08 3.31] ⁴
					yrig	
					<u>)</u> ‡	
			60			

					Ó	
					1-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 202	RR: 2.02 [1.59 2.56] ⁵
					551	RR: 3.03 [2.42 3.80] ⁶
					on on	RR: 2.94 [2.36 3.67] ⁷
					25	RR: 3.01 [2.41 3.75] ⁸
					è	RR: 1.67 [1.25 2.23] ⁹
					gu	-
					st 2	Encountering explosive
					02	devices
					1	<u>No</u>
					Jo _w	RR: Ref. ¹
					/nlc	RR: Ref. ²
					ad	RR: Ref. ³
		TO DO			ed f	RR: Ref. ⁴
					fror	RR: Ref. ⁵
					<u> </u>	RR: Ref. ⁶
					t t p:	RR: Ref. ⁷
			- / h		//br	RR: Ref. ⁸
			10.		njo	RR: Ref. ⁹
				•	per	<u>Yes</u>
					n.br	RR: 2.14 [1.71 2.67] ¹
					nj.c	RR: 1.66 [1.30 2.10] ²
				1/1	On	RR: 1.54 [1.21 1.95] ³
					0 0	RR: —4
					⊃ >	RR: 1.70 [1.33 2.16] ⁵
					, pri	RR: 2.17 [1.72 2.73] ⁶
					18	RR: 2.01 [1.60 2.52] ⁷
					, N	RR: 2.06 [1.65 2.59] ⁸
					<u> </u>	RR: 1.26 [0.95 1.66] ⁹
	Name: Everyday	<u>n</u> = 1,763	Exposure assessment:	Type of symptoms:	Crude noodel	Frequency of violence
	violence project		Self-reported.	PTSD	adjusting for age	No violence
		<u>Country</u> = Denmark			and gen <mark>g</mark> er (model	OR: Ref.
	Design:		Year of assessment:	Way of assessment:	1), additionally	OR: Ref.
	Prospective	<u>%Female</u> = 78%	2016-2017	Self-reported using	adjusting for BMI,	OR: Ref.
	longitudinal			the International	alcohol, wears of	Low frequency
36. Pihl-		Age= 48.7 (9.4) years.	Exposure categories:	Trauma	experience, critical	OR: 4.4 [1.3 14.8] ¹
Thingvad,	Follow-up period:		Patient-initiated	Questionnaire, with	incidents outside of	OR: 3.0 [0.90 10.4] ²
2019 54	12 months	Type of job/company=	violence.	ICD-11 criteria.	work, pgsttraumatic	OR: 4.0 [1.0 16.3] ³
					<u>)</u>	

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		Social educators working			stress d	Medium frequency
		with disabled adults.		Incidence: 3.5%	symptom level at	OR: 6.3 [1.8 22.9] ¹
					baseline trauma	OR: 3.7 [1.0 13.8] ²
		Inclusion/exclusion=			coping self-efficacy,	OR: 5.9 [1.4 24.2] ³
		Participants in leadership			workpla∉e social	High frequency
		position and with PTSD			capital king, and	OR: 10.2 [2.9 36.3] ¹
		at baseline were			training model 2).	OR: 4.2 [1.1 15.9] ²
		excluded.			In mode№3,	OR: 6.5 [1.6 25.6] ³
					additional for	
					frequen y and	Severity of violence
		() 6			severity of violence	<u>No violence</u>
					was donge.	OR: Ref.
					ð f	OR: Ref.
					from http://bmjopen.bmj.com/ on April 18,	OR: Ref.
					n ht	Max. mild violence
					tp:/	OR: 2.3 [0.2 22.8] ¹
					/bm	OR: 2.3 [0.2 24.4] ²
			10.		Jj. Qoji	OR: 3.8 [0.3 46.2] ³
) en	Max. threats of violence
					.bm	OR: 5.1 [1.5 17.5] ¹
				\mathbf{O}_{I}	ر. o.زر	OR: 3.6 [1.0 12.4] ²
				1/1/	9	OR: 5.4 [1.2 24.2] ³
					or or	Max. moderate violence
					<u>></u>	OR: 4.1 [1.1 14.5] ¹
) r <u>i</u>	OR: 2.1 [0.6 8.1] ²
					18,	OR: 2.6 [0.6 10.8] ³
					20	Max. severe violence
					24	OR: 13.7 [3.1 37.1] ¹
					by .	OR: 5.3 [1.5 19.5] ²
	Name: Readiness	<u>n</u> = 426	Exposure assessment:	Type of symptoms:	2024 by guille for all	OR: 6.5 [1.6 26.0] ³ Baseline PTSD symptoms
	and Resilience in	<u>11</u> - 420	Self-reported	Probable PTSD (new	other pre-	No
	National Guard	Country= USA	Jen reported	onset)	deploynent factors	OR: Ref. ¹
	Soldiers.	Soundy SOA	Year of assessment:	5113617	(model 🖺),	OR: Ref. ²
	Joidicio	<u>%Female</u> = 12%	2006	Way of assessment:	additionally	OR: Ref. ³
37. Polusny,	Design:	75. CHIMIC 12/0		Self-reported using	adjusting for	Yes Yes
2011 ⁵⁵	Prospective	Age= Mostly younger	Exposure categories:	the PCL checklist, with	deployment	OR: 0.73 [0.34 1.58] ¹
<u> </u>					~~~~	
					right.	

		BMJ Open		/bmjopen-2021-0	Page
longitudinal Follow-up period: 2 months	than 30. Type of job/company= National Guard soldiers Inclusion/exclusion= Those with PTSD at baseline were excluded.	Psychosocial risk, protective factors and deployment exposures.	DSM-4 criteria. Incidence: 14%	2) el e	OR: 0.79 [0.34 1.85] ² OR: 0.69 [0.27 1.79] ³ Military preparedness No OR: Ref. ¹ OR: Ref. ² OR: Ref. ³ Yes OR: 0.58 [0.39 0.87] ¹ OR: 0.62 [0.40 0.95] ² OR: 0.77 [0.48 1.25] ³ Concerns about life/family disruptions No OR: Ref. ¹ OR: Ref. ² OR: Ref. ³ Yes OR: 1.38 [0.97 1.97] ¹ OR: 1.31 [0.88 1.95] ² OR: 1.12 [0.71 1.77] ³ Unit support No OR: Ref. ¹ OR: Ref. ² OR: Ref. ³ Yes OR: 1.43 [0.95 2.15] ¹ OR: Ref. ³ Yes OR: 1.43 [0.71 1.79] ² OR: 1.15 [0.70 1.89] ³ Combat experiences No OR: Ref. ²

			BMJ Open		ʻbmjopen-2	Pag
	Design: Prospective	Country= Netherlands	Year of assessment: 2005-2008	Way of assessment:	021-049651 or	OR: Ref 1 month post-deployment OR: 2.12 [1.4 3.3]
	longitudinal with baseline measurements 1 month prior to deployment Follow-up period: 2 years post deployment.	<u>%Female</u> = 9% <u>Age</u> = 28.5 (9.0) <u>Type of job/company</u> = Dutch military personnel who were deployed to Afghanistan <u>Inclusion/exclusion</u> =-	Exposure categories: Different categories of time since deployment (compared to predeployment)	Self-reported with the Dutch Self-Rating Inventory for PTSD, using DSM-4 cut-off values Incidence: 8.9%	/bmjopen-2021-049651 on 25 August 2021. Downloade	6 months post-deployment OR: 2.18 [1.4 3.4] 1 year post-deployment OR: 1.62 [1.0 2.6] 2 years post-deployment OR: 1.33 [2.8 5.8]
	Name: - Design: Prospective longitudinal Follow-up period: 6 months post deployment.	n= 238 Country= USA %Female= 8% Age= 33.5 (9.5) years. Type of job/company= Members of the National Guard units recently returned from deployment to Iraq and Afghanistan. Inclusion/exclusion= -	Exposure assessment: Self-reported Year of assessment: 2006-2009 Exposure categories: Personal characteristics, pre-deployment and deployment characteristics.	Type of symptoms: PTSD Way of assessment: Diagnosed during a CAPS structured interview. Incidence: 13%	Adjusting for demographics (model additionally adjusting for predeployment characteristics (model additionally adjusting for deployment-related variables (model 3), and additionally adjusting for post-deployment characteristics (model 4).	It is unclear what the reference group is for the below associations Gender OR: 1.03 [0.12 8.89] ¹ OR: 0.46 [0.04 5.14] ² OR: 0.94 [0.03 28.56] ³ OR: 1.12 [0.03 38.70] ⁴ Ethnicity OR: 0.33 [0.04 2.64] ¹ OR: 0.17 [0.02 1.61] ² OR: 0.08 [0.00 1.45] ³ OR: 0.07 [0.00 1.18] ⁴ Age OR: 1.09 [0.69 1.72] ¹ OR: 1.01 [0.60 1.72] ² OR: 0.7 [0.34 1.41] ³ OR: 1.12 [0.31 1.45] ⁴ Negative temperament
39. Shea, 2013					/ copy	OR: 2.95 [1.66 5.23] ² OR: 2.23 [1.18 4.22] ³

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Prospective longitudinal Follow-up period: 9 years, with follow-up measurements every 18 months.	<pre>%Female= 0% Age= 39.5 (7.4) years Type of job/company= New York firefighters involved in the 9/11 WTC attacks. Inclusion/exclusion= Firefighters who arrived at the site more than 14 days before the close of the WTC site were included. Women were excluded.</pre>	were obtained from databases. Other variables were self-reported. Year of assessment: 2002 Exposure categories: Exposure to the WTC sites	Self-reported using the PCL-C checklist. Incidence: 8% (after the first follow-up).	with pen-2021-04:55-8 as eline (model and 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyr. 4.), for at least 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyr. 4.).	HR: Ref³ HR: Ref⁴ Group 1 HR: 0.76 [0.58-1.00]¹ HR: 0.74 [0.56-0.99]² HR: 2.21 [1.80-2.70]³ HR: 1.38 [1.12-1.70]⁴ Group 2 HR: 0.97 [0.75-1.25]¹ HR: 0.85 [0.66-1.11]² HR: 1.16 [0.98-1.39]³ HR: 0.90 [0.75-1.08]⁴ ≥1 death at firehouse on 9/11 No HR: Ref.¹ HR: Ref.² HR: Ref.³ HR: Ref.⁴ Yes HR: 0.84 [0.71-1.00]¹ HR: 0.87 [0.73-1.04]² HR: 1.31 [1.12-1.54]³ HR: 1.11 [0.95-1.31]⁴ Received counselling during year 1 No HR: Ref.⁴ HR: 0.89 [0.76-1.04]¹ HR: 0.98 [0.83-1.15]² HR: 2.02 [1.74-2.35]³

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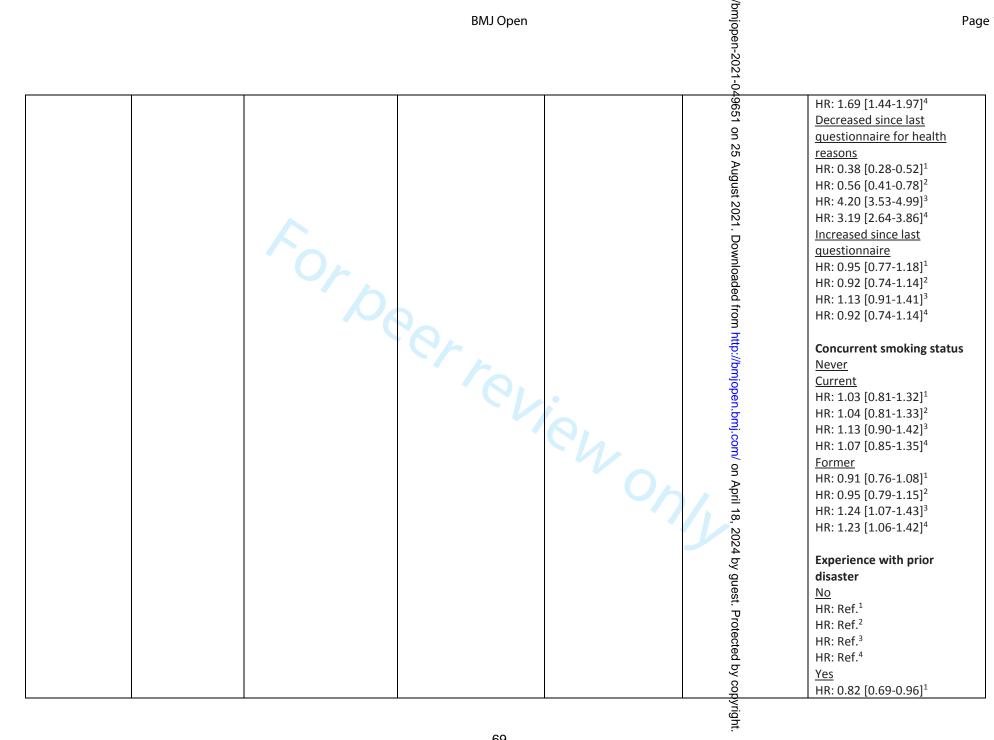
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					496	HR: 0.86 [0.73-1.02] ²
					51	HR: 1.29 [1.13-1.48] ³
					On	HR: 1.11 [0.96-1.27] ⁴
					25	
					Aug	Non-white race/ethnicity
					snf	<u>No</u>
					t 20	HR: Ref. ¹
)21	HR: Ref. ²
					, D	HR: Ref. ³
					JWr	HR: Ref. ⁴
					iloa	<u>Yes</u>
					dec	HR: 0.98 [0.70-1.36] ¹
					d fr	HR: 1.05 [0.75-1.46] ²
		/ / /			Om Om	HR: 1.20 [0.94-1.54] ³
			NL		htt	HR: 1.37 [1.07-1.75] ⁴
)://k	Age on 9/11
					<u> </u>	HR: 1.02 [1.01-1.04] ²
			' (2)		ope	HR: 1.00 [0.99-1.01] ⁴
	Name: HERRICK	<u>n</u> =8,093	Exposure assessment:	Type of symptoms:	Unadjusted (model	Deployment
	cohort	_ ′	Deployment	Probable PTSD	1) and adjusted for	Regulars
		Country= UK	administration	1/1/	age, geneler, marital	Not deployed
	Design:			Way of assessment:	status, education,	OR: Ref ¹
	Retrospective	<u>%Female</u> = 13% and 8%	Year of assessment:	Self-reported with the	service and rank	OR: Ref ²
	longitudinal	for those who were	2014-2016	PCL-C checklist.	(model <u>ᢓ</u>).	Deployed
		deployed and not			18,	OR: 1.34 [1.00 1.78] ¹
	Follow-up period:		Exposure categories:	Incidence: 5.2% and		OR: 1.41 [1.04 1.90] ²
	-	Age= 40.0 (13.0) and 40.2	Deployment and service	6.9% for those who)24	
		(9.4) for those who were	status.	were not deployed	by	Reservists
		not and were deployed,		and deployed,	gue	Not deployed
		respectively.		respectively.	st.	OR: Ref ¹
		Tune of ich /c			Pro	OR: Ref ²
		Type of job/company=			otec	<u>Deployed</u>
		Military personnel that were and were not			¥ec	OR: 2.25 [1.14 4.46] ¹ OR: 2.48 [1.20 5.16] ²
1. Stevelink		deployed in Iraq.			by	ON. 2.40 [1.20 3.10]
2018 ⁵⁹	'	deployed in Italy.			2024 by guest. Protected by copyrig	Serving status
2010		<u>I</u>	I	l	<u> </u>	Je. villa status

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		Inclusion/exclusion= -			049651 on 25 Au	Not serving OR: Ref¹ OR: Ref² Serving OR: 1.60 [1.25 2.06]¹
		FO _F O _G	20.		1-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/	OR: 1.73 [1.25 2.40] ² Role during last deployment Serving regulars No combat OR: Ref ¹ OR: Ref ² Combat OR: 1.70 [1.08 2.67] ¹ OR: 1.58 [0.98 2.55] ²
			Tev.	ieu	0	Ex-serving regulars No combat OR: Ref¹ OR: Ref² Combat OR: 3.39 [2.25 5.11]¹ OR: 2.53 [1.60 3.99]²
	Name: PIT-PTSD+ study	<u>n</u> = 1,483	Exposure assessment: Deployment	Type of symptoms: PTSD	Unadjusted	Population Control group
		<u>Country</u> = Germany	administration		pril 18, 2024 by guest. Protected by copyright.	OR: Ref. (12 month diagnosis)
	<u>Design:</u> Retrospective	%Female= -	Year of assessment:	Way of assessment: Diagnosed with a	202	OR: Ref. (12 month incidence) OR: Ref. (lifetime prevalence)
	longitudinal	<u>/oremale</u> = -	2010	structured interview	24 b	Deployed soldiers
	iongreadina.	Age= -	2010	using DSM-4 criteria.	y 9	OR: 2.5 [1.1 5.6] (12 month
	Follow-up period:		Exposure categories:		ues	diagnosis)
	On average 12	Type of job/company=	Deployment	Incidence: 12 month		OR: 4.2 [0.7 24.5] (12 month
	months post-	Soldiers deployed in	characteristics.	incidence: 2.1% and	rote	incidence)
	deployment.	Afghanistan, and those		0.2% in the deployed	cte	OR: 1.7 [0.96 3.1] (lifetime
		who have not been		and non-deployed group ,respectively.	d b	prevalence)
42. Wittchen,		deployed.				

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Supplementary file 4. Risk of bias of included articles. The risk of bias (i.e. low, moderate and high risk of bias) in six domains (i.e. gludy participation, study attrition, prognostic factor (i.e. exposure), outcome, study confounding and statistical analysis) is depicted, while also sum scores are shown.

First author, year of publication

Participation Attrition Prognostic factor Outcome Confounding Analysis (reporting)

First author, year of publication	Participation	Attrition	Prognostic factor	Outcome	Confounding	Analysis/reportir
1 Armed Forces Health Surveillance Center, 2011	Moderate	Moderate	Moderate	Low	High	High
2 Andersen, 2019	Moderate	Moderate	Moderate	Moderate	Low	Low
3 Anderson, 2019	Low	Moderate	Moderate	Moderate	Low	Low
4 Berninger, 2010	High	High	Low	Moderate	Low	Low
5 Brownlow, 2018	Moderate	Moderate	Moderate	Moderate	High	Low
6 Brundage, 2015	Low	Low	Low	Low	High	High
7 Cameron, 2019	Low	Low	Low	Low	Low	Low
8 Chiu, 2011	Low	Moderate	Moderate	Moderate	Low	Low
9 Ciarleglio, 2018	Low	Moderate	Moderate	Low	Low	Low
10 Cone, 2015	High	High	Moderate	Moderate	Low	Low
11 Connorton, 2011	Moderate	Moderate	High	High	Moderate	Low
12 Cukor, 2011	Low	Moderate	Moderate	Moderate	Low	Low
13 Fear, 2010	High	High	Low	Moderate	Low	Low
14 Ferrajao, 2016	High	High	Moderate	Moderate	High	Low
15 Fichera, 2015	High	High	Moderate	Moderate	Low	Low
16 Fink, 2016	High	High	Moderate	Moderate	High	Low
17 Goodwin, 2012	Low	Low	Moderate	Moderate	Low	Low
18 Green, 2016	Moderate	Moderate	Moderate	Low	High	Low
19 Hansen, 2017	High	Moderate	Moderate	Moderate	Low	Low
20 Harvey, 2012	High	Moderate	Low	Moderate	Low	Low
21 Horesh, 2011	Moderate	Moderate	Moderate	Moderate	High	Moderate
22 Hourani, 2012	Moderate	High	Moderate	Moderate	High	High
23 Ikeda, 2017	Moderate	Moderate	Moderate	Moderate	Low	Low
24 Joseph, 2014	Moderate	Moderate	Moderate	Moderate	Low	Low
25 Karstoft, 2013	Moderate	Low	Moderate	Moderate	High	Low
26 Karstoft, 2015	Moderate	Low	Moderate	Moderate	High	Low
27 Kim, 2014	Low	Low	Moderate	Low	Low	Low
28 Levin-Rector, 2018	Low	Low	Low	Low	Moderate	Low
29 MacGregor, 2015	Moderate	Moderate	Low	Low	Low	Low
30 MacGregor, 2012	Low	Low	Low	Low	Low	Low
31 Maguen, 2012	Moderate	Moderate	Moderate	Moderate	Low	Low
32 Maguen, 2010	Moderate	Moderate	Low	Low	High	Low
33 Martindale, 2018	High	Moderate	Moderate	Low	High	High
34 Nagamine, 2018	Moderate	Moderate	Moderate	Moderate	High	Low
35 Osorio, 2018	High	High	Moderate	Moderate	Low	Low
36 Pihl-Thingvad, 2019	Low	Low	Moderate	Moderate	Low	Low
37 Polusny, 2011	Moderate	Moderate	Moderate	Moderate	Low	Low
38 Reijnen, 2015	High	High	Moderate	Moderate	High	Low
	Moderate	Moderate	Moderate	Low	Low	
39 Shea, 2013						Low
40 Soo, 2011	Moderate	Moderate	Moderate	Moderate	Low	Low
41 Stevelink, 2018	High	High	Moderate	Moderate	Low	Low
42 Wittchen, 2012	Moderate	Moderate	Moderate	Low	High	Low

Supplementary file 5. Risk of bias of includ	ed studies.
First author, Year;	Item

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Supplementary file 5. Risk of bias of inclu	idad studias)49
First author, Year;	Item	Risk of	Reason
Thist dutilor, real,	l tem	bias	9
	Participation	Moderate	All armed forces were eligible, but no non-participant analysis has been presented by the
	- articipation		authors.
	Attrition	Moderate	No loss to follow-up analyses were presented by the authors.
Armed Forces Health Surveillance	Prognostic factor	Moderate	Although prognostic factors were self-reported, no substantial bias can be expected from
Center, 2011 ²¹			self-reports of the current prognostic factors
,	Outcome	Low	Outcomes were diagnosed in a hospital
	Confounding	High	No confounding analysis has been conducted ≤
	Analysis/reporting	High	No proper analysis has been conducted, only descriptives were presented.
	Participation	Moderate	No non-participant analysis has been presented by the authors.
	Attrition	Moderate	No loss to follow-up analyses were presented by the authors.
2 Andrews 2010 19	Prognostic factor	Moderate	Prognostic factors were self-reported
2. Andersen, 2019 ¹⁹	Outcome	Moderate	Outcomes were self-reported
	Confounding	Low	Multivariate analyses were done with all available exposures
	Analysis/reporting	Low	Adequate analyses were used
	Participation	Low	86% of eligible participants, participated at baseling.
	Attrition	Moderate	60% of the participants were filled out their follow up questionnaires
3. Anderson, 2019 ²⁰	Prognostic factor	Moderate	Prognostic factors were self-reported
5. Alluerson, 2019	Outcome	Moderate	Outcomes were self-reported
	Confounding	Low	Multivariate analyses were done with all available exposures
	Analysis/reporting	Low	Adequate analyses were used
	Participation	High	There were differences (e.g. in PTSD status) between participants and non-participants
	Attrition	High	Participants without follow-up data were excluded. The above therefore also holds for those
			lost at follow-up
4. Berninger, 2010 ²²	Prognostic factor	Low	Prognostic factors were self-reported and from registers
	Outcome	Moderate	Outcomes were self-reported
	Confounding	Low	Multivariate analyses were done with all available exposures
	Analysis/reporting	Low	Adequate analyses were used
	Participation	Moderate	No non-participant analysis has been presented by the authors.
	Attrition	Moderate	No loss to follow-up analyses were presented by the authors.
5. Brownlow, 2018 ²³	Prognostic factor	Moderate	Prognostic factors were self-reported
	Outcome	Moderate	Outcomes were self-reported $\frac{\ddot{\Omega}}{\sigma}$
	Confounding	High	Only univariate analyses were reported
			Only univariate analyses were reported opyriginate
			rigt
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			BMJ Open Spen-2021-0	Pa
			2021-04	
	Analysis/reporting	Low	Adequate analyses were used 9	
	Participation	Low	It appears as if all eligible participants were analysed.	
	Attrition	Low	It appears as if all eligible participants were analyse्ष.	
C Drumdone 2015 24	Prognostic factor	Low	Deployment records were used	
6. Brundage, 2015 ²⁴	Outcome	Low	Outcomes were diagnosed (it appears).	
	Confounding	High	No confounding adjustment were done	
	Analysis/reporting	High	Only descriptive statistics were provided	
	Participation	Low	It appears as if all eligible participants were analysed.	
7. Cameron, 2019 ²⁵	Attrition	Low	It appears as if all eligible participants were analys.	
	Prognostic factor	Low	Deployment records were used §	
	Outcome	Low	Outcomes were diagnosed	
	Confounding	Low	Multivariate analyses were done with all available exposures	-
	Analysis/reporting	Low	Adequate analyses were used	
	Participation	Low	There were some differences between responders and non-responders.	
	Attrition	Moderate	Since data were gathered retrospective, participation and attrition are similar.	-
c. Chiu, 2011 ²⁶	Prognostic factor	Moderate	Both self-reports and employer data were used	-
	Outcome	Moderate	Outcomes were self-reported using a validated questionnaire	-
	Confounding	Low	Confounding adjustment was performed.	-
	Analysis/reporting	Low	Adequate analyses were used	
	Participation	Low	11% non-response	
	Attrition	Moderate	Since data were gathered retrospective, participation and attrition are similar.	
2 2 1 1 2 2 2 2 2 2 7	Prognostic factor	Moderate	Both self-reports and employer data were used	
9. Ciarleglio, 2018 ²⁷	Outcome	Low	Outcome was diagnosed	
	Confounding	Low	Multivariate analyses were done with all available exposures	
	Analysis/reporting	Low	Adequate analyses were used	
	Participation	High	There are substantial differences between responders and non-responders.	
	Attrition	High	There was substantial loss to follow-up	
10 0 001739	Prognostic factor	Moderate	Prognostic factors were self-reported	
10. Cone, 2015 ²⁸	Outcome	Moderate	Outcomes were self-reported (2	
	Confounding	Low	Adjustment for confounding was performed.	
	Analysis/reporting	Low	Adequate analyses were conducted	
	Participation	Moderate	No non-participant analysis has been presented by the authors.	
	Attrition	Moderate	No loss to follow-up analyses were presented by the authors.	
11. Connorton, 2011 ²⁹	Prognostic factor	High	Prognostic factors were self-reported and it is unclear how	
	Outcome	High	Outcomes were self-reported and it is unclear howo	

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	Confounding	Moderate	Multivariate analyses are not reported and it is un reported and i
	Analysis/reporting	Low	Adequate analyses were done.
	Participation	Low	There was 86% participation
	Attrition	Moderate	There was 67% participation at follow-up
	Prognostic factor	Moderate	Prognostic factors were self-reported.
12. Cukor, 2011 ³⁰	Outcome	Moderate	Outcomes were self-reported and obtained from interviews, with interview data used for
			exposure-outcome associations.
	Confounding	Low	exposure-outcome associations. Name of the property of the
	Analysis/reporting	Low	Adequate analyses were conducted
	Participation	High	There are substantial differences between responders and non-responders.
	Attrition	High	There was substantial loss to follow-up
13. Fear, 2010 ³¹	Prognostic factor	Low	Deployment administrative data were used
13. Fear, 2010	Outcome	Moderate	Outcomes were self-reported
	Confounding	Low	Outcomes were self-reported Adjustment for confounding was performed.
	Analysis/reporting	Low	Adequate analyses were conducted
14. Ferrajao, 2016 ³²	Participation	High	Unclear but probably low participation rate
	Attrition	High	Since data were gathered retrospective, participation and attrition are similar.
	Prognostic factor	Moderate	Prognostic factors were self-reported
	Outcome	Moderate	Outcomes were self-reported
	Confounding	High	No adjustment for confounding was performed.
	Analysis/reporting	Low	Adequate analyses were conducted
	Participation	High	There was substantial non-response
	Attrition	High	There was substantial loss to follow-up
15. Fichera, 2015 ³³	Prognostic factor	Moderate	Prognostic factors were self-reported 9
15. Fichera, 2015 **	Outcome	Moderate	Outcomes were self-reported
	Confounding	Low	Adjustment for confounding was performed.
	Analysis/reporting	Low	Adequate analyses were conducted
	Participation	High	There was substantial non-response
	Attrition	High	There was substantial loss to follow-up
16 Fink 2016 34	Prognostic factor	Moderate	Prognostic factors were self-reported
16. Fink, 2016 ³⁴	Outcome	Moderate	Outcomes were self-reported $ abla $
	Confounding	High	No adjustment for confounding was performed.
	Analysis/reporting	Low	Adequate analyses were conducted
17. Coodwin 2012 35	Participation	Low	There were no substantial differences between responders and non-responders.
17. Goodwin, 2012 ³⁵	Attrition	Low	There were no substantial differences between kesponders and non-responders (includi
	·		ору
			·pyright.
			<u>.</u> ∓

18. Green, 2016 ³⁶	Prognostic factor Outcome Confounding Analysis/reporting Participation Attrition	Moderate Moderate Low	those lost to follow-up). Prognostic factors were self-reported. Outcome was self-reported	/bmjopen-2021-049651 ¢
18. Green, 2016 ³⁶	Outcome Confounding Analysis/reporting Participation	Moderate Low	Prognostic factors were self-reported. Outcome was self-reported	2
18. Green, 2016 ³⁶	Outcome Confounding Analysis/reporting Participation	Moderate Low	Prognostic factors were self-reported. Outcome was self-reported	2
18. Green, 2016 ³⁶	Outcome Confounding Analysis/reporting Participation	Moderate Low	Outcome was self-reported	0
18. Green, 2016 ³⁶	Analysis/reporting Participation			o
18. Green, 2016 ³⁶	Analysis/reporting Participation			N
18. Green, 2016 ³⁶	Participation	Low	Appropriate analyses were used.	D C C C C C C C C C C C C C C C C C C C
18. Green, 2016 ³⁶	Attrition	Moderate	There was a substantial non-response (20%)	us
18. Green, 2016 ³⁶	Attition	Moderate		
18. Green, 2016 ³⁰	Prognostic factor	Moderate	Prognostic factors were self-reported.	2021
	Outcome	Low	Outcome was diagnosed in an interview	
	Confounding	High	No confounding adjustment was conducted	<u> </u>
	Analysis/reporting	Low	Appropriate analyses were used.	<u> </u>
	Participation	High	There was a substantial amount of non-responders	ត្ត gand no non-responder analysis.
	Attrition	Moderate	There was a substantial amount of participants	gst to follow-up and no loss to follow-up
			analysis.	om .
19. Hansen, 2017 ³⁷	Prognostic factor	Moderate	Prognostic factors were self-reported	h tt
	Outcome	Moderate	Outcomes were self-reported	9://I
	Confounding	Low	Confounding was properly adjusted for	3.
	Analysis/reporting	Low	Appropriate analyses were used.	0
	Participation	High	There were substantial differences (e.g. in age a responders.	d gender) between responders and non
	Attrition	Moderate	No loss to follow-up analysis were reported	
20. Harvey, 2012 ³⁸	Prognostic factor	Low	Prospective factors were determined based on dep	ਤ੍ਰੋ Novment characteristics
20. Harvey, 2012	Outcome	Moderate	Outcome was self-reported	5
	Confounding	Low		>
	Analysis/reporting	Low	Appropriate analyses were used.	<u> </u>
	Participation	Moderate	No non responder analysis was performed	,∞
	Attrition	Moderate	No loss to follow-up analysis was performed	<u>2</u> 02
	Prognostic factor	Moderate		g
21. Horesh, 2011 ³⁹	Outcome	Moderate	†	۵۲ ا
	Confounding	High		L es:
	Analysis/reporting	Moderate	The description of the analysis is unclear	70
	Participation	Moderate	No non-responder analysis was performed	ot
	Attrition	High	There was substantial loss to follow-up in this stud	<u>&</u>
22. Hourani, 2012 ⁴⁰	Prognostic factor	Moderate	Prognestic factors were self reported	<u>ö</u> .
	Outcome	Moderate	Outcome was salf reported	by copyright.

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	Confounding	High	No confounding analyses were conducted (ag least, not for the exposure-outcom
			associations)
	Analysis/reporting	High	Only descriptive statistics were reported (at least, for the exposure-outcome associations)
	Participation	Moderate	About 15% non-response.
	Attrition	Moderate	There was substantial loss to follow-up with differences between those who were and wer
			not lost.
23. Ikeda, 2017 ⁴¹	Prognostic factor	Moderate	Prognostic factors were self-reported
	Outcome	Moderate	Outcome was self-reported
	Confounding	Low	Confounding was properly adjusted for
	Analysis/reporting	Low	Appropriate analyses were used.
	Participation	Moderate	There was a substantial non-response
	Attrition	Moderate	There was a substantial loss to follow-up
24 1 2044 42	Prognostic factor	Moderate	Prognostic factors were self-reported
24. Joseph, 2014 ⁴²	Outcome	Moderate	Outcome was self-reported
	Confounding	Low	Confounding was properly adjusted for
	Analysis/reporting	Low	Appropriate analyses were used.
	Participation	Moderate	No non-responder analyses were presented
	Attrition	Low	Loss to follow-up analyses indicated no substantia differences between those who remaine
			in the cohort or not.
25. Karstoft, 2013 43	Prognostic factor	Moderate	Prognostic factors were self-reported 3
	Outcome	Moderate	Outcome was self-reported
	Confounding	High	No adjustment for confounding were performed
	Analysis/reporting	Low	Adequate statistical analyses were conducted
	Participation	Moderate	No non-responder analyses were presented ੂ ਰੁੱ
	Attrition	Low	Loss to follow-up analyses indicated no substantia differences between those who remaine
			in the cohort or not.
26. Karstoft, 2015 44	Prognostic factor	Moderate	Prognostic factors were self-reported
	Outcome	Moderate	Outcome was self-reported
	Confounding	High	No adjustment for confounding were performed 👱
	Analysis/reporting	Low	Adequate statistical analyses were conducted $\overline{\mathbb{Q}}$
	Participation	Low	Very high >99% participation rate
27. Kim, 2014 ⁴⁵	Attrition	Low	
	Prognostic factor	Moderate	Prognostic factors were self-reported
	Outcome	Low	Very high >99% participation rate in follow-up Prognostic factors were self-reported Outcome was diagnosed during an interview Adjustment for confounding was performed Opyright
	Confounding	Low	Adjustment for confounding was performed
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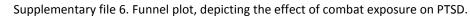
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				hmippen-2021-0
	Analysis/reporting	Low		74. 96
	Participation	Low	Responders comprised >90% of the eligible popular	
	Attrition	Low	Participants during follow-up comprised >90% of the	
46	Prognostic factor	Low	Prognostic factors were obtained from database in	
28. Levin-Rector, 2018 ⁴⁶	Outcome	Low	Outcomes were obtained from diagnosed register,	
	Confounding	Moderate	Only adjustment for clustering within units was do	
	Analysis/reporting	Low	· · · · · · · · · · · · · · · · · · ·	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
	Participation	Moderate	It is unclear what the non-response in this study we	
29. MacGregor, 2015 ⁴⁷	Attrition	Moderate	It is unclear what the loss to follow-up in this study	
	Prognostic factor	Low	Prognostic factors were obtained from register data	
	Outcome	Low	Outcomes were obtained from register data and w	
	Confounding	Low	Adjustment for confounding has been conducted	D
	Analysis/reporting	Low	Adequate statistical analyses were used.	2
	Participation	Low	All eligible participants were analysed.	9
30. MacGregor, 2012 ⁴⁸	Attrition	Low	All eligible participants were analysed.	<u>-</u>
	Prognostic factor	Low	Register data were used	.
	Outcome	Low	Diagnosed register data were used	3
	Confounding	Low	Adjustment for confounding has been conducted	D C C C C C C C C C C C C C C C C C C C
	Analysis/reporting	Low	Adequate statistical analyses were used.	<u></u>
	Participation	Moderate	No non-responder analyses were presented	<u>.</u>
	Attrition	Moderate		
24 . N 2042 49	Prognostic factor	Moderate	Prognostic factors were self-reported	
31. Maguen, 2012 ⁴⁹	Outcome	Moderate	Outcome was self-reported	5
	Confounding	Low	Adjustment for confounding was done	bri:
	Analysis/reporting	Low	Adequate analyses were used	12
	Participation	Moderate	No non-responder analyses were presented	<u>v</u>
	Attrition	Moderate	No loss to follow-up analyses were presented	024
22 Maguan 2010 ⁵⁰	Prognostic factor	Low	Prognostic factors were obtained from company da	- 其a.
32. Maguen, 2010 ⁵⁰	Outcome	Low	Outcome was diagnosed	
	Confounding	High	No adjustment for confounding was done	est
	Analysis/reporting	Low	· · · · · · · · · · · · · · · · · · ·	- -
	Participation	High	No non-responder analyses were presented, with §	bstantial non-response.
33. Martindale, 2018 ⁵¹	Attrition	Moderate	No loss to follow-up analyses were presented	Cre
55. Ividi tilludie, 2018	Prognostic factor	Moderate	Prognostic factors were obtained from an interview	<u> </u>
	Outcome	Low	Outcome was diagnosed during an interview	c copyright

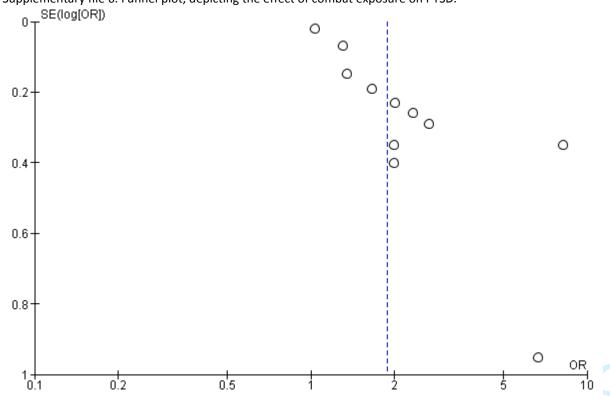
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	Confounding	High	No adjustment for confounding was done 6
	Analysis/reporting	High	No statistical analysis was done on the exposure-outcome association (only other analysis).
	Participation	Moderate	No non-responder analyses were presented
	Attrition	Moderate	No loss to follow-up analyses were presented
24.4	Prognostic factor	Moderate	Prognostic factors were self-reported
34. Nagamine, 2018 ⁵²	Outcome	Moderate	Outcome was self-reported
	Confounding	High	
	Analysis/reporting	Low	No adjustment for confounding was done Adequate analyses were used
	Participation	High	A substantial amount of eligible participants did pt participate. No non responder analys
			was conducted.
	Attrition	High	A substantial amount of participants were lost in $\frac{1}{100}$ e follow-up. No loss to follow-up analys
25 Occasio 2010 53			was conducted.
35. Osorio, 2018 ⁵³	Prognostic factor	Moderate	Prognostic factors were self-reported
	Outcome	Moderate	Outcome was self-reported 3
	Confounding	Low	Confounding analyses were conducted
	Analysis/reporting	Low	Adequate statistical analyses were performed.
	Participation	Low	Responders and non-responders did not differ substantially from one another (only in age)
	Attrition	Low	Variables that predicted loss to follow-up (e.g. baseline PTSD) were adjusted for
26 Pibl Thinguad 2010 54	Prognostic factor	Moderate	Prognostic factors were self-reported
36. Pihl-Thingvad, 2019 ⁵⁴	Outcome	Moderate	Outcome was self-reported <u>3</u>
	Confounding	Low	Confounding analyses were conducted
	Analysis/reporting	Low	Adequate statistical analyses were performed.
	Participation	Moderate	There were slight differences between responders and non-responders
	Attrition	Moderate	There were slight differences between those with র্ফ্রাব without follow-up data
27 Delivery 2011 55	Prognostic factor	Moderate	Prognostic factors were self-reported
37. Polusny, 2011 55	Outcome	Moderate	Outcome was self-reported
	Confounding	Low	Confounding analyses were conducted
	Analysis/reporting	Low	Adequate statistical analyses were performed.
	Participation	High	There were substantial differences (e.g. in mental health) between responders and nor
			responders.
	Attrition	High	Participants without follow-up data were excluded of the above therefore also holds for those
38. Reijnen, 2015 ⁵⁶			lost at follow-up
	Prognostic factor	Moderate	Prospective factors were self-reported
	Outcome	Moderate	Outcome was self-reported
	Confounding	High	No confounding adjustment was conducted
			No confounding adjustment was conducted Opyriging the conduction of the conduction
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	Analysis/reporting	Low	Appropriate analyses were used.	1496
	Participation	Moderate	It is unclear what the non-response in this study v	- Si Vas
	Attrition	Moderate	It is unclear what the loss to follow-up in this stud	v Q was
	Prognostic factor	Moderate	Prognostic factors were self-reported	N O
39. Shea, 2013 ⁵⁷	Outcome	Low	Outcome was diagnosed during a structured inter	→ væw
	Confounding	Low	Confounding analyses were conducted	gus
	Analysis/reporting	Low	Adequate statistical analyses were performed.	\$ 1 20
	Participation	Moderate	It is unclear what the non-response in this study v	
	Attrition	Moderate	It is unclear what the loss to follow-up in this stud	
	Prognostic factor	Moderate	Prognostic factors were self-reported	<u>/</u>
40. Soo, 2011 ⁵⁸	Outcome	Moderate	Outcome was self-reported	nloa
	Confounding	Low	Confounding analyses were conducted	<u>a</u> 0 e
	Analysis/reporting	Low	Adequate statistical analyses were performed.	Q .
	Participation	High	There was substantial non-response	from
11. Stevelink, 2018 ⁵⁹	Attrition	High	There was substantial loss to follow-up	htt
	Prognostic factor	Moderate	Prognostic factors were self-reported	'p ://
	Outcome	Moderate	Outcomes were self-reported	
	Confounding	Low	Adjustment for confounding was performed.	jo po
	Analysis/reporting	Low	Adequate analyses were conducted	<u>0</u>
	Participation	Moderate	It is unclear what the non-response in this study v	vas
	Attrition	Moderate	It is unclear what the loss to follow-up in this stud	
	Prognostic factor	Moderate	Prognostic factors were self-reported	2
42. Wittchen, 2012 ⁶⁰	Outcome	Low	Outcomes was diagnosed during a structured inte	r y iew
	Confounding	High	No adjustment for confounding was performed	pr
	Analysis/reporting	Low	Adequate analyses were conducted	1 18
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Supplementary file 7. Forest plot depicting the effect of number of army deployments (one versus multiple) with PTSD, stratified for risk of bias.

Supplementary me 7. 1	orest plot depicting	g tile ei	iect of flui	Odds Ratio	Odds Ratio
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI
2.1.1 Low methodolo	gical quality				25 /
Fear, 2010	-0.13	0.21	0.0%	0.88 [0.58, 1.33]	Aug PAug
Hotorogenoity: Not an	nlicable		0.070	0.00 [0.00, 1.00]	wst:
Test for overall effect:	Z= 0.62 (P = 0.54))			202
	,				1.
2.1.2 High methodolo	gical quality			0.0010.07.0.501	owr
Clarlegilo, 2018 Maguen 2010	-0.19 0.14	0.57	0.0% 100.0%	0.83 [0.27, 2.53] 1 15 [1 14 1 16]	- lioa
Subtotal (95% CI)	0.14	0.004	100.0%	1.15 [1.14, 1.16]	de d
Heterogeneity: Tau² =	0.00; Chi ² = 0.34 ,	df = 1 (F	o = 0.56);	l² = 0%	fron
Test for overall effect:	Z = 35.00 (P < 0.0)	0001)			n ht
Total (95% CI)			100.0%	1.15 [1.14, 1.16]	tp://t
Heterogeneity: Tau²=	0.00; Chi² = 1.99,	df = 2 (F	P = 0.37);	I² = 0%	10 10
Test for overall effect:	Z = 34.98 (P < 0.0)	0001)			0.01 0.1 1 10 1000
Test for subgroup diff	erences: Chi ² = 1.6	65, df=	1 (P = 0.2	0), I ^z = 39.5%	ı.bm
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Supplementary file 8. Forest plot depicting the effect of combat exposure with PTSD, stratified for risk of bias.							
				Odds Ratio	Odds Ratio		
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI		
2.2.1 Low methodolo	gical quality						
Connorton, 2011	2.1	0.35	7.1%	8.17 [4.11, 16.22]			
Green, 2016	0.03	0.02	14.0%	1.03 [0.99, 1.07]	+		
Osorio, 2018	0.3	0.15	11.9%	1.35 [1.01, 1.81]	-		
Stevelink, 2018	0.7	0.23	9.9%	2.01 [1.28, 3.16]			
Wittchen, 2012	1.89	0.95	1.7%	6.62 [1.03, 42.60]			
Subtotal (95% CI)			44.7%	2.17 [1.23, 3.85]	•		
Heterogeneity: Tau² =	0.32; Chi ² = 49.80	df = 4	(P < 0.00	0001); I² = 92%			
Test for overall effect:	Z= 2.66 (P = 0.008	3)					
2.2.2 High methodolo	gical quality						
Cukor, 2011	0.27	0.07	13.6%	1.31 [1.14, 1.50]	-		

Ziziz riigii motilodological quality				
Cukor, 2011	0.27	0.07	13.6%	1.31 [1.14, 1.50]
Goodwin, 2012	0.69	0.4	6.2%	1.99 [0.91, 4.37]
Harvey, 2012	0.98	0.29	8.4%	2.66 [1.51, 4.70]
MacGregor, 2015	0.51	0.19	10.9%	1.67 [1.15, 2.42]
Polusny, 2011	0.85	0.26	9.1%	2.34 [1.41, 3.89]
Shea, 2013	0.69	0.35	7.1%	1.99 [1.00, 3.96]
Subtotal (95% CI)			55.3%	1.80 [1.37, 2.37]

Heterogeneity: $Tau^2 = 0.06$; $Chi^2 = 11.87$, df = 5 (P = 0.04); $I^2 = 58\%$

Test for overall effect: Z = 4.20 (P < 0.0001)

Total (95% CI) 100.0% 1.89 [1.46, 2.45]

Heterogeneity: Tau z = 0.12; Chi z = 88.86, df = 10 (P < 0.00001); I z = 89%

Test for overall effect: Z = 4.79 (P < 0.00001)

Test for subgroup differences: $Chi^2 = 0.33$, df = 1 (P = 0.57), $I^2 = 0\%$



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Supplementary file 9. F	orest plot depicting	g the e	ffect of a	rmy deployment with Odds Ratio	PTSD, stratified for risk of bias. Odds Ratio	/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyright.		
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95%	CI S		
2.3.1 Low methodolo				,		25		
Reijnen, 2015		0.12	79.2%	1.75 [1.38, 2.21]		Ą		
Stevelink, 2018	0.52		15.6%	1.68 [0.99, 2.86]	-	gu		
Wittchen, 2012 Subtotal (95% CI)	1.44	0.91	1.4% 96.2%	4.22 [0.71, 25.12] 1.76 [1.42, 2.18]	•	st 202		
Heterogeneity: Tau² =	0.00; Chi² = 0.95.	df = 2 i			'	<u> </u>		
Test for overall effect			,,			Downl		
2.3.2 High methodolo	ogical quality					oac		
Joseph, 2014 Subtotal (95% CI)	1.03	0.55	3.8% 3.8%	2.80 [0.95, 8.23] 2.80 [0.95, 8.23]		— led fro		
Heterogeneity: Not ap	•					m ht		
Test for overall effect	Z = 1.87 (P = 0.06)					tp://		
Total (95% CI)			100.0%	1.79 [1.45, 2.21]	•	ʻbmjo		
Heterogeneity: Tau² =			(P = 0.65)	; I² = 0%	0.01 0.1 1	10 100		
Test for overall effect Test for subgroup dif	•	-	1 (P = 0	41) 1² = 0%		.bm		
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Supplementary file 10. Forest plot depicting the effect of number of army deployments (one versus multiple) with PTSD, stratified for study design.

			Odds Ratio	Odds Ratio 55
Study or Subgroup log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI
3.1.1 Retrospective design				25
Ciarleglio, 2018 -0.19		0.0%	0.83 [0.27, 2.53]	Aug
	0.004	100.0%	1.15 [1.14, 1.16]	- Just
Subtotal (95% CI)		100.0%	1.15 [1.14, 1.16]	120
Heterogeneity: Tau ² = 0.00; Chi ² = 0.34		P = 0.56);	I ² = 0%	2.1
Test for overall effect: Z = 35.00 (P < 0.0	10001)			D
3.1.2 Prospective design				w <u>n</u>
Fear, 2010 -0.13	0.21	0.0%	0.88 [0.58, 1.33]	<u> </u>
Subtotal (95% CI)	0.2.	0.0%	0.88 [0.58, 1.33]	→ ded
Heterogeneity: Not applicable				fro
Test for overall effect: $Z = 0.62$ (P = 0.54)			3
				ittp:
Total (95% CI)		100.0%	1.15 [1.14, 1.16]	
Heterogeneity: Tau ² = 0.00; Chi ² = 1.99		P = 0.37);	F= 0%	0.01 0.1 1 10 10
Test for overall effect: Z = 34.98 (P < 0.0 Test for subgroup differences: Chi ² = 1		1 /D = 0.2	∩\ IZ = 20.50¢	oe n
restror subgroup unlerences. Crit = 1	05, ui –	1 (F = 0.2	0),1 = 38.076	bm
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Supplementary file 11.	Forest plot depicting the effect of	f combat exposure with PTSI	D, stratified for study design.

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Supplementary file 11.	Forest plot depiction	ng the	effect of	combat exposure with Odds Ratio	n PTSD, stratified for study design. Odds Ratio	90			
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95% C	:1 ≦			
3.2.1 Retrospective									
Connorton, 2011	2.1	0.35	7.1%	8.17 [4.11, 16.22]	_	 }			
Green, 2016	0.03	0.02	14.0%	1.03 [0.99, 1.07]	+	S. C.			
Stevelink, 2018	0.7	0.23	9.9%	2.01 [1.28, 3.16]		<u> </u>			
Wittchen, 2012 Subtotal (95% CI)	1.89	0.95	1.7% 32.8%	6.62 [1.03, 42.60] 2.82 [1.08, 7.36]	•	<u> </u>			
Heterogeneity: Tau² :	= 0.79; Chi ² = 46.90	i, df = 3	(P < 0.0	0001); I² = 94%		Ç			
Test for overall effect	Z = 2.11 (P = 0.03))				ည် (၁)			
3.2.2 Prospective de	esign					α α			
Cukor, 2011	0.27	0.07	13.6%	1.31 [1.14, 1.50]	-	<u> </u>			
Goodwin, 2012	0.69	0.4	6.2%	1.99 [0.91, 4.37]	 •	=			
Harvey, 2012		0.29	8.4%	2.66 [1.51, 4.70]		Ę			
MacGregor, 2015	0.51	0.19	10.9%	1.67 [1.15, 2.42]	-	<u>َ</u>			
Osorio, 2018		0.15	11.9%	1.35 [1.01, 1.81]	-	Ę			
Polusny, 2011		0.26	9.1%	2.34 [1.41, 3.89]		<u> </u>			
Shea, 2013 Subtotal (95% CI)	0.69	0.35	7.1% 67.2%	1.99 [1.00, 3.96] 1.66 [1.34, 2.05]	*				
Heterogeneity: Tau² = 0.03; Chi² = 12.11, df = 6 (P = 0.06); l² = 50% Test for overall effect: Z = 4.70 (P < 0.00001)									
rest for overall effect	: ∠= 4.70 (P < 0.00)	001)				2			
Total (95% CI)			100.0%	1.89 [1.46, 2.45]	•	- 7			
Heterogeneity: Tau² :	= 0.12; Chi ² = 88.86	i, df = 1	0 (P < 0.1	00001); I² = 89%					
Test for overall effect			,		0.01 0.1 1				
Test for subgroup dif	ferences: Chi² = 1.1	11, df=	1 (P = 0.	.29), I² = 10.2%		70			
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Supplementary file 12.	Forest plot depicti	ng the	effect of		:h PTSD, st		dy design. s Ratio		
Odds Ratio 0									
Study or Subgroup	oup log[Odds Ratio] SE Weight IV, Random, 95% CI				IV, Rande	om, 95% CI			
3.3.1 Retrospective of	lesign								
Joseph, 2014	1.03	0.55	3.8%	2.80 [0.95, 8.23]			-		
Stevelink, 2018	0.52	0.27	15.6%	1.68 [0.99, 2.86]			-		
Wittchen, 2012	1.44	0.91	1.4%	4.22 [0.71, 25.12]		-	<u> </u>		
Subtotal (95% CI)			20.8%	1.96 [1.24, 3.10]			•		
Heterogeneity: Tau² =	0.00; Chi² = 1.45,	df = 2	(P = 0.48)); I² = 0%					
Test for overall effect:	Z = 2.88 (P = 0.004)	4)							
3.3.2 Prospective de	sign						l <u> </u>		
Reijnen, 2015	0.56	0.12	79.2%						
Subtotal (95% CI)			79.2%	1.75 [1.38, 2.21]			◆		
Heterogeneity: Not applicable									
Test for overall effect: Z = 4.67 (P < 0.00001)									
Total (DEW CI)			400.0%	4 70 (4 45 2 24)					
Total (95% CI)			100.0%	1.79 [1.45, 2.21]			•		
	Heterogeneity: Tau ² = 0.00; Chi ² = 1.64, df = 3 (P = 0.65); I ² = 0%								
	Test for overall effect: Z = 5.46 (P < 0.00001)								
Test for subgroup diff	Test for subgroup differences: $Chi^2 = 0.19$, $df = 1$ ($P = 0.67$), $I^2 = 0\%$								

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Supplementary file 13. Forest plot depicting the effect of number of army deployments (one versus multiple) with PTSD, stratified for type of PTSD ascertainment.

Supplementary me 13	s. Forest plot depicti	ng the e	errect or m	Odds Ratio	Odds F	atio 57	זכ
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Randon	ı, 95% CI ⊆	
4.1.1 Probable PTS	D					25	_
Fear, 2010	-0.13	0.21	0.0%	0.88 [0.58, 1.33]	<u></u>	Aug	
Subtotal (95% CI)	annii an bio		0.0%	0.88 [0.58, 1.33]	T	lust	
Test for overall effer	applicable tr 7 = 0.62 (P = 0.54)	١				202	
	(,					
4.1.2 Diagnosed PT	SD					owr	
Ciarleglio, 2018	-0.19	0.57	0.0%	0.83 [0.27, 2.53]		— ■	
Subtotal (95% CI)	0.14	0.004	100.0%	1.15 [1.14, 1.16]	TI.	ded	
Heterogeneity: Tau ^a	= 0.00; Chi² = 0.34,	df = 1 (F	P = 0.56);	I² = 0%		fror	
Test for overall effec	t: Z = 35.00 (P < 0.0	0001)				n n	
Total (95% CI)			100.0%	1.15 [1.14, 1.16]		tp://	
Heterogeneity: Tau ^a	'= 0.00; Chi² = 1.99,	df = 2 (F	P = 0.37);	I ² = 0%	0.04	—— <u> </u>	
Test for overall effect	t: Z = 34.98 (P < 0.0	0001)			0.01 0.1 1	10 100	
Test for subgroup d	ifferences: Chi ^z = 1.	65, df=	1 (P = 0.2	0), I²= 39.5%		ı.br	
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pplementary file 14.	Forest plot depictir	ng the	effect of	•	PTSD, stratified for type of PTSD ascertainmen
Study or Subgroup	log[Odds Ratio]	SE.	Weight	Odds Ratio IV, Random, 95% CI	Odds Ratio IV, Random, 95% CI
I.2.1 Probable PTSD		JL	weight	IV, Kalluolli, 95% Ci	IV, Ralidolli, 95% Cl
300dwin, 2012	0.69	0.4	6.2%	1.99 [0.91, 4.37]	
Harvey, 2012		0.29	8.4%	2.66 [1.51, 4.70]	
Osorio, 2018		0.15	11.9%	1.35 [1.01, 1.81]	- -
Polusny, 2011		0.26	9.1%	2.34 [1.41, 3.89]	
Stevelink, 2018		0.23	9.9%	2.01 [1.28, 3.16]	
Subtotal (95% CI)			45.5%	1.90 [1.44, 2.52]	•
Heterogeneity: Tau² =	: 0.04; Chi² = 6.81,	df = 4	(P = 0.15)	; I² = 41%	
Test for overall effect:	Z = 4.48 (P < 0.000)	001)			
I.2.2 Diagnosed PTS	D .				
Connorton, 2011	2.1	0.35	7.1%	8.17 [4.11, 16.22]	
Cukor, 2011		0.07	13.6%	1.31 [1.14, 1.50]	-
/UNOI,		0.02	14.0%	1.03 [0.99, 1.07]	+
Green, 2016	0.00		10.9%	1.67 [1.15, 2.42]	-
	0.51	0.19	10.970	1.07 [1.10, 2.42]	
3reen, 2016			7.1%	1.99 [1.00, 3.96]	
Green, 2016 MacGregor, 2015 Ghea, 2013 Wittchen, 2012	0.51 0.69		7.1% 1.7%	1.99 [1.00, 3.96] 6.62 [1.03, 42.60]	
Green, 2016 MacGregor, 2015 Ghea, 2013 Vittchen, 2012 Subtotal (95% CI)	0.51 0.69 1.89	0.35 0.95	7.1% 1.7% 54.5 %	1.99 [1.00, 3.96] 6.62 [1.03, 42.60] 1.80 [1.28, 2.54]	•
Green, 2016 MacGregor, 2015 Ghea, 2013 Wittchen, 2012 Subtotal (95% CI) Heterogeneity: Tau² =	0.51 0.69 1.89 = 0.11; Chi ^z = 57.78	0.35 0.95 , df = 5	7.1% 1.7% 54.5 %	1.99 [1.00, 3.96] 6.62 [1.03, 42.60] 1.80 [1.28, 2.54]	•
Green, 2016 MacGregor, 2015 Ghea, 2013 Vittchen, 2012 Subtotal (95% CI)	0.51 0.69 1.89 = 0.11; Chi ^z = 57.78	0.35 0.95 , df = 5	7.1% 1.7% 54.5 %	1.99 [1.00, 3.96] 6.62 [1.03, 42.60] 1.80 [1.28, 2.54]	•
Green, 2016 MacGregor, 2015 Ghea, 2013 Wittchen, 2012 Subtotal (95% CI) Heterogeneity: Tau² =	0.51 0.69 1.89 = 0.11; Chi ^z = 57.78	0.35 0.95 , df = 5	7.1% 1.7% 54.5 %	1.99 [1.00, 3.96] 6.62 [1.03, 42.60] 1.80 [1.28, 2.54]	IV, Random, 95% CI

4.2.1 Probable PTSD				
Goodwin, 2012	0.69	0.4	6.2%	1.99 [0.91, 4.37]
Harvey, 2012	0.98	0.29	8.4%	2.66 [1.51, 4.70]
Osorio, 2018	0.3	0.15	11.9%	1.35 [1.01, 1.81]
Polusny, 2011	0.85	0.26	9.1%	2.34 [1.41, 3.89]
Stevelink, 2018	0.7	0.23	9.9%	2.01 [1.28, 3.16]
Subtotal (95% CI)			45.5%	1.90 [1.44, 2.52]
Hotorogonoity: Tauz - C	i 0.4÷ Chi≅ – 6.94	df = A	(D = 0.16)	IZ — #1.0%

4.2.2 Diagnosed PTSD

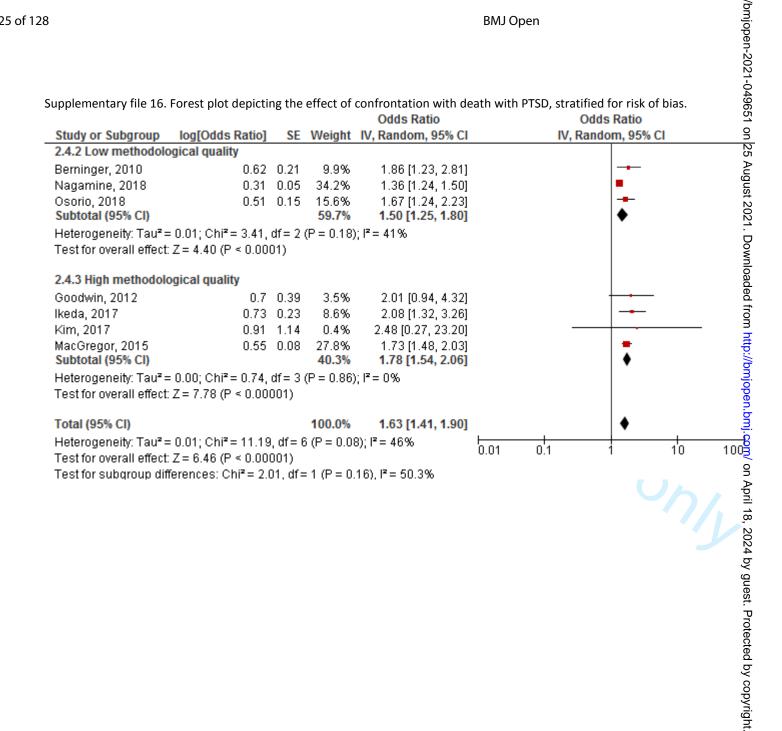
Connorton, 2011	2.1	0.35	7.1%	8.17 [4.11, 16.22]
Cukor, 2011	0.27	0.07	13.6%	1.31 [1.14, 1.50]
Green, 2016	0.03	0.02	14.0%	1.03 [0.99, 1.07]
MacGregor, 2015	0.51	0.19	10.9%	1.67 [1.15, 2.42]
Shea, 2013	0.69	0.35	7.1%	1.99 [1.00, 3.96]
Wittchen, 2012	1.89	0.95	1.7%	6.62 [1.03, 42.60]
Subtotal (95% CI)			54.5%	1.80 [1.28, 2.54]

Total (95% CI) 1.89 [1.46, 2.45] 100.0%

Test for subgroup differences: $Chi^2 = 0.06$, df = 1 (P = 0.81), $I^2 = 0\%$



				Ouus Rauo	Odus	Ratio	_
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Rando	m, 95% CI	9n
4.3.1 Probable PTSD)						25
Reijnen, 2015	0.56	0.12	79.2%	1.75 [1.38, 2.21]			₽
Stevelink, 2018		0.27	15.6%	1.68 [0.99, 2.86]	-	-	gu
Subtotal (95% CI)			94.9%	1.74 [1.40, 2.16]		*	st 2
Heterogeneity: Tau ² =	0.00; Chi ² = 0.02,	df = 1	(P = 0.89)); I² = 0%			0,
Test for overall effect	Z= 5.05 (P < 0.00	001)					
							VO W
4.3.2 Diagnosed PTS	SD						'nlc
Joseph, 2014	1.03	0.55	3.8%	2.80 [0.95, 8.23]	+		ad
Wittchen, 2012	1.44	0.91	1.4%	4.22 [0.71, 25.12]	-		e e
Subtotal (95% CI)			5.1%	3.13 [1.24, 7.86]			fror
Heterogeneity: Tau² =			(P = 0.70)); I² = 0%			<u>א</u>
Test for overall effect	Z = 2.42 (P = 0.02))					ŧ.
Total (OFN, CI)			400.00	4 70 (4 45 2 24)		•	1 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by
Total (95% CI)	0.00: 01:3 4.04	-14 0	100.0%	1.79 [1.45, 2.21]		▼ ,	
Heterogeneity: Tau ² =			(P = 0.65)); 1= 0%	0.01 0.1 1	1'0	100
Test for overall effect Test for subgroup dif			- 1 /D - 0	22/ 12 - 22 00/			.bn
restror subgroup un	ierences. Oni = 1.	47, ui-	- 1 (F - 0.	.23),1 = 32.0%	· (V)		J. 0
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Study or Subgroup	log[Odds Ratio]			Odds Ratio IV, Random, 95% CI		tified for study design. Odds Ratio Random, 95% CI
3.4.2 Retrospective d	esign					
Kim, 2017	0.91	1.14	0.4%	2.48 [0.27, 23.20]	-	
Subtotal (95% CI)			0.4%	2.48 [0.27, 23.20]		
Heterogeneity: Not app						
Fest for overall effect: 2	Z = 0.80 (P = 0.42)	1				
3.4.3 Prospective des	sign					
Berninger, 2010	0.62	0.21	9.9%	1.86 [1.23, 2.81]		-
3oodwin, 2012		0.39	3.5%	2.01 [0.94, 4.32]		
keda, 2017		0.23	8.6%	2.08 [1.32, 3.26]		
MacGregor, 2015		0.08	27.8%	1.73 [1.48, 2.03]		
Nagamine, 2018		0.05	34.2%	1.36 [1.24, 1.50]		
Osorio, 2018 Subtotal (95% CI)	0.51	0.15	15.6% 99.6%	1.67 [1.24, 2.23] 1.64 [1.40, 1.91]		
Test for overall effect: 2	Z= 6.20 (P < 0.00)	J01)	100.0%	1.63 [1.41, 1.90]		
Fotal (05% CI)						—
	0.01: Chi²= 11.19	ˈdf=ñ				4 40 4
Heterogeneity: Tau² =	•	-) (F = 0.00	57,1 - 4070	0.01 0.1	1 1'0 1
Heterogeneity: Tau² = Fest for overall effect: 2	Z = 6.46 (P < 0.000	001)			0.01 0.1	1 10 1
Heterogeneity: Tau² = Fest for overall effect: 2	Z = 6.46 (P < 0.000	001)			0.01 0.1	U _A ,
Heterogeneity: Tau² = Fest for overall effect: 2	Z = 6.46 (P < 0.000	001)			0.01 0.1	U//
Heterogeneity: Tau² = Fest for overall effect: 2	Z = 6.46 (P < 0.000	001)			0.01 0.1	07/1
Heterogeneity: Tau² = Fest for overall effect: 2	Z = 6.46 (P < 0.000	001)			0.01 0.1	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Heterogeneity: Tau² = Fest for overall effect: 2	Z = 6.46 (P < 0.000	001)			0.01 0.1	Un_
Heterogeneity: Tau² = Fest for overall effect: 2	Z = 6.46 (P < 0.000	001)			0.01 0.1	⁰ 7/
Heterogeneity: Tau² = Fest for overall effect: 2	Z = 6.46 (P < 0.000	001)			0.01 0.1	
Heterogeneity: Tau² = Fest for overall effect: 2	Z = 6.46 (P < 0.000	001)			0.01 0.1	
Heterogeneity: Tau² = Test for overall effect: 2	Z = 6.46 (P < 0.000	001)			0.01 0.1	otified for study design. Odds Ratio Random, 95% CI
Total (95% CI) Heterogeneity: Tau ² = Test for overall effect: 2 Test for subgroup diffe	Z = 6.46 (P < 0.000	001)			0.01 0.1	1 U
Heterogeneity: Tau² = Test for overall effect: 2	Z = 6.46 (P < 0.000	001)			0.01 0.1	
Heterogeneity: Tau² = Test for overall effect: 2	Z = 6.46 (P < 0.000	001)			0.01 0.1	
Heterogeneity: Tau² = Test for overall effect: 2	Z = 6.46 (P < 0.000	001)			0.01 0.1	

Supplementary file 18. Forest plot depicting the effect of confrontation with death with PTSD, stratified for type of PTSD ascertainment.

, , ,				Odds Ratio	Odds Ratio 55
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI
4.4.2 Probable PTSD					25
Berninger, 2010	0.62	0.21	9.9%	1.86 [1.23, 2.81]	Aug
Goodwin, 2012		0.39	3.5%	2.01 [0.94, 4.32]	- Jus
Ikeda, 2017		0.23	8.6%	2.08 [1.32, 3.26]	
Nagamine, 2018		0.05	34.2%	1.36 [1.24, 1.50]	- 21
Osorio, 2018	0.51	0.15	15.6%	1.67 [1.24, 2.23]	🔭 💆
Subtotal (95% CI)			71.8%	1.61 [1.33, 1.94]	▼
Heterogeneity: Tau² =			(P = 0.14)); I² = 42%	าใดย
Test for overall effect:	Z = 4.99 (P < 0.00)	JU1)			ade
4.4.3 Diagnosis PTSI)				Odds Ratio IV, Random, 95% CI Odds Ratio Od
Kim, 2017	0.91	1.14	0.4%	2.48 [0.27, 23.20]	
MacGregor, 2015	0.55	0.08	27.8%	1.73 [1.48, 2.03]	+ t p
Subtotal (95% CI)			28.2%	1.74 [1.48, 2.03]	♦
Heterogeneity: Tau² =			(P = 0.75)); I² = 0%	<u> </u>
Test for overall effect:	Z = 6.91 (P < 0.00)	001)			per
Total (95% CI)			100.0%	1.63 [1.41, 1.90]	1.bm
Heterogeneity: Tau ² =	. በ በ1+ ∩hi≅ – 11 10	df – f			▼ 32.
Test for overall effect:	•	-	7 (1 - 0.0)	0),1 - 40 %	0.01 0.1 1 10 1008
Test for subgroup diff			1 (P = 0	54) P= 0%	on
rootion candicale am	0.0	, a.	. ,	0.17.1	Ap
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PRISMA 2009 Checklist

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PRISMA 2	009	BMJ Open Checklist Checklist	
Section/topic	#	Checklist item 6965	Reported on page #
TITLE	•	on 25	
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT		gust	
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION	•	nloac	
Rationale	3	Describe the rationale for the review in the context of what is already known.	3
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, in expressions, comparisons, outcomes, and study design (PICOS).	3
METHODS		»://br	
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and if available, provide registration information including registration number.	4
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	4
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	4
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	4
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	4
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	5
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	5
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	5
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	5
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including nearly assures of consistency (e.g., I²) for each meta-analysis. For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml	5



PRISMA 2009 Checklist

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PRISMA 20	09	BMJ Open Checklist Page 1 of 2	
		Page 1 of 2 9	
Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	5
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	5-6
RESULTS		. 1 D	
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reach stage, ideally with a flow diagram.	7
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	7
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	7
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summare data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	7-9
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	7-9
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	7-9
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	7-9
DISCUSSION		9 >	
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	10
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	10-11
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	12
FUNDING		<u>#</u> D	
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of datage; role of funders for the systematic review.	13

41 From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The RISMA Statement. PLoS Med 6(6): e1000097.
43 For more information, visit: www.prisma-statement.org.

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What work-related exposures are associated with post-traumatic stress disorder? A systematic review with meta-analysis

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Abstract

<u>Objectives</u>: Although there is evidence that work-related exposures cause post-traumatic stress disorder (PTSD), there are few quantitative studies assessing the degree to which these factors contribute to PTSD. This systematic review with meta-analysis identified work-related exposures associated with PTSD, and quantified their contribution to this disorder.

<u>Methods</u>: We searched Medline, PsycINFO, Embase, PILOTS and Web of Science (2005 to 10-09-2019) for longitudinal studies on work-related exposures and PTSD. We described included articles, and conducted meta-analyses for exposures with sufficient homogeneous information. We performed subgroup analyses for risk of bias, study design and PTSD ascertainment. We assessed evidence quality using GRADE, and estimated population attributable fractions.

Results: After screening 8,590 records, we selected 33 studies (n=5,719,236). From what was moderate quality evidence at best, we identified various work-related exposures that were associated with PTSD, mainly involving individuals in the military and first responder (e.g., police or fire brigade) occupations. These exposures included the number of army deployments (odds ratio: 1.15 [1.14 1.16]), combat exposure (1.89 [1.46 2.45]), army deployment (1.79 [1.45 2.21]) and confrontation with death (1.63 [1.41 1.90]). Effects were robust across subgroups and exposures attributed modestly (7%-34%) to PTSD. We identified additional exposures in other occupations, including life threats, being present during an attack, and hearing about a colleague's trauma.

<u>Conclusions</u>: We identified various work-related exposures associated with PTSD and quantified their contribution. While exposure assessment, PTSD ascertainment, and inconsistency may have biased our findings, our data are of importance for development of preventive interventions and occupational health guidelines.

Key words: Post traumatic stress disorder; occupational health; occupational diseases; systematic review; meta-analysis

Strengths and limitation of this study

- The strengths of this review are the systematic methods, including the a-priori registered protocol, a thorough meta-analysis with sensitivity analyses, estimation of population attributable fractions and the assessment of evidential quality with GRADE.
- Reported studies bear sources of heterogeneity and possible bias, e.g. in the ascertainment of post-traumatic stress disorders (which was not always clinically diagnosed but sometimes based on self-reports)
- The external validity of our findings is limited as the majority of the studies in our review were based on armed forces, first responders and other male dominated occupations, and mainly from Western countries.
- Evidence reported in our review was moderate quality at best, among other elements, due to risk of bias regarding participation (i.e., selection bias), attrition and misclassification.

Background

Post-traumatic stress disorder (PTSD) can be triggered when individuals experience or witness traumatic events. PTSD has been a clinical diagnosis since 1980, when the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) was published¹. The most recent DSM-5² states that PTSD results from exposure to severely traumatic event(s), while exhibiting a pattern of symptoms characterised by intrusion, avoidance, negative moods and cognitions, arousal, and reactivity. A diagnosis of PTSD also involves duration and functional impairment criteria, and the patient's symptoms should be exclusive (i.e., not caused by drugs or other illnesses). Estimates of PTSD prevalence among the general population differ widely. For example, lifetime PTSD prevalence ranged from 6% to 9% in United States (US) and Canadian samples, while prevalence rates in Australian samples range from 1% to 2%³. The substantial differences between individual studies could result from different ways in which PTSD was ascertained, varying from any type of clinical diagnosis, to self-reports of DSM-5 criteria and PTSD symptoms assessed as *probable PTSD*.

PTSD can have a major impact on individuals and society as a whole, as it is associated with mental comorbidities⁴, substance abuse⁵ and suicide⁶. PTSD is particularly prevalent among certain occupational groups, such as police officers, firefighters, medical workers and military personnel, all of whom can experience events that might trigger PTSD⁷ ⁸. One particular systematic review showed that the prevalence of PTSD in military veterans and other high-risk occupational groups can be almost twice as high as among the general population⁸. Another more recent review identified a number of occupational groups, including healthcare workers, police officers, prison workers, and emergency personnel, with an increased risk of PTSD⁹. Also, various specific work-related exposures (i.e., exposures to situations or conditions at work that may have an effect on PTSD) and their association with PTSD have been reported⁷. This included traumatic events experienced by military personnel and first responders (e.g., police officers or fire fighters). The latter review also identified journalists, healthcare workers or individuals in other occupations who are exposed to traumatic events or the aftermath thereof⁷.

Despite this evidence, the association of work-related exposures with PTSD has not yet been quantified in a meta-analysis. Such knowledge is of importance to answer questions regarding work-related causation and prevention, as a prelude to developing interventions. With regard to prevention, we need to quantify the contribution of work-related exposures in the onset of PTSD¹⁰. Such data could be used to formulate clinically relevant exposure threshold limits, as has been done with other disorders¹¹ 12. It could also be of use in occupational health guidelines, as many countries provide financial compensation for individuals diagnosed with an occupational disease.

In this study, our aim was to 1) identify the work-related exposures associated with the onset of PTSD, and 2) quantify the extent to which such exposures contribute to this disorder. Evidence on the contribution of work-related factors to PTSD could be used to facilitate decisions in reporting schemes. It could also help to identify and prioritise preventive interventions against those exposures with the strongest effect, in terms of triggering PTSD.

Methods

The protocol for this systematic review with meta-analysis was registered in PROSPERO¹³ a-priori. The review itself was conducted in accordance with the PRISMA statement guidelines¹⁴.

Searches

The Medline, PsycINFO, Embase, PILOTS and Web of Science databases were systematically searched for material published from 2005 (January) to 2019 (September 10). This was an arbitrarily chosen period on the basis of changes in people's exposure to work-related traumatic events and changes in the definition of PTSD over time². The search strategy consisted of a combination of controlled search terms (e.g., Medical Subject Headings/MeSH) and free-text words used to specify search terms related to: 1) PTSD 2) exposure, and 3) work. A methodological filter was used to select longitudinal studies (prospective, retrospective or case-control), studies published in English, and those involving human participants only. The search strategy used is described in detail in supplementary file 1. We validated this search with various key references, to avoid term bias. In addition to the database search, we conducted snowball searches for additional studies. These were based on citation tracking (forwards and backwards) from the articles and reviews retrieved in our electronic search. We also conducted scoping searches for key researchers on this topic, and used ResearchGate profiles to identify relevant records and projects (including unpublished projects). Outcome articles were compared to potential protocol papers, to assess selective reporting.

Inclusion and exclusion criteria

Two reviewers, working independently of one another, used Rayyan (an online tool: https://rayyan.qcri.org/) to screen for eligible references. The full texts of any such references (whose eligibility was based on the screening title and abstract) were retrieved for further screening. Any conflicts were resolved during a consensus meeting. We included studies on the association between any work-related exposure and the onset of PTSD (acute or delayed) in paid workers of working age (aged 18-65). Any studies that described work-related exposures in terms of work demands or other occupational factors were eligible for inclusion. However, studies in which exposures were related to job title or work title only were excluded. Studies were included if there was an actual diagnosis of PTSD (either using checklists with defined cut-off values or clinical criteria, e.g., using DSM criteria² and/or coded according to the International Classification of Disorders -ICD-9-CM 309.81-). Studies in which PTSD was assessed by means of self-reports only (not using any criteria) were excluded. We excluded any studies into the persistence or growth of PTSD. Those studies in which the exposure-outcome association was quantified, e.g., in terms of effect sizes such as a hazard ratio (HR), relative risk (RR) or odds ratio (OR), were included. We restricted ourselves to original articles, in English or Dutch, published in peer-reviewed scientific journals from 2005 onwards. Studies with a prospective, retrospective or case-control longitudinal design were included, while cross-sectional studies were excluded, to be able to monitor the time sequence between exposure and the PTSD onset, in which the assessments of exposure precede the actual onset of the disorder. The above-mentioned set of criteria were finalised after a pilot screening of 300 references.

Data extraction and risk of bias assessment

Two reviewers, working independently of one another, extracted data and assessed risk of bias from each of the eligible articles. Any conflicts were resolved during a consensus meeting. We extracted first author and year of publication, study name and design, sample (country, occupational group,

age and sex), exposure assessment, PTSD ascertainment, and effect size. Where it was not possible to retrieve sufficient information from the published articles, additional data were requested from study researchers.

Risk of bias was assessed using the 'Quality in Prognosis Studies' tool¹⁵, with criteria related to study participation, attrition, prognostic factor (i.e., exposure) measurements, outcomes, confounding, and statistical analysis. Here, we attributed a low risk of bias regarding attrition to studies with a >80% participant retention.

Data analysis

The included articles were described in terms of extracted data and risk of bias. Work-related exposures were categorised according to the DSM-5 criteria for PTSD stressors²: 1) direct exposure to the trauma, 2) witnessing a trauma, 3) hearing about a colleague/co-workers (adapted to work context) was/were exposed to a trauma, or 4) indirect exposure to aversive details of a trauma (e.g., first responders and medics).

Where sufficient clinically and methodologically homogeneous information were available, a quantitative meta-analysis was conducted to determine a pooled effect size for the association of each exposure with PTSD. Review Manager (RevMan 5) was used for the meta-analyses, and to generate forest and funnel plots. The latter were used to assess publication bias, through visual inspection. According to the Cochrane collaboration handbook, funnel plots were only generated for exposures with effect sizes from ≥10 studies¹6. Most of the exposure-outcome associations featured statistical heterogeneity (I²>75%), so random-effects estimates were adopted for statistical pooling. We assumed that the interpretation of effect estimates (e.g., HR and OR) was consistent, and we estimated pooled OR with 95% confidence interval (95%CI). We adopted the OR, as this was the most frequently reported effect size in the articles found (being reported in 32 articles, whereas two articles reported HRs and three articles reported RRs).

When more than one article reported on the same study, information from just one of these articles was used for analyses, using effect sizes from the article with the shortest follow-up duration (with a latency time of at least four weeks) to ensure that the work-related exposure of interest is indeed the most likely cause of PTSD. Wherever possible, we used information from fully adjusted models and we did not consider subgroups (e.g., sex differences). Population attributable fractions (PAFs) were estimated¹⁷ to assess the extent to which work-related exposures contributed to the development of PTSD. Here, the proportion of workers exposed to the exposure of interest (P_e) were multiplied by the attributable proportion in the exposed workers: $P_e(OR-1)/(1+P_e(OR-1))$.

In line with our registered protocol¹³, subgroup analyses were based on the risk of bias (with a cut-off score of 60% for the risk of bias scale summary score, to obtain two subgroups), on the study design (prospective vs retrospective) and on PTSD ascertainment (clinically diagnosed PTSD vs probable PTSD). In contrast to the protocol that we registered a-priori,¹³ we were unable to compare other characteristics of PTSD (i.e., acute vs delayed) due to limited available data. Any information that could not be qualitatively analysed was described narratively.

Strength of evidence

The strength of the evidence was assessed using the GRADE (Grades of Recommendations, Assessment, Development and Evaluation) framework¹⁸. Four quality levels were distinguished: high, moderate, low, and very low. Our starting point for evidence grading was 'moderate', which has previously been proposed for use in the assessment of prognostic factors¹⁹. Various study limitations

could have detracted from the strength of the evidence (if the majority of the studies scored <60% on the risk of bias scale), as could inconsistency (I²>50%), indirectness, imprecision (95%CI boundaries are <1 and >2), and publication bias (based on the funnel plots). Study findings with moderate or large effect sizes (i.e., lower limit of 95%CI OR>2.0) or an exposure-response gradient could boost the quality of the evidence.

Patient and public involvement

There was no patient or public involvement in designing and conducting this study.

Results

Study selection

The study selection procedure is described in Figure 1. We identified 14,529 records during database searches. After discarding duplicates, we screened the remaining 8,590 records on title and abstract. Of these, we assessed 107 full text articles and excluded 65 for various reasons (see Supplementary file 2 for more details). As no additional articles were found during snowball and scoping searches, 42 articles from 33 studies were described in this review²⁰⁻⁶¹.

Study description and methodological quality/risk of bias

Supplementary file 3 contains the extracted data, and risk of bias assessment is shown in supplementary file 4-5. The 33 included studies provided data on n=5,719,236 participants, ranging from n=19 to n=2,549,949 participants per study. Eighteen studies were from the US, four were from the United Kingdom, two were from Denmark, and two others from Japan. There was one study from each of the following countries: Israel, The Netherlands, Germany, Portugal, Italy, Norway and Korea. The majority of the studies (N=21) involved participants from armed forces. Five studies featured first responders who had attended the scene of a disaster, three focused on healthcare workers, two on employers at the scene of a disaster, one on bank workers and one on public transport workers.

Four studies reported no details of sex, five studies only used male participants, and 17 used samples in which the majority of participants were male (≤20% females). In only seven studies, did female participants make up a reasonable proportion (>20%) of the study sample. Twenty-eight studies reported exposures obtained from self-reports, 12 studies used deployment administration databases, and two studies were based on a combination of these two measurements. Baseline exposure assessment was carried out for the period 1983-2012. Twenty-five articles assessed PTSD (by clinical diagnosis) while the remaining 17 articles assessed probable PTSD/PTSD symptoms (by self-reports using pre-defined (e.g., DSM-5) criteria). The weighted average for PTSD prevalence during in the follow-up periods was 7.3%, while individual study prevalence ranged from 1.0% to 70.5%. The average prevalence for diagnosed cases of PTSD was slightly higher (7.3%) than for probable PTSD (6.4%).

Twenty-five studies were prospective studies and eight were retrospective studies. On average, methodological quality was 62% (SD:19%), ranging from 25% to 100%. Most articles showed a low risk of bias on analysis/reporting (N=37) and confounding (N=25). Less than half of the articles showed a low risk of bias on participation selection (N=11), attrition (N=9), prognostic factor (exposure) assessment (N=9) and outcome (PTSD) ascertainment (N=13).

Work-related exposures

Each of the exposure-outcome associations presented have been described and categorised according to the DSM-5 criteria for PTSD stressors²: 1) direct exposure, 2) witnessing a trauma, 3) hearing that a colleague or co-worker was exposed to a trauma, or 4) indirect exposure to aversive details of a trauma. An overview of qualitative and quantitative analyses of all exposure-outcome associations is shown in Table 1. Figures 2 and 3 depict quantitative analyses, while Table 2 contains an overview of any exposure-outcome associations that could not be statistically pooled.

Direct exposure

The exposure-outcome associations for direct exposures were quantitatively analysed for: number of army deployments (OR[95%CI]: 1.15[1.14 1.16], I²=0%, n=333,024, Figure 2), combat exposure

(OR[95%CI]: 1.89[1.46 2.45], I²=89%, n=28,304, Figure 2) and army deployment (OR[95%CI]: 1.79 [1.45 2.21], I²=0%, n=11,023, Figure 3). The PAFs for these exposures were 7%, 14% and 34%, respectively. Evidence for these exposure-outcome associations was moderate, very low, and low quality, respectively. In some cases, the evidence was downgraded due to high risk of bias and inconsistency. There was some evidence for publication bias, although it was only possible to assess that for the 'combat exposure' variable (Supplementary file 6). Subgroup analyses based on risk of bias (Supplementary file 7-9), study design (Supplementary file 10-12) and PTSD ascertainment (Supplementary file 13-15) showed no statistically significant differences between effects for those subgroups.

In our qualitative analyses of exposures that could not be statistically pooled, we found exposure-outcome associations for exposures related to undergoing a traumatic event, cumulative exposure and the severity of exposure (Table 2). With regard to undergoing a traumatic event, the effect sizes ranged from OR[95%CI]: 0.86[0.32 2.28] (physical contacts with thieves)³⁴ to OR[95%CI]: 5.65[3.27 9.74] (workers fleeing from a tsunami)⁴². Cumulative exposure was e.g. expressed in length of deployment³⁷ (OR[95%CI]: 0.97[0.92 1.03]) and high frequency of violence (compared to no violence)⁵⁵ (OR[95%CI]: 6.5[1.6 25.6]). The effect sizes for exposure severity ranged from OR[95%CI]: 1.01[0.67 1.35] (severity of battles)⁴⁵ to OR[95%CI]: 6.5[1.6 26.0] (severe compared to no violence)⁵⁵

Witnessing a trauma

With regard to the DSM-5 criterion 'witnessing a trauma', there was insufficient homogeneous data to pool studies statistically (Table 2). In five studies (with n=4,876 participants), effect sizes ranged from OR[95%CI]: 1.01[0.63 1.64] ('perceiving a life threat')⁵⁶ to OR[95%CI]: 9.3[6.1 14.2] ('being present during an attack')³⁸.

A colleague or co-worker was exposed to a trauma

Only one study (n=980) reported on effect sizes regarding 'colleague or co-worker exposed to a trauma'. This study, among public transport workers, found that 'hearing that a close colleague had suffered a person under train experience' was not significantly association with PTSD (OR[95%CI]: 0.55[0.12 2.47])⁴⁶

Indirect exposure to aversive details

Regarding indirect exposure to adverse events, we statistically pooled the effect sizes from seven studies (n=75,902 participants) with moderate-quality evidence for an association between confrontation with death and PTSD (Figure 3; OR[95%CI]: 1.63[1.41 1.90]). Subgroup analyses regarding risk of bias (Supplementary file 16), study design (Supplementary file 17) and PSTD ascertainment (Supplementary file 18) showed no statistically significant differences between any of those subgroups.

Additional evidence from four studies (n=14,085 participants), which could not be statistically pooled, showed effect sizes ranging from OR[95%CI]: 1.03[1.00 1.06] (being exposed to the aftermath of a battle)³⁷ to OR[95%CI]: 4.0[2.5 6.6] (being present during the morning of the 9/11 attacks)²⁷.

Other exposures

We found additional evidence that could not be categorised into any of the DSM-5 criteria. An increased risk of PTSD was associated with experiencing stress, with evidence ranging from

OR[95%CI]: 1.01[0.98 1.04] (deployment concerns)²⁸ to OR[95%CI]: 3.52[2.94 4.21] (high deployment stress)²¹. Also, the time that has passed since a given traumatic event seems to be associated with PTSD. This factor can either reduce the PTSD risk (OR[95%CI]: 0.47[0.32 0.70] with a longer dwell time between deployments)⁴⁸ or increase it (OR[95%CI]: 1.89[0.99 3.60] if the period since the return from deployment exceeds 6.5 years)³². Other exposures included experiencing discrimination at work (OR[95%CI]: 5.72[3.37 9.71])⁴² and having to perform duties that involved a risk of radiation exposure (OR[95%CI]: 1.08[0.97 1.20])⁵³.



Discussion

In this systematic review with meta-analysis and evidence grading, we found various associations, albeit based on moderate-quality evidence at best, showing that several work-related exposures are associated with PTSD development. This includes exposures such as the number of army deployments, combat exposure, army deployment and confrontation with death. The corresponding effect sizes ranged from 1.15[1.14 1.16] to 1.89[1.46 2.45] and PAFs varied from 7% (for the number of army deployments) to 34% (for army deployment). The latter values indicate the proportion of PTSD cases that could potentially be avoided in a working population, if the exposure in question were to be totally eliminated. The data suggests that there could be an only moderate relationship between PTSD and work situations. However, they could also indicate that PTSD cannot be attributed to a single work-related exposure and that it is multi-factorial in nature and/or is mediated by other factors. This could, perhaps, also account for the relatively low ORs found for some of the effects.

Only a limited data, which could not be statistically pooled, was available concerning exposures that corresponded to the DSM-5 criteria 'witnessing a trauma' and 'hearing that a colleague/coworker was exposed to a trauma'. These exposures include 'perceiving a life threat', 'being present during an attack', and 'hearing that a close colleague had suffered a person under train experience'. The additional exposures that could not be categorised according to DSM-5 criteria include 'military deployment', 'deployment stress', and 'time since return from deployment'. In future, it may be worth considering exposures of this kind when diagnosing work-related PTSD.

The details uncovered by this review are key to a better understanding of work-related causes of PTSD, to the selection or development of preventive interventions, and to the identification of thresholds for occupational health guidelines. This review has updated earlier work^{7 9} and we are the first to quantify the association between work-related exposures and PTSD. This update identifies occupational groups and exposures that do not feature in previous reviews, such as public transport workers⁴⁶ and bank workers (being exposed to robberies)³⁴.

Although the prevention of occupational diseases, including PTSD, is preferable, not all risks can be fully eliminated as witnessing traumatic events, disasters and war situations are likely to remain present in our working situations. In the working environment it is also important to attenuate the impact of exposures on workers or to treat them when having developed work-related PTSD. In the current review we also identified work-related factors that can reduce the risk of PTSD, which can be helpful to attenuate the impact of stressful exposures. For instance, among highly exposed occupational groups, a high level of preparedness (OR[95%CI]: 0.6[0.4 0.9])⁶², unit support (OR[95%CI]: 0.5[0.3 0.8])⁶², post-deployment support (OR[95%CI]: 0.3[0.2 0.4])⁶² and social support (OR[95%CI]: 0.96[0.93 0.98])³⁷ were all found to be associated with a reduced risk of PTSD. These elements can be used in the development of interventions, especially for those in occupations that involve high PTSD risks.

Methodological strengths and limitations

The strengths of this review are the systematic methods used plus a protocol that was registered apriori, the systematic review with meta-analysis, and the assessment of evidential quality using GRADE¹⁸. The findings appear to be quite robust, since subgroup analyses based on risk of bias, study design and PTSD ascertainment produced results that did not differ between any of those subgroups. Moreover, the PAFs estimated in our study provide insight into the extent to which the identified exposures were occupationally related to PTSD. We deviated from our a-prior registered protocol¹³ in that we were unable to compare different PTSD diagnoses (acute vs delayed). In our meta-analysis, we used effect sizes from the article with the shortest follow-up duration (with a latency time of at least four weeks). There were, however, also data available from few studies measuring both the short-term and long-term effects of exposure and their association with PTSD. For example, 'being present during a terrorist attack' was strongly associated with PTSD in the acute phase (after 10 months; OR[95%CI]: 9.3[6.1 14.2]), but this association was even stronger in the long term (after 34 months; OR[95%CI]: 10.0[5.4 18.6])³⁸. Regarding 'being exposed to combat', the opposite was true. Stronger effects were seen in short term (OR[95%CI]: 2.91[1.34 6.31]) than long term (OR[95%CI]: 2.42[1.04 5.62])³⁹. This is in line with another review indicating that, following exposure, the risk of PTSD attenuates over time⁷.

Another potential source of heterogeneity stems from the method used to ascertain PTSD. In 25 articles, PTSD was assessed by clinical diagnosis while 17 articles assessed probable PTSD/PTSD symptoms, based on self-reports using pre-defined (e.g., DSM-5) criteria. We found that the average prevalence was slightly higher for diagnosed PTSD (7.3%) than for probable PTSD (6.4%). This is in line with a study of disaster workers, following the 9/11 attacks, in which 2-9% had probable self-reported PTSD, respectively³¹. However, 6-15% of these workers were diagnosed with PTSD. Nevertheless, our pooled effect sizes were robust across different methods for ascertaining PTSD. While ascertaining PTSD by clinical diagnosis may be more valid, this source of heterogeneity is unlikely to have substantially affected the findings presented. We have only assessed incidence of PTSD. Accordingly, this review does not address the persistence or growth of PTSD. Future studies should, therefore, focus on different types of PTSD diagnoses. They should also assess the work-relatedness of PTSD persistence and growth, as an aid to the development of occupational health guidelines.

One limitation of our study is that the majority of the studies in this review were based on participants from armed forces (N=21) and first responders (N=5). There was limited information on other occupations, such as public transport workers, bank employees and healthcare workers. Furthermore, most studies of the armed forces and of first responders tend to be male dominated and from Western countries. Future research should address these issues, by assessing previously unexplored occupational sectors and groups, as well as data from other countries. In this review we only included longitudinal studies in which the exposure would proceed the outcome, as a result of which a better inference of causality can be provided than with cross-sectional studies only. Moreover, we focussed in our review on articles published from 2005 onwards. This cut-off was based on changes in people's exposure to work-related traumatic events and changes to the definition of PTSD over time².

While our use of the GRADE framework provides an adequate way to assess quality of the evidence, it does not necessarily provide insights into causation of the association of work-related exposures and PTSD, for which other approaches such as the Bradford Hill criteria⁶³ could be used. It has been argued that the majority of the Bradford Hill criteria are to some extent incorporated in GRADE, such as the strength and consistency of the association⁶⁴. Other criteria, such as that of the biological plausibility are not well covered nor are they in the current review evidence regarding work-related PTSD. Future studies should therefore aim at providing more insights into this, to further build the evidence base around work-related PTSD and the biology of risk for PTSD⁶⁵. Although methodological quality of the included studies was of an acceptable level (62%, on average), the quality of the evidence was rated moderate at best. More than half of the articles showed a risk of bias with regard to participation (i.e., selection bias), attrition (with <80% of the

participants being retained during the follow-up period), and misclassification due to a limited assessment of the prognostic factors (i.e., exposure) and the outcome of interest. As mentioned above, the ascertainment of PTSD is unlikely to have caused a substantial bias in our findings. However, exposures were often measured by means of self-reports, which may well have biased our findings. In addition, the quality of the evidence was downgraded due to inconsistency for some of the exposures. Our assessment of publication bias was limited to just one of the pooled exposures. It appeared, however, that none of the studies had published or registered their protocol, which could have caused publication bias.



Conclusion

In this systematic review with meta-analysis of 33 studies (with n=5,719,236 participants), based on moderate quality evidence at best, we identified a number of work-related exposures (mainly involving individuals in the armed forces and in first responder occupations) that increase the risk of PTSD (by 15% to 89%). These exposures include 'number of army deployments', 'combat exposure', 'army deployment' and 'confrontation with death', for which we found a moderate contribution to the development of PTSD. We identified additional exposures in other occupations, such as bank workers, public transport workers, and medics. These included 'life threats', 'being present during an attack' and 'hearing about a colleague's trauma'. Although exposure assessment, PTSD ascertainment and inconsistency may have biased our findings, the results of this review are quite robust and are of importance for the development of preventive interventions and occupational health guidelines.

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Author contribution

Both authors (PC and HvdM) designed the study and reviewed the manuscript for important intellectual content. Both authors identified relevant articles and conducted data extraction and analyses together. PC drafter the first version of the manuscript. HvdM is the study guarantor.

Data sharing

All data relevant to the study are included in the article and supplementary documents.

Study ethics

Not applicable as this study is a systematic review

Competing interests

The authors declare no competing interests

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Data sharing

Additional data is provided in the supplementary files.

Ethical approval

As this is a systematic review, no ethical approval is required

Patient consent

As this is a systematic review, no patient consent is required

Table 1. Overview of the evidence from both qualitative and quantitative analyses, with exposures categorised according to DSM-5 criteria. For exposures for which quantitative analyses could be performed (Figure 2 and 3), quality of the evidence for the relationship between work-related exposures and PTSD according to the GRADE framework is shown. Other exposures are described qualitatively (Table 2).

DSM-5 criterion	Exposure	N	n	Limit ¹	Incons ²	Indirect ³	Imprec ⁴	Pub bias ⁵	OR [95%CI] ⁶ 25	Grad ⁷	GRADE	PAF	Reference
Direct exposure	Number of army deployments ⁸	3	333,024	No	0%	No	No	N/A	1.15 [1.14 1.16]	No	Moderate	7%	Figure 2
	Combat exposure	11	28,304	Yes	89%	No	No	Yes	1.89 [1.46 2.45]	No	Very low	14%	Figure 2
	Army deployment ⁹	4	11,023	Yes	0%	No	No	N/A	1.79 [1.45 2.21]	No	Low	34%	Figure 3
	Undergoing a traumatic event	13	1,703,107	-	-	-	-	-	Min: 0.86 [0.32 2 28] Max: 5.65 [3.27 5 .74]	-	-		Table 2
	Cumulative exposure	8	1,749,762	<i>-</i> /~ ,	-	-	-	-	Min: 0.97 [0.92 $\frak{3003}$] Max: 6.5 [1.6 25 $\frak{300}$]	-	-		Table 2
	Exposure severity	3	2,558	-		-	-	-	Min: 1.01 [0.67 135] Max: 6.5 [1.6 269]	-	-		Table 2
Witnessing trauma	-	5	4,876	-	-50	-	-	-	Min: 1.01 [0.63 164] Max: 9.3 [6.1 142]	-	-		Table 2
Colleague exposed ¹⁰	-	1	980	-	-	- /-	-	-	0.55 [0.12 2.47]	-	-		Table 2
Indirect exposure	Confrontation with death	7	75,902	No	46%	No	No	N/A	1.63 [1.41 1.90]	No	Moderate	15%	Figure 3
		4	14,085	-	-	-	1/6	7	Min: 1.03 [1.00 3 06] Max: 4.0 [2.5 6.6]	-	-		Table 2
Other exposures	Stress	4	1,390,641	-	-	-	-	-	Min: 1.01 [0.98 104] Max: 3.52 [2.94 4.21]	-	-		Table 2
·	Time since event	3	1,358,468	-	-	-	-	-	Min: 0.47 [0.32 6 70] Max: 1.89 [0.99 3 60]	-	-		Table 2
	Other	3	69,176	-	-	-	-	-	Min: 1.08 [0.97 120] Max: 5.72 [3.37 2,71]	-	-		Table 2

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¹ Limitation: downgraded if the majority of studies score lower than 60% on the risk of bias scale. ² Inconsistency: downgrade if l²≥50%.

³ Indirectness: downgrade if indirectness is present. ⁴ Imprecision: downgrade if the 95% confidence interval is <1 and >2.

Indirectness: downgrade if indirectness is present. Imprecision: downgrade if the 95% confidence interval is <1 and >2.
 Publication bias: downgraded if publication bias is present (based on the funnel plots). Effect size: upgrade if the lower limit of the 95% confidence interval is >2.0.

⁷ Gradient: upgraded if there is a dose-response gradient available.

⁸ Depicting the effect of being deployed more than once, as compared to being deployed once.

⁹ Depicting the effect of being deployed, as compared to not being deployed.

¹⁰ For this study on occupational exposures, the DSM-5 criterion 'relative/friend' was adapted to 'colleague or co-worker'.

Table 2. Overview of all exposure-outcome effect sizes from qualitative analyses, with exposures categorised according to DSM-5 criteria. Odds ratios (OR) with 95% confidence intervals (95%CI) are shown.

DSM-5 criterion	Exposure category	Exposure	Effect size (OR [95%CI])
Direct exposure	Undergoing	Work-related threats ²⁰	1.10 [1.04 1.15]
	an event	Work-related violence ²⁰	1.02 [0.98 1.06]
		Previous disaster experience ²³	1.4 [1.2 1.6]
		One injury sustained during the 9/11 attacks ²⁹	1.1 [0.6 2.0]
		Two or more injuries sustained during the 9/11 attacks ²⁹	1.4 [0.6 3.4]
		Participation in abusive violence ³³	3.32 [1.81 6.08]
		Robberies during working life ³⁴	1.18 [0.97 1.44]
		Physical contacts with robbers ³⁴	0.86 [0.32 2.28]
		Scuffle [taking part or being present] ³⁴	1.92 [0.63 5.79]
		Being injured during the robbery ³⁴	1.28 [0.31 5.21]
		Discharged weapon on deployment ³⁶	1.48 [0.61 3.60]
		Experience of life-threatening danger ⁴²	4.32 [2.89 6.48]
		Major property loss ⁴²	3.45 [2.28 5.23]
		Escape from tsunami ⁴²	5.65 [3.27 9.74]
		Life threatening war ⁴⁵	
		-	1.91 [1.07 3.24]
		Conflict with passengers ⁴⁶	3.21 [1.14 9.03]
		Felt in great danger of being killed ⁴⁸	3.44 [2.50 4.72]
		Exposure to blast ⁵⁰	4.72 [2.9 7.7]
	C 1. 11	Encountering explosive devices ⁵⁴	1.26 [0.95 1.66]
	Cumulative	Prolonged work at the WTC site ²³	2.0 [1.7 2.3]
	exposure	Length of deployment ³⁷	0.97 [0.92 1.03]
		≥5 critical cases per call for traumatic surgeons ⁴³	7 [1.1 8]
		≥7 call duties a month for traumatic surgeons ⁴³	3.8 [0.9 7.2]
		≥15 operative cases per month ⁴³	2.8 [0.4 3.2]
		Cumulative years deployed in navy ⁴⁷	2.04 [1.93 2.15]
		Cumulative years deployed in army ⁴⁷	1.74 [1.71 1.76]
		No. of Combat Exposures ⁴⁸	1.62 [1.46 1.79]
		Two combat exposure deployment ⁴⁸	1.37 [1.17 1.61]
		Three combat exposure deployment ⁴⁸	1.30 [0.94 1.82]
		Two deployments ⁴⁸	1.00 [1.00 1.01]
		Three deployments ⁴⁸	1.00 [0.99 1.01]
		One exposure (compared to no exposure)50	4.67 [3.1 7.1]
		Two or more deployments (compared to no exposure) ⁵⁰	6.15 [4.4 8.7]
		Deployment length 1–3 months ⁵³	1.53 [1.37 1.70]
		Deployment length ≥3 months ⁵³	2.64 [2.33 2.99]
		Low frequency of violence (compared to no violence) ⁵⁵	4.0 [1.0 16.3]
		Medium frequency of violence (compared to no violence) ⁵⁵	5.9 [1.4 24.2]
		High frequency of violence (compared to no violence) ⁵⁵	6.5 [1.6 25.6]
	Exposure	Combat exposure scale ³³	1.98 [1.50 2.62]
	severity	Severity of battles ⁴⁵	1.01 [0.67 1.35]
	Severity	Max. mild violence (compared to no violence) ⁵⁵	3.8 [0.3 46.2]
		Max. threats of violence (compared to no violence) ⁵⁵	5.4 [1.2 24.2]
		Max. moderate violence (compared to no violence) ⁵⁵	2.6 [0.6 10.8]
		Max. severe violence (compared to no violence) ⁵⁵	6.5 [1.6 26.0]
Mitnossina tha		Perceived life threat ⁵⁶	
Witnessing the			1.01 [0.63 1.64]
trauma		Observation of abusive violence ³³	8.36 [4.56 15.35
		Presence during attack ³⁸	9.3 [6.1 14.2]
		Witnessing of plant explosions ⁴²	2.09 [1.43 3.06]
		Person under train experience ⁴⁶	1.54 [0.52 4.55]
		One person under train experiences ⁴⁶	1.77 [0.31 4.47]
		Two or more person under train experiences ⁴⁶	2.36 [0.57 9.70]
		Sudden train stop ⁴⁶	3.66 [0.82 16.4]
		Near train accident ⁴⁶	8.81 [1.96 39.3]

		Damage to train ⁴⁶	1.71 [0.48 6.14]
Colleague exposed		Person under train experience of colleague ⁴⁶	0.55 [0.12 2.47]
Indirect exposure		Aftermath of battle ³⁷	1.03 [1.00 1.06]
to aversive details		Morning of 9/11 (compared to >3 days) ²⁷	4.0 [2.5 6.6]
		Afternoon of 9/11 (compared to >3 days) ²⁷	2.1 [1.3 3.3]
		Day 2 (compared to >3 days) ²⁷	1.4 [0.9 2.4]
		Morning of 9/11 (compared to >3 days) ²³	2.0 [1.3 2.9]
		Afternoon of 9/11 (compared to >3 days) ²³	1.1 [0.8 1.5]
		Exposure to aftermath of battle ⁵⁶	1.81 [1.08 3.06]
Other exposures	Stress	High deployment stress ²¹	3.52 [2.94 4.21]
		Deployment concerns summary score ²⁸	1.01 [0.98 1.04]
		Worried by other issues related to robbery ³⁴	2.64 [0.95 7.36]
		Unit cumulative high deployment stress rate (marine) ⁴⁷	1.04 [1.03 1.05]
		Unit cumulative high deployment stress rate (army) ⁴⁷	1.05 [1.04 1.06]
	Time since	Months since most recent deployment ²⁸	1.00 [0.98 1.02]
	event	Time since return from deployment (up to 2 years) ³²	1.18 [0.75 1.86]
		Time since return from deployment (up to 3 years) ³²	1.80 [1.05 3.10]
		Time since return from deployment (up to 4 years) ³²	1.88 [0.98 3.62]
		Time since return from deployment (up to 5 years) ³²	1.53 [0.92 2.55]
		Time since return from deployment (up to 6.5 years) ³²	1.89 [0.99 3.60]
		Dwell to deployment ratio (1:1 versus <1:1)48	0.83 [0.60 1.13]
		Dwell to deployment ratio (2:1 versus <1:1)48	0.47 [0.32 0.70]
	Other	Supervising responsibilities ²³	2.2 [1.7 2.9]
		Discrimination/slurs ⁴²	5.72 [3.37 9.71]
		Duties with radiation exposure risk ⁵³	1.08 [0.97 1.20]

Figure caption

Figure 1. Flow chart depicting the search for literature.

Figure 2. Study findings (i.e., effect sizes) for articles reporting on the association of number of army deployments (depicting the effect of being deployed more than once, as compared to being deployed once; upper panel) and combat exposure (lower panel) with PTSD. Individual study as well as pooled effects are presented. SE = standard error; CI = confidence interval; IV = Inverse variance.

Figure 3. Study findings (i.e., effect sizes) for articles reporting on the association of deployments status (depicting the effect of being deployed, as compared to not being deployed; upper panel) and confrontation with death (lower panel) with PTSD. Individual study as well as pooled effects are presented. SE = standard error; CI = confidence interval; IV = Inverse variance.



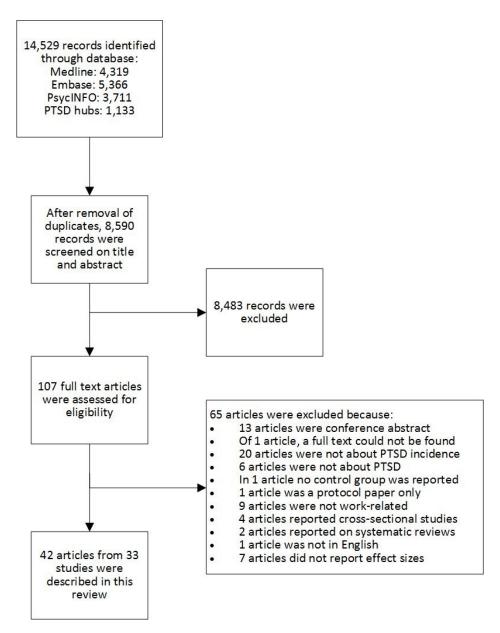
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Flow chart depicting the search for literature.

101x130mm (200 x 200 DPI)

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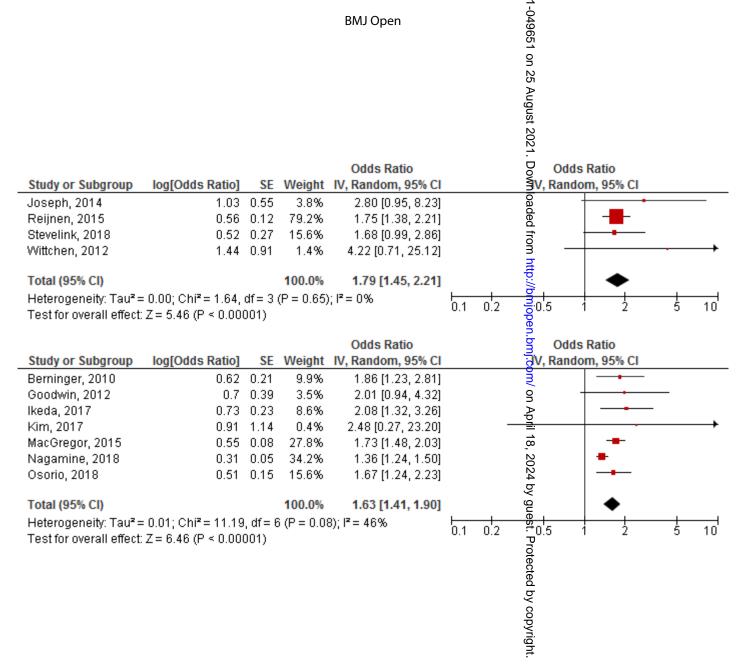
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Supplementary file 1

Sup	olementary file 1. Ovid MEDLINE(R) ALL <1946 to September 09, 2019>. Search date: 10 September 2019	
#	Search	Results
1	stress disorders, post-traumatic/ or stress disorders, traumatic, acute/	30925
2	(acute stress or (asd and stress) or ptsd or ptss or posttraumatic stress or post traumatic stress or acute stress disorder or posttraumatic symptom? or post traumatic symptom? or traumatic stress).ab,kf,ti,sh.	42697
3	(htsq or trauma screen* or (trauma screen* and stress)).ab,kf,ti. [trauma screening zoals de Harvard Trauma Screening Questionnaire - htsq]	160
4	or/1-3 [ptsd]	51153
5	exp Occupations/ or Workload/ or exp Work/ or Workplace/ or exp Occupational Diseases/ or Rehabilitation, Vocational/ or Occupational Health/ or Sick Leave/ or Absenteeism/ or Retirement/ or workers' compensation/ or exp Employment/ or exp Occupational Exposure/ or Volunteers/	361332
6	(worka* or worke* or workg* or worki* or workl* or workp* or work capacity or work disabilit* or work abilit* or at work or work exposure or work related or workers or job* or employee or staff or personnel or occupation or occupations or occupational or outdoor work* or day shift* or night shift* or shift work* or vocational rehabilitation or sick leave or absenteeism or sickness absen* or absente* or presente* or "return to work" or vocational reintegration or retirement or pension or employment or unemployed or unemployment or work status or industries or industrial sector or volunteer* or voluntary worker* or repetitive work).ab,kf,ti.	2038626
7	exp "personnel, hospital"/ or exp emergency responders/	100417
8	(residents or emergency responder? or first responder? or firefighter? or fire fighter? or Police officer? or emergency medicals or Armed forces or paramedics or veterans or Journalist?).ab,kf,ti.	147998
9	or/5-8 [work]	2360997
10	Epidemiologic studies/	8073
11	exp case control studies/	1016792
12	exp cohort studies/	1894888
13	Case control.tw.	118051
14	(cohort adj (study or studies)).tw.	183886
15	Cohort analy\$.tw.	7241
16	(Follow up adj (study or studies)).tw.	47481
17	(observational adj (study or studies)).tw.	95892
18	Longitudinal.tw.	227916
19	or/10-17 [observationele- en longitudinale studies]	2269321
20	(risk or predict*).mp.	3563653
21	19 or 20	4936872
22	and/4,9,21	6387
23	limit 22 to yr="2010-current"	4319

	Ovid Embase Classic+Embase <1947 to 2019 September 09>. Search date: 10 September 2019		
#	Search	Results	
1	*posttraumatic stress disorder/ or *acute stress disorder/	30071	
2	(acute stress or (asd and stress) or ptsd or ptss or posttraumatic stress or post traumatic stress or acute stress disorder or posttraumatic symptom? or post traumatic symptom? or	56167	

	traumatic stress).ab,kw,ti.	
3	(htsq or trauma screen* or (trauma screen* and stress)).ab,kw,ti.	199
4	or/1-3 [ptsd]	60673
5	exp *Occupation/ or exp *occupational health/ or exp *work/ or *Volunteer/ or exp *named groups by occupation/	907358
6	(worka* or worke* or workg* or worki* or workl* or workp* or work capacity or work disabilit* or work abilit* or at work or work exposure or work related or workers or job* or employee or staff or personnel or occupation or occupations or occupational or outdoor work* or day shift* or night shift* or shift work* or vocational rehabilitation or sick leave or absenteeism or sickness absen* or absente* or presente* or "return to work" or vocational reintegration or retirement or pension or employment or unemployed or unemployment or work status or industries or industrial sector or volunteer* or voluntary worker* or repetitive work).ab,kw,ti.	3266921
7	exp *hospital personnel/ or rescue personnel/	46527
8	(residents or emergency responder? or first responder? or firefighter? or fire fighter? or Police officer? or emergency medicals or Armed forces or paramedics or veterans or Journalist?).ab,kw,ti.	195059
9	or/5-8 [work]	3981638
10	*Clinical study/	56379
11	*Case control study/	6905
12	*Family study/	2834
13	*Longitudinal study/	7151
14	*Retrospective study/	19751
15	*Prospective study/	21494
16	Randomized controlled trials/	168154
17	15 not 16	21378
18	*Cohort analysis/	26124
19	(Cohort adj (study or studies)).mp.	275760
20	(Case control adj (study or studies)).tw.	126673
21	(follow up adj (study or studies)).tw.	66352
22	(observational adj (study or studies)).tw.	151582
23	(epidemiologic\$ adj (study or studies)).tw.	106051
24	or/10-15,17-23	799536
25	(risk or predict*).mp.	5152294
26	24 or 25	5545704
27	and/4,9,26	7053
28	limit 27 to yr="2010-current"	5366

	Ovid PsycINFO <1806 to September Week 1 2019>. Search date: 10 September 2019				
#	Search	Results			
1	posttraumatic stress disorder/ or acute stress disorder/	31361			
2	(acute stress or (asd and stress) or ptsd or ptss or posttraumatic stress or post traumatic stress or acute stress disorder or posttraumatic symptom? or post traumatic symptom? or traumatic stress).ab,id,ti.	49013			
3	(htsq or trauma screen* or (trauma screen* and stress)).ab,id,ti,tm.	292			
4	or/1-3 [ptsd]	50242			

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5	exp occupations/ or exp occupational health/ or occupational status/	59891
6	(worka* or worke* or workg* or worki* or workl* or workp* or work capacity or work disabilit* or work abilit* or at work or work exposure or work related or workers or job* or employee or staff or personnel or occupation or occupations or occupational or outdoor work* or day shift* or night shift* or shift work* or vocational rehabilitation or sick leave or absenteeism or sickness absen* or absente* or presente* or "return to work" or vocational reintegration or retirement or pension or employment or unemployed or unemployment or work status or industries or industrial sector or volunteer* or voluntary worker* or repetitive work).ab,id,ti.	866191
7	exp medical personnel/ or exp emergency personnel/	89105
8	(residents or emergency responder? or first responder? or firefighter? or fire fighter? or Police officer? or emergency medicals or Armed forces or paramedics or veterans or Journalist?).ab,id,ti.	68300
9	or/5-8 [work]	972972
10	(Clinical stud* or Case control stud* or Longitudinal stud* or Retrospective stud* or (Prospective stud* not (Randomized controlled trials or rct)) or Cohort analysis or (Cohort adj (study or studies)) or (Case control adj (study or studies)) or (follow up adj (study or studies)) or (observational adj (study or studies)) or (epidemiologic\$ adj (study or studies))).ab,id,ti.	136663
11	(risk or predict*).mp.	730689
12	10 or 11	808563
13	and/4,9,12	5417
14	limit 13 to yr="2010-current"	3711

	ProQuest PTSDhubs. Search date: 10 September 2019	
#	Search	Results
1	(su((worka* OR worke* OR workg* OR worki* OR workl* OR workp* OR work capacity OR work disabilit* OR work abilit* OR at work OR work exposure OR work related OR workers OR job* OR employee OR staff OR personnel OR occupation OR occupations OR occupational OR outdoor work* OR day shift* OR night shift* OR shift work* OR vocational rehabilitation OR sick leave OR absenteeism OR sickness absen* OR absente* OR presente* OR "return to work" OR vocational reintegration OR retirement OR pension OR employment OR unemployed OR unemployment OR work status OR industries OR industrial sector OR volunteer* OR voluntary worker* OR repetitive work)) OR su((residents OR emergency responder? OR first responder? OR firefighter? OR fire fighter? OR Police officer? OR emergency medicals OR Armed forces OR paramedics OR veterans OR Journalist?))) AND (su(risk OR predict*) OR su((Clinical stud* OR Case control stud* OR Longitudinal stud* OR Retrospective stud* OR (Prospective stud* NOT (Randomized controlled trials OR rct)) OR Cohort analysis OR Cohort stud* OR Case control stud* OR observational stud* OR epidemiologic stud*)))	1849
2	Limit 1 to publication date = 2010-01-01 / 2019-09-10	1133

Supplementary file 2. Excluded articles

Jup	prementary file 2. Excluded difficies	Reason for	No
Art	icle	exclusion	papers
1.	Amiri T. Occupational posttraumatic stress disorder: Latent structure and risk pathways. 2019, Dissertation Abstracts International, 80(4).	Conference abstract	1
2.	Chin WS, Shiao JSC, Liao SC, Kuo CY, Chen CC, Guo YL. Psychiatric diseases at six years after occupational injuries. 2016. Occupational and Environmental Medicine, 73: A175.	Conference abstract	2
3.	Connorton E, Miller M, Perry MJ, Hemenway D. Mental health and combat, peacekeeping, or relief work: Results from the National Comorbidity Survey Replication. 2011. Comprehensive Psychiatry, 52: E4.	Conference abstract	3
4.	Geronazzo AL, Shen S, Duarte CS, Wu P, Lord E, Amsel L, Musa GJ, Wicks J, Yip J, Fan B, Guffanti G, Hoven CW. Cumulative exposure to work-related incidents and current posttraumatic stress disorder in new york city's first responders. 2013. European Psychiatry Conference.	Conference abstract	4
5.	Goldmann E, Tamburrino M, Liberzon I, Slembarski R, Prescott MR, Calabrese J Galea S. Pre-, peri-, and post-deployment characteristics and risk of posttraumatic stress disorder among ohio national guard soldiers. 2010. American Journal of Epidemiology, 11: S90.	Conference abstract	5
6.	Goodwin L, Jones M, Sundin J, Wessely S, Rona RJ, Fear NT. Prevalence and predictors of delayed onset PTSD in military personnel: Is there evidence for this disorder? Results of a prospective UK cohort study. 2011. Occupational and Environmental Medicine,1351-0711,1,A100.	Conference abstract	6
7.	Herrell R, Wilk J, Bliese P, Hoge C. Combat intensity, psychopathology, and suicidal ideation in a population of soldiers after deployment to Iraq. 2011. Comprehensive Psychiatry, 52: E8.	Conference abstract	7
8.	Herrell RK, Bliese PA, Hoge CW. Effect of combat intensity, depression, alcohol misuse, and family history of depression and alcohol misuse on PTSD in a sample of post-deployment US Soldiers. 2013. Comprehensive Psychiatry, 54: E4-E5.	Conference abstract	8
9.	Herrell RK, Bliese PB, Hoge CW. Number of deployments and total months of deployment as predictors of post-traumatic stress disorder in active duty soldiers. 2011. American Journal of Epidemiology, 11: S289.	Conference abstract	9
10.	Horesh D, Solomon Z, Ein-Dor T. Delayed-onset PTSD following combat: The role of social resources. 2013. Comprehensive Psychiatry, 54: e24.	Conference abstract	10
11.	Kim AR, Sung JH, Cho SW, Jeong KS, Ahn YS. The relationship between the post-traumatic stress syndrome and the occupational stress among the firefighters in Korea. 2018. Occupational and Environmental Medicine, 75: A380.	Conference abstract	11
12.	Pierce MD, Wood MD, Reddy M, Sevin E, Shea MT. A prospective examination of posttraumatic stress and alcohol use disorders among returning veterans. 2012. Alcoholism: Clinical and Experimental Research, 1: 303A.	Conference abstract	12
13.	Subramaney U. Personality, trauma exposure, PTSD and depression in a cohort of SA metro policemen: A longitudinal study. 2010. South African Journal of Psychiatry, 16: 97-98.	Conference abstract	13
	Huang, D, Wang X, Kung WW. The impact of job loss on posttraumatic stress disorder among Asian Americans: 11-12 years after the World Trade Center attack. 2019. Traumatology,1085-9373.	Full text could not be found	1
15.	Andersen SB, Karstoft KI, Bertelsen M, Madsen T. Latent trajectories of trauma symptoms and resilience: the 3-year longitudinal prospective USPER study of Danish veterans deployed in Afghanistan. 2014. Journal of Clinical Psychiatry, 75(9): 1001-1008.	No PTSD incidence	1
16.	Armstrong D, Shakespeare-Finch J, Shochet I. Predicting post-traumatic growth and post-traumatic stress in firefighters. 2014. Australian Journal of Psychology, 66(1): 38-46.	No PTSD incidence	2
17.	Boasso AM, Steenkamp MM, Nash, WP, Larson JL, Litz BT. The relationship between course of PTSD symptoms in deployed U.S. Marines and degree of combat exposure. 2015. Journal of Traumatic Stress, 28(1): 73-78.	No PTSD incidence	3
18.	Bowler RM, Harris M, Li J, Gocheva V, Stellman SD, Wilson K, Alper H, Schwarzer R,	No PTSD	4

	Cone JE.Longitudinal mental health impact among police responders to the 9/11 terrorist attack. 2012. American Journal of Industrial Medicine, 55(4): 297-312.	incidence	
19.	Chin WD, Shiao JS, Liao SC, Kuo CY, Chen CC, Guo YL. Depressive, anxiety and post-traumatic stress disorders at six years after occupational injuries. 2017. European	No PTSD incidence	5
20.	Archives of Psychiatry & Clinical Neuroscience, 267(6): 507-516. Eriksson CB, Lopes Cardozo B, Foy DW, Sabin M, Ager A, Snider L, Scholte WF, Kaiser R, Olff M, Rijnen B, Crawford CG, Zhu J, Simon W. Predeployment mental health and trauma exposure of expatriate humanitarian aid workers: Risk and resilience factors. 2013. Traumatology, 19(1): 41-48.	No PTSD incidence	6
21.	Garcia FE, Vazquez C, Inostroza C. Predictors of post-traumatic stress symptoms following occupational accidents: A longitudinal study. 2019. Anxiety, Stress, & Coping, 32(2): 168-178.	No PTSD incidence	7
22.	Hartley TA, Violanti JM, Sarkisian K, Andrew ME, Burchfiel CM. PTSD symptoms among police officers: associations with frequency, recency, and types of traumatic events. 2013. International Journal of Emergency Mental Health, 15(4): 241-253.	No PTSD incidence	8
23.	Huang H, Kashubeck-West S. Exposure, agency, perceived threat, and guilt as predictors of posttraumatic stress disorder in veterans. 2015. Journal of Counseling & Development, 93(1): 3-13.	No PTSD incidence	9
24.	Jaegers LA, Matthieu MM, Vaughn MG, Werth P, Katz IM, Ahmad SO. Posttraumatic Stress Disorder and Job Burnout Among Jail Officers. 2019. Journal of Occupational & Environmental Medicine, 61(6): 505-510.	No PTSD incidence	10
25.	Mac Donald CL, Johnson AM, Wierzechowski L, Kassner E, Stewart T, Nelson EC, Werner NJ, Zonies D, Oh J, Fang R, Brody DL. Prospectively assessed clinical outcomes in concussive blast vs nonblast traumatic brain injury among evacuated US military personnel. 2014. JAMA Neurology, 71(8): 994-1002.	No PTSD incidence	11
26.	Magruder KM, Goldberg J, Forsberg CW, Friedman MJ, Litz BT, Vaccarino V, Heagerty PJ, Gleason TC, Huang GD, Smith NL. Long-Term Trajectories of PTSD in Vietnam-Era Veterans: The Course and Consequences of PTSD in Twins. 2016. Journal of Traumatic Stress, 29(1): 5-16.	No PTSD incidence	12
27.	Marchand A, Nadeau C, Beaulieu-Prevost D, Boyer R, Martin M. Predictors of posttraumatic stress disorder among police officers: A prospective study. 2015. Psychological Trauma:Theory, Pesearch, Practice and Policy, 7(3): 212-221.	No PTSD incidence	13
28.	Nash WP, Boasso AM, Steenkamp MM, Larson JL, Lubin RE, Litz BT. Posttraumatic stress in deployed marines: Prospective trajectories of early adaptation. 2015. Journal of Abnormal Psychology, 124(1): 155-171.	No PTSD incidence	14
29.	Polusny MA, Kumpula MJ, Meis LA, Erbes CR, Arbisi PA, Murdoch M, Thuras P, Kehle-Forbes SM, Johnson AK. Gender differences in the effects of deployment-related stressors and pre-deployment risk factors on the development of PTSD symptoms in National Guard Soldiers deployed to Iraq and Afghanistan. 2014. Journal of Psychiatric Research, 49(1): 1-9.	No PTSD incidence	15
30.	Rona RJ, Jones M, Sundin J, Goodwin L, Hull L, Wessely S, Fear NT. Predicting persistent posttraumatic stress disorder (PTSD) in UK military personnel who served in Iraq: a longitudinal study. 2012. Journal of Psychiatric Research, 46(9): 1191-1198.	No PTSD incidence	16
31.	Ryan-Gonzalez C, Kimbrel N, Meyer EC, Gordon EM, DeBeer BB, Gulliver SB, Elliott TR, Mosissette S. Differences in PTSD symptoms among post-9/11 veterans with blast- and non-blast mild TBI. 2019. Journal of Neurotrauma, 0897-7151.	No PTSD incidence	17
32.	Steenkamp MM, Schlenger WE, Corry N, Henn-Haase C, Qian M, Li M, Horesh D, Karstoft KI, Williams C, Ho CL, Shalev A, Kulka R, Marmar C. Predictors of PTSD 40 years after combat: Findings from the National Vietnam Veterans longitudinal study. 2017. Depression & Anxiety, 34(8): 711-722.	No PTSD incidence	18
33.	Wolf E, Mitchell K, Koenen K, Miller M. Combat exposure severity as a moderator of genetic and environmental liability to post-traumatic stress disorder. 2014. Psychological Medicine, 44(7): 1499-1509.	No PTSD incidence	19
34.	Yuan C, Wang Z, Inslicht SS, McCaslin SE, Metzler TJ, Henn-Haase C, Apfel BA, Tong H, Neylan TC, Fang Y, Marmar CR. Protective factors for posttraumatic stress disorder symptoms in a prospective study of police officers. 2011. Psychiatry Research, 188(1): 45-50.	No PTSD incidence	20

35.	Amster ED, Fertig SS, Green M, Carel R. Occupational exposures and psychological symptoms among fire fighters and police during a major wildfire: The carmel cohort study. 2018. Occupational and Environmental Medicine, 75: A590-A591	Not about PTSD	1
36.	Cavanaugh CE, Campbell JC, Messing JT. A longitudinal study of the impact of cumulative violence victimization on comorbid posttraumatic stress and depression among female nurses and nursing personnel. 2014. Workplace Health and Safety, 62 (6): 224-232.	Not about PTSD	2
37.	Han M, Park S, Park JH, Hwang SS, Kim I. Do police officers and firefighters have a higher risk of disease than other public officers? A 13-year nationwide cohort study in South Korea. 2018, BMJ Open; 8(1):e019987.	Not about PTSD	3
38.	Jacobson IG, Horton JL, Leardmann CA, Ryan MA, Boyko EJ, Wells TS, Smith B, Smith TC. Posttraumatic stress disorder and depression among U.S. military health care professionals deployed in support of operations in Iraq and Afghanistan. 2012, J Trauma Stress;25(6):616-23.	Not about PTSD	4
39.	Tvaryanas AP, Maupin GM. Risk of incident mental health conditions among critical care air transport team members. 2014. Aviation Space & Environmental Medicine, 85(1): 30-38.	Not about PTSD	5
40.	Vasterling JJ, Brailey K, Proctor SP, Kane RL, Heeren T, Franz, Molly R. Neuropsychological outcomes of mild traumatic brain injury, post-traumatic stress disorder and depression in Iraq-deployed US Army soldiers. 2012. British Journal of Psychiatry, 201(3): 186-192.	Not about PTSD	6
41.	Bandelow BB, Koch M, Zimmermann P, Biesold KH, Wedekind D, Falkai P. Posttraumatic stress disorder (PTSD) in the German Armed Forces: a retrospective study in inpatients of a German army hospital. 2012. European Archives of Psychiatry & Clinical Neuroscience, 262(6): 459-467.	No control group	1
42.	Aslan M, Concato J, Peduzzi PN, Proctor SP, Schnurr PP, Marx BP, McFall ME, Gleason TC, Huang GD, Vasterling JJ. Design of 'Neuropsychological and mental health outcomes of Operation Iraqi Freedom: a longitudinal cohort study'. 2013. Journal of Investigative Medicine, 61(3):569-577.	Protocol paper only	1
43.	Dinenberg RE, McCaslin SE, Bates MN, Cohen BE. Social support may protect against development of posttraumatic stress disorder: findings from the Heart and Soul Study. 2014. American Journal of Health Promotion, 28(5): 294-297.	Not work- related	1
44.	Erbes CR, Polusny MA, Arbisi PA, Koffel E. PTSD symptoms in a cohort of National Guard soldiers deployed to Iraq: Evidence for nonspecific and specific components. 2012. Journal of Affective Disorders, 142(1): 269-274.	Not work- related	2
45.	Eskridge SL, Macera CA, Galarneau MR, Holbrook TL, Woodruff SI, MacGregor AJ, Morton DJ, Shaffer RA. Influence of combat blast-related mild traumatic brain injury acute symptoms on mental health and service discharge outcomes. 2013. Journal of Neurotrauma, 30(16): 1391-1397.	Not work- related	3
46.	Eskridge SL, Macera CA, Galarneau MR, Holbrook, TL, Woodruff SI, Macgregor AJ, Morton DJ, Shaffer RA. Combat blast injuries: Injury severity and posttraumatic stress disorder interaction on career outcomes in male servicemembers. 2013. Journal of Rehabilitation Research and Development, 50(1): 7-16.	Not work- related	4
47.	Fink DS, Gradus JL, Keyes KM, Calabrese JR, Liberzon I, Tamburrino MB, Cohen GH, Sampson L, Galea S. Subthreshold PTSD and PTSD in a prospective-longitudinal cohort of military personnel: Potential targets for preventive interventions. 2018. Depression & Anxiety, 35(11): 1048-1055.	Not work- related	5
48.	Fitch TJ, Yu X, Chien LC, Karim MM, Alamgir H. Traumatic life events and development of post-traumatic stress disorder among female factory workers in a developing country. 2018. International Journal of Social Psychiatry, 64(4): 351-358.	Not work- related	6
49.	Gilbertson MW, McFarlane AC, Weathers FW, Keane TM, Yehuda R, Shalev AY, Lasko NB, Goetz JM, Pitman RK, Harvard VA. Is trauma a causal agent of psychopathologic symptoms in posttraumatic stress disorder? Findings from identical twins discordant for combat exposure. 2010. Journal of Clinical Psychiatry, 71(10): 1324-1330.	Not work- related	7
50.	Horesh D, Solomon Z, Keinan G, Ein-Dor T. The clinical picture of late-onset PTSD: a 20-year longitudinal study of Israeli war veterans. 2013. Psychiatry Research, 208(3): 265-273.	Not work- related	8

51.	Goldmann E, Calabrese JR, Prescott MR, Tamburrino M, Liberzon I, Slembarski R, Shirley E, Fine T, Goto T, Wilson K, Ganocy S, Chan P, Serrano MB, Sizemore J, Galea S. Potentially modifiable pre-, peri-, and postdeployment characteristics associated with deployment-related posttraumatic stress disorder among ohio army national guard soldiers. Ann Epidemiol. 2012;22(2): 71-78.	No work- related exposure	1
52.	Banducci AN, McCaughey VK, Gradus JL, Street AE. The associations between deployment experiences, PTSD, and alcohol use among male and female veterans. 2019. Addictive Behaviors, 98: 106032,	Cross- sectional	1
53.	Huang, J. and Liu, Q. and Li, J. and Li, X. and You, J. and Zhang, L. and Tian, C. and Luan, R. Post-traumatic stress disorder status in a rescue group after the Wenchuan earthquake relief. 2013. Neural Regeneration Research, 8(20): 1898-1906.	Cross- sectional	2
54.	Jones M, Sundin J, Goodwin G, Hull L, Fear NT, Wessely S, Rona RJ. 2013. What Explains Post-Traumatic Stress Disorder (PTSD) in UK Service Personnel: Deployment or Something Else? Psychological Medicine, 43(8):1703-12.	Cross- sectional	3
55.	Rybojad B, Aftyka A, Baran M, Rzonca P. Risk Factors for Posttraumatic Stress Disorder in Polish Paramedics: A Pilot Study. 2016. Journal of Emergency Medicine, 50(2): 270-276.	Cross- sectional	4
56.	Liu B, Tarigan LH, Bromet EJ, Kim H. World Trade Center disaster exposure-related probable posttraumatic stress disorder among responders and civilians: a meta-analysis. 2014. PLoS ONE, 9(7): e101491.	Systematic review	1
	Schutte N, Bar O, Weiss U, Heuft G. Prediction of PTSD in police officers after six monthsa prospective study. 2012. Spanish Journal of Psychology, 15(3): 1339-1348.	Systematic review	2
58.	Milosavljevic M, Drakulic B, Crnobaric C, Perunicic I, Tosevski DL. Risk factor assessment for posttraumatic stress disorder in war veterans in former Yugoslavia. 2011. Psihijatrija Danas, 43(2): 141-153.	Not in English	1
59.	Giupponi G, Thoma H, Lamis D, Forte A, Pompili M, Kapfhammer HP. Posttraumatic stress reactions of underground drivers after suicides by jumping to arriving trains; feasibility of an early stepped care outpatient intervention. J Trauma Dissociation. 2019; 20(5):495-510.	No effect sizes	1
60.	Osofsky HJ, Osofsky JD, Arey J, Kronenberg ME, Hansel TC, Many MM. Hurricane Katrina's first responders: the struggle to protect and serve in the aftermath of the disaster. 2011. Disaster Medicine and Public Health Preparedness, 5: S214-S219.	No effect sizes	2
61.	Rosenblatt AS, Li R, Fortier C, Liu X, Fonda JR, Villalon A, McGlinchey RE, Jorge RE. Latent factor structure of PTSD symptoms in veterans with a history of mild traumatic brain injury and close-range blast exposure. 2018. Psychological Trauma: Theory, Research, Practice, and Policy, 442-450.	No effect sizes	3
62.	Sheffler JL, Rushing NC, Stanley IH, Sachs-Ericsson NJ. The long-term impact of combat exposure on health, interpersonal, and economic domains of functioning. 2016. Aging and Mental Health, 20(11): 1202-1212.	No effect sizes	4
63.	Solberg O, Birkeland MS, Blix I, Hansen MB, Heir T. Towards an exposure-dependent model of post-traumatic stress: longitudinal course of post-traumatic stress symptomatology and functional impairment after the 2011 Oslo bombing. 2016. Psychological Medicine, 46(15): 3241-3254.	No effect sizes	5
64.	Taymur I, Sargin AE, Ozdel K, Turkcapar HM, Calisgan L, Zamki E, Demirel B. Possible Risk Factors for Acute Stress Disorder and Post-Traumatic Stress Disorder After an Industrial Explosion. 2014. Noropsikiyatri Arsivi, 51(1): 23-29.	No effect sizes	6
65.	Wisnivesky JP, Teitelbaum S, Todd AC, Boffetta P, Crane M, Crowley L, De la Hoz RE, Dellenbaugh C, Harrison DJ, Herbert R, Kim H, Jeon Y, Kaplan J, Katz CL, Levin SM, Luft BJ, Markowitz S, Moline JM, Ozbay F, Pietrzak RH, Shapiro M, Sharma V, Skloot G, Southwick SM, Stevenson LA, Udasin IG, Wallenstein S, Landrigan PJ. Persistence of multiple illnesses in World Trade Center rescue and recovery workers: a cohort study. 2011. Lancet, 378(9794): 888-897.	No effect sizes	7

/bmjopen-2021-049

negative acts,

private Raumas and

sector (model 2),

OR: 1.10 [1.07 1.13]1

OR: 1.11 [1.07 1.5]²

OR: 1.10 [1.04 1.15]³

Elder care

44 45 46 and longitudinal

Follow-up period:

analyses)

4 years

2. Andersen,

2019 19

Age= 45.1(10.1) years

Type of job/company=

Employees working in

psychiatric wards, in the

First author,	Study (name,	Sample description (n,	Description of exposure	Description of	Adjustment	Effect estimates (e.g., HR, RR
Year;	design and	Country, Type of	assessment (way and	outcome (type of	on .	or OR with 95% confidence
	follow-up period)	job/company, relevant	year of baseline	symptoms, way of	25	interval). Super scripts refer
		inclusion/exclusion	exposure assessment	assessment, and	Au	to the models specified in the
		criteria, %Female, Age)	and description of	incidence over the	August 2	'adjustment' column
			categories)	follow-up period)	st 2)	
	Name: Armed	<u>n</u> =1,344,668	Exposure assessment:	Type of symptoms:	No 21.	PTSD incidence was in
	forces health		Self-reported	PTSD	-	general higher after the
	surveillance	Country=USA			ow	second, third and fourth
		() 4	Year of assessment:	Way of assessment:	nlo	deployment, compared to the
	Design:	<u>%Female</u> = 11%	between Oct 2001 and	Mental disorders	ade	first and fifth.
	Prospective		Dec 2010	assessed with ICD-9-	ð f	
	longitudinal	Age= The majority was		CM (309.81), reported	Downloaded from http://bmjopen.bmj.com/ on Apr	PTSD incidence was in
		<25, with lower numbers	Exposure categories: %	in military or civilian	n hi	general higher among males,
	Follow-up period:	of participants in the 25-	PTSD diagnosis were	hospitals	itp:	those in lowest age group,
	12 months post	29 and 30+ categories.	compared between		//br	health care workers and
	deployment		deployment number,	<u>Incidence</u> : -	njo	those with longer dwelling
		Type of job/company=	gender, age group,		per	time between the
1. Armed		Active components of	military occupation		ı.br	deployments.
Forces		the forces (on	(combat, health care	\mathbf{O}_{i}	nj.c	
Health		Afghanistan and Iran	and other) and	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	öm	No effect estimates were
Surveillance		missions).	'dwelling time' between		0	reported (only incidences).
Center,			employments.		۸ ۲	
2011 ²¹		<u>Inclusion/exclusion</u> = -		U/A	<u> </u>	
	Name: -	<u>n</u> = 2,678	Exposure assessment:	Type of symptoms:	Unadjusted (model	Work-related threats
			Self-reported	PTSD	1), adjusted for	All four sectors
	<u>Design:</u>	<u>Country</u> = Denmark			gender, gge,	PTSD at 2011
	Prospective		Year of assessment:	Way of assessment:	bullyingesexual	OR: 1.11 [1.07 1.14] ¹
	longitudinal (with	<u>%Female</u> = 66%	2011	Self-reported with the	harassm <u>e</u> nt,	OR: 1.10 [1.05 1.15] ²
	cross-sectional			Impact of Event Scale-	conflictsat work,	PTSD at 2015

Exposure categories:

Work-related violence

and threats on a 5 point

likert scale with 0=never

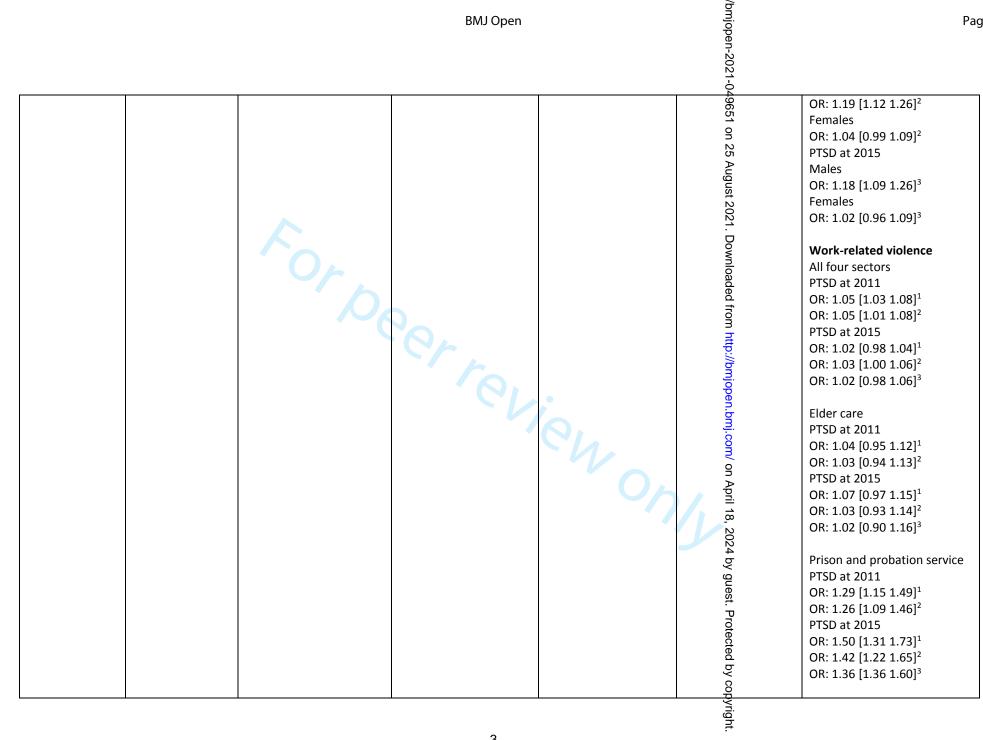
to 4=almost daily, with

Revised

incidences)

Incidence:14% (2

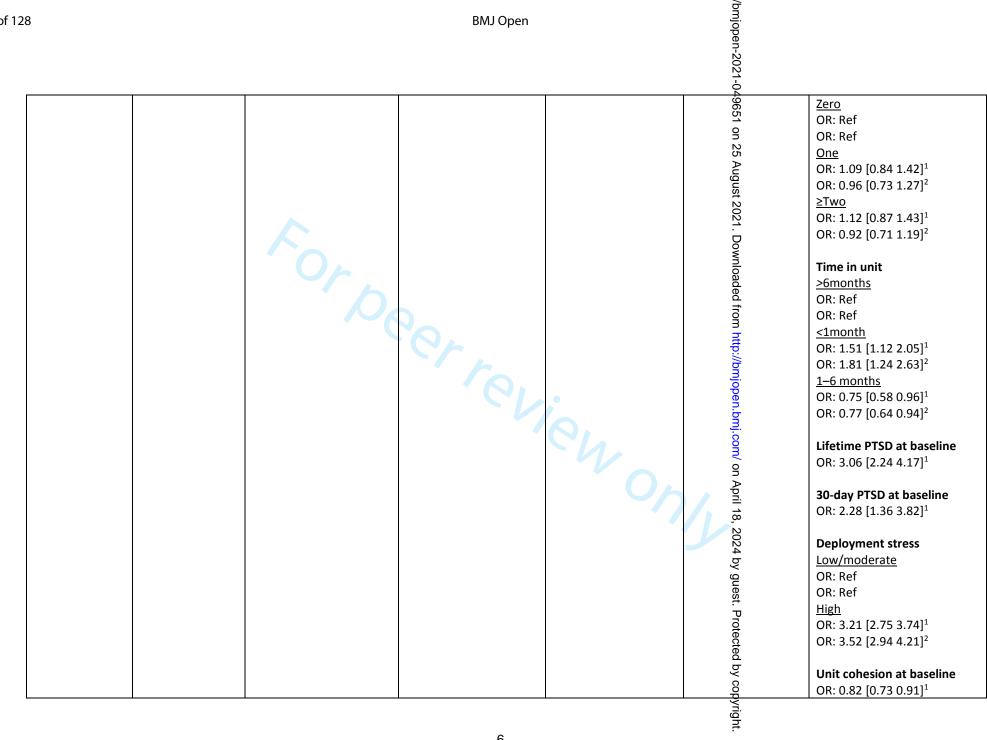
28		BMJ Open	/bmjopen-2	
	elder sector, at special schools and in the prison and probation service. Inclusion/exclusion=-	summary scores 0-24 and 0-44, respectively.	요 /bmjopen-2021-04錄孫on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyrig	PTSD at 2011 OR: 0.99 [0.88 1.23]¹ OR: 0.98 [0.82 1.18]² PTSD at 2015 OR: 1.12 [1.00 1.25]¹ OR: 1.12 [0.94 1.33]² OR: 1.22 [0.95 1.56]³ Prison and probation service PTSD at 2011 OR: 1.21 [1.14 1.28]¹ OR: 1.18 [1.08 1.27]² PTSD at 2015 OR: 1.73 [1.20 1.35]¹ OR: 1.25 [1.17 1.34]² OR: 1.22 [1.13 1.31]³ Psychiatry PTSD at 2011 OR: 1.14 [1.06 1.12]¹ OR: 1.19 [1.09 1.32]² PTSD at 2015 OR: 1.06 [0.99 1.13]¹ OR: 0.94 [0.83 1.07]³ Special schools PTSD at 2011 OR: 1.01 [0.93 1.09]¹ OR: 0.95 [0.85 1.05]² PTSD at 2015 OR: 1.08 [1.01 1.15]¹ OR: 1.06 [0.98 1.14]² OR: 1.07 [0.95 1.12]³ PTSD at 2011 Males
			 <u> </u>	



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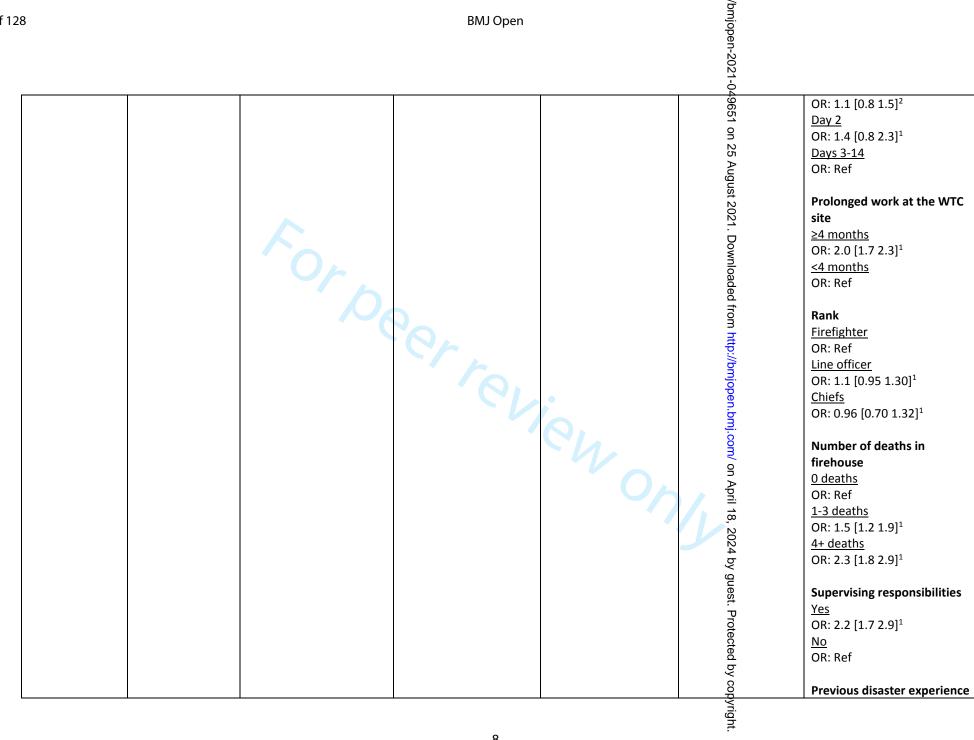
3			BMJ Open		/bmjopeı	
					1-2021-04	
Nam	ne: Army	<u>n</u> =4,645	Exposure assessment:	Type of symptoms:	bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by each od by both and the control of the co	Psychiatry PTSD at 2011 OR: 1.08 [1.01 1.15] ¹ OR: 1.13 [1.03 1.24] ² PTSD at 2015 OR: 1.04 [0.98 1.10] ¹ OR: 1.05 [0.96 1.14] ² OR: 0.98 [0.88 1.10] ³ Special schools PTSD at 2011 OR: 1.04 [0.98 1.09] ¹ OR: 1.03 [0.97 1.10] ² PTSD at 2015 OR: 1.02 [0.97 1.07] ¹ OR: 1.02 [0.97 1.07] ² OR: 1.01 [0.42 1.08] ³ PTSD at 2011 Males OR: 1.06 [0.99 1.12] ² Females OR: 1.03 [0.99 1.07] ² PTSD at 2015 Males OR: 1.07 [0.99 1.14] ³ Females OR: 0.99 [0.95 1.05] ³ Age
	RRS study	<u> </u>	Self-reported	PTSD (30 days)	adjuste@for all	OR: 1.00 [0.99 1.02] ¹
		<u>Country</u> =USA			other exposures	OR: 1.00 [0.99 1.02] ²
<u>Desig</u>		% Famala=E%	Year of assessment: 2012	Way of assessment: Composite	(model ┧) and for lifetime⊈TSD at	Sex
	spective situdinal (with	<u>%Female</u> =5%	2012	International	baseline (model 2).	Female
basel		Age=26.9(0.2) years	Exposure categories:	Diagnostic Interview	<u>e</u>	OR: Ref
	surements 1-		Unit cohesion, stressful	screening scales (CIDI-	by	OR: Ref
		Type of job/company=	employment	SC) and a six-item	сор	<u>Male</u>
					by copyright.	

				-02	
the deployment)	Soldiers from three	characteristics and	screening version of	.96	OR: 0.73 [0.46 1.14] ¹
	combat teams employed	sociodemographic were	the PTSD Checklist	51	OR: 0.88 [0.51 1.51] ²
Follow-up period:	in Afghanistan	assessed	(PCL) to assess	on	
9 months post-			lifetime DSM-4 mental	25	Race
employment	Inclusion/exclusion= -		disorders	Au	White
				gu	OR: Ref
			Incidence: 11.9%	st 2	OR: Ref
			(lifetime)	02	Black
			,	1. [OR: 0.99 [0.67 1.48] ¹
				Ον	OR: 1.04 [0.72 1.49] ²
				vnlo	Asian
				oad	OR: 1.28 [0.77 2.12] ¹
				ed	OR: 1.38 [0.80 2.39] ²
				froi	Other
	Forde			3	OR: 1.49 [1.04 2.15] ¹
				ıttp	OR: 1.25 [0.86 1.82] ²
		-/ -		://b	
				mjc	Ethnicity
				эре	Non-Hispanic
				n.b	OR: Ref
				<u>, p.</u>	OR: Ref
				cor	Hispanic
				n/ c	OR: 1.15 [0.83 1.59] ¹
				on ,	OR: 1.22 [0.87 1.73] ²
			Uh	Αpr	
				≕ 1	Brigade Combat Team
				, N	Fort #1
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				4 b	OR: Ref
				у д	Fort #2
				ues	OR: 1.15 [0.90 1.47] ¹
				st. F	OR: 1.31 [0.97 1.77] ²
				o.	Fort #3
				tec	OR: 1.00 [0.80 1.24] ¹
				ted	OR: 1.09 [0.82 1.45] ²
				by	2 2.05 [0.02 20]
				-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyric	Number of deployments
	I.	I .	<u>I</u>		The second of th



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		BMJ Open		/bmjopen		Pag
Name: FDNY-WTC-MMP Design: Prospective longitudinal with baseline measurement within 6 months from the disaster. Follow-up period: 2.9 years	n=5,656 Country= USA %Female= 0% Age= - Type of job/company= New York fire department rescue workers who were involved in the 9/11 WTC disaster Inclusion/exclusion= Fire fighters who retired during the study, who arrived at the disaster site >14 days after the recue, and females; firefighters	Exposure assessment: Demographic and retirement from employee databases, all other information from self-reports. Year of assessment: 2001 Exposure categories: -	Type of symptoms: Probable PTSD Way of assessment: Self-reported using PTSD checklist (PCL-m) Incidence:16%	Univariate adjusting Application in the univariate statistic and incomplete with the univariate and univariate adjusting Application in the univariate and u	OR: 0.74 [0.65 0.84] ² Age 20-29 years OR: Ref 30-39 years OR: 1.0 [0.8 1.3] ¹ 40-49 years OR: 1.0 [0.8 1.3] ¹ 50-59 years OR: 0.6 [0.4 1.1] ¹ 60+ years OR: - Continuous OR: 0.98 [0.97 1.00] ² Education High School OR: Ref Some College OR: 1.1 [0.9 1.3] ¹ College OR: 1.1 [0.9 1.3] ¹ Post-College OR: 1.2 [0.8 1.8] ¹ Living with a partner Yes OR: Ref	Pag
				2024 by gues		
4. Berninger, 2010 ²²				st. Protected by cc	Arrival Group Morning of 9/11 OR: 4.8 [3.0 7.5] ¹ OR: 2.0 [1.3 2.9] ² Afternoon of 9/11 OR: 2.3 [1.5 3.5] ¹	



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		mjopen-20	Pa		
Name: Army STARSS study Design: Retrospective longitudinal Follow-up periods -	n= 14,254 for AAS and 25,629 for NSS. Country= USA %Female= 12% for AAS and 17% for NSS Age= 29.0(0.1) for AAS and 21.0(0.0) for NSS Type of job/company= Soldiers at all stages of their activity (AAS substudy) and new recruits (NSS sub-study) Inclusion/exclusion= -	Exposure assessment: Self-reported Year of assessment: 2011-2013 Exposure categories: Deployment-related and lifetime stress were assessed (the former only for the AAS cohort).	Type of symptoms: Probable PTSD (lifetime and past 30-day prevalence) was assessed using the PTSD Checklist (PCL) using DSM-4 criteria Way of assessment: Self-reported Incidence:-	/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyri	Yes OR: 1.4 [1.2 1.6] ¹ No OR: Ref Duration of work at WTC site (per month) OR: 1.1 [1.1 1.2] ² Reported increase in alcohol OR: 1.3 [1.0 1.7] ² Baseline probable PTSD OR: 5.6 [4.4 7.0] ² Diversity of Deployment- Related Traumatic Stress Score [0-15] 30-day PTSD OR: 1.15 [1.13 1.16] (AAS) Lifetime PTSD OR: 1.17 [1.16 1.18] (AAS) Cumulative Deployment- Related Traumatic Stress Score [0 60] 30-day PTSD OR: 1.03 [1.03 1.04] (AAS) Lifetime PTSD OR: 1.00 [0.99 1.00] (AAS) Diversity of Lifetime Traumatic Stress Score 30-day PTSD OR: 1.14 [1.13 1.16] (AAS) OR: 1.34 [1.30 1.38] (NSS) Lifetime PTSD OR: 1.16 [1.15 1.17] (AAS) OR: 1.34 [1.31 1.38] (NSS)

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						1-2021-04	
6.	Brundage, 2015 ²⁴	Name: Defense Medical Surveillance System (DMSS) Design: Prospective longitudinal Follow-up period: 36 months post-deployment.	n= 2,020,340 (Iraq/Afghanistan) and 529,609 (Korea/Japan) Country= USA %Female= - Age= - Type of job/company= Individuals who served in army, air force, navy and marine. Those who were deployed in Iraq and Afghanistan were compared with a reference group who returned from assignments in Korea and Japan. Inclusion/exclusion= -	Exposure assessment: Deployment administration Year of assessment: 2003-2014 Exposure categories: Iraq/Afghanistan vs Korea/Japan, and occupation. Also other factors were assessed but where not considered for this review.	Type of symptoms: PTSD Way of assessment: Diagnosis using ICD-9 criteria. Incidence: -	49651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by gues	Cumulative Lifetime Traumatic Stress Score 30-day PTSD OR: 1.02 [1.02 1.03] (AAS) OR: 0.99 [0.98 1.01] (NSS) Lifetime PTSD OR: 1.02 [1.01 1.02] (AAS) OR: 1.00 [0.99 1.01] (NSS) There were 4.85 diagnoses per 100 deployments among those who served in Iraq/Afghanistan, this was 1.04 among those who went to Japan/Korea (with a 4.66 ratio between the two groups). Diagnosis per 100 deployments were highest among combat specific (5.62) and health care (8.52) occupations who went to Iraq/Afghanistan, compared to others (4.17).
	2013	Name: Defence	<u>n</u> = 1.35 million	Exposure assessment:	Type of symptoms:	្រុំ Unadjus t ed (model	Sex
		Manpower Data		Deployment	PTSD	1) and ഏ	<u>Female</u>
		Center (DMDC)	<u>Country</u> = USA	administration		all othe exposures	RR: 1.65 [1.54 1.77] ¹
7.	Cameron,	Database and			Way of assessment:	(model 🏖).	RR: 1.92 [1.84 2.00] ²
1	2019 ²⁵	Defense Medical	<u>%Female</u> = 12%	Year of assessment:	Data from the	by by	Male

Surveillance		1999-2008	Defence Medical	196	RR: Ref.
System (DMSS)	<u>Age</u> = -		Surveillance System	51	RR: Ref.
		Exposure categories:	(DMSS), with ICD-9-	on	
Design:	Type of job/company =	Rank and service type.	CM coded diagnoses,	25	Age
Retrospective	Active duty service		were used.	Αc	< 20
longitudinal	members between 1999			nBr	RR: Ref.
	and 2008.		Incidence: 52,771	st 2	RR: Ref.
Follow-up period:	aa 2000.		incident cases (~4%)	202	<u>20–24</u>
-	Inclusion/exclusion= -		moracine cases (170)	<u>-</u>	RR: 1.41 [1.25 1.60] ¹
	inclusion, exclusion			Do	RR: 1.36 [1.27 1.46] ²
				vnl	25–29
				oac	RR: 1.36 [1.20 1.54] ¹
				ded	RR: 1.52 [1.41 1.65] ²
				fro	30–34
	7-7	Per tev		-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18,	RR: 1.00 [0.87 1.15] ¹
		104		http	RR: 1.37 [1.25 1.50] ²
				o://k	35–39
				omj.	RR: 0.88 [0.76 1.02] ¹
		' (2)		ope	RR: 1.37 [1.24 1.52] ²
				en.l	> 39
				om	RR: 0.93 [0.80 1.08] ¹
			\mathcal{O}_{I}	j.cc	
)m/	RR: 1.68 [1.51 1.87] ²
				on	Bass
				Ap	Race
) j <u>r</u> i	Black
				18,	RR: Ref.
				20	RR: Ref.
				24	Other
				by	RR: 1.32 [1.18 1.47] ¹
				gut	RR: 1.45 [1.36 1.54] ²
				est	<u>White</u>
				Pr	RR: 1.35 [1.25 1.47] ¹
				2024 by guest. Protected by copyri	RR: 1.58 [1.51 1.66] ²
				cte	
				D D	Marital Status
				у с	Married
1	1			×	RR: 1.13 [1.06 1.20] ¹

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		I			- 2	
		Country= USA	administration		all remagning	OR: 4.9 [3.0 7.9] ¹
	Design:			Way of assessment:	exposures in the	OR: 4.0 [2.5 6.6] ²
	Prospective	<u>%Female</u> = 0%	Year of assessment:	Self-reported using	model (နာodel 2).	afternoon of 9/11
	longitudinal		2001	the PTSD checklist	25	OR: 2.4 [1.5 3.7] ¹
		Age= 47.0 (6.9) years		(PCL-17), using a cut-	Aug	OR: 2.1 [1.3 3.3] ²
	Follow-up period:		Exposure categories:	off >= 39 (range 17-	snb	<u>day 2</u>
	4 years post-	Type of job/company=	Retirement status, rank,	85).	2	OR: 1.7 [1.0 2.8] ¹
	attack.	New York fire	and exposure.		021	OR: 1.4 [0.9 2.4] ²
		department firefighters		Incidence: 22%		<u>day 3 to day 14</u>
		who were involved in the			Ŏ W	OR: Ref.
		9/11 WTC attacks.			'nlo	OR: Ref.
					ă d	
		Inclusion/exclusion= Fire			ed -	Retirement status
		marshals, females, those			fror	Disability
		who retired due to			ם ב	OR: 1.9 [1.5 2.4] ¹
		mental health disability			[OR: 1.7 [1.4 2.2] ²
		and those who did not	er ter		//b	Non-disability
		first arrive at the disaster			nj _o	OR: Ref.
		site were excluded.			ре	OR: Ref.
					n.b	
				\bigcirc	₫.	AUDIT score
					O	≥8
					√ c	OR: 2.0 [1.5 2.5] ¹
					Ď,	OR: 1.9 [1.5 2.4] ²
				UA	pri	<u><8</u>
					1 12	OR: Ref.
					, w N	OR: Ref.
					02	
					25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyr	Age on 9/11 [in years]
					y 9	<u><55</u>
					ues	OR: 2.0 [1.4 3.0] ¹
					 	OR: 1.5 [1.0 3.0] ²
					rot	≥55
					iect	OR: Ref.
					:ed	OR: Ref.
					by	
					8	Age on 9/11 - in years
<u> </u>	<u> </u>	<u> </u>	1	l	' 	

9. Ciarleglio,

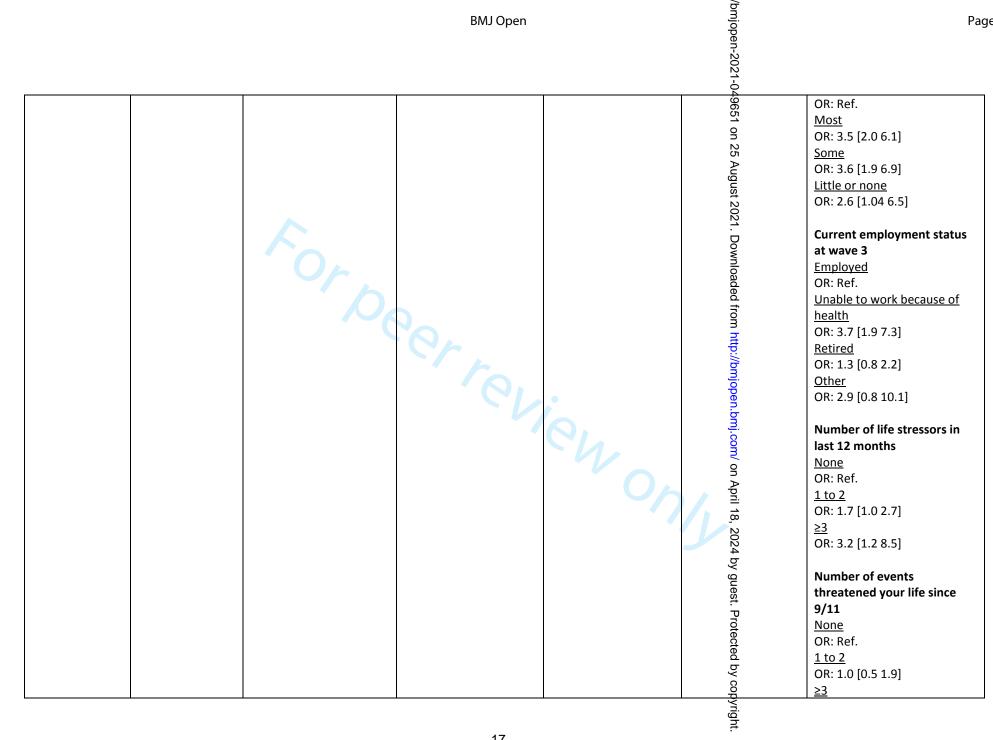
2018 27

					1- ₀	
					49651 on	Continuous OR: 1.0 [1.0 1.0] ¹
			Per rev		1-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protective in the contraction of the contraction o	OR: 1.0 [1.0 1.0] ¹ Marital status Married OR: 0.8 [0.6 1.2] ¹ Living with a partner OR: 1.1 [0.6 2.1] ¹ Never married OR: 0.9 [0.5 1.6] ¹ Separated/widowed/divorced OR: Ref. Marital status change since 9/11 Status change OR: 1.3 [0.9 1.9] ¹ No change OR: Ref. Previous profession No other profession OR: 1.2 [0.9 1.4] ¹
				Oh	April 18, 20	Other professions OR: Ref. Rank
)24 1	Chiefs OR: 0.5 [0.3 0.9] ¹
					у g	Captains and lieutenants
					ues	OR: 0.8 [0.6 1.0] ¹
					t. Pr	<u>Firefighters</u>
		077		- .	ot er	OR: Ref.
	Name: VU	<u>n</u> = 375	Exposure assessment:	Type of symptoms:	Multivagate models	Age in years
	Cooperative	Country - LICA	Self-reported	PTSD	adjusting for all other exposures.	OR: 1.04 [0.99 1.09]
,	Studies Program	Country= USA	Vacuation and	May of accommon to	other exposures.	Candan
	Study, combined		Year of assessment:	Way of assessment:	соруг	Gender
					÷	

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with data from	%Female= 5%	2003-2005	Using a clinically	196	Male
Neurocognition			administered PTSD	51	OR: Ref.
Deployment	Age= 35.1 (5.9) years	Exposure categories:	scale.	on	Female
Health Study		Deployment history and		25	OR: 0.31 [0.07 1.53]
(NDHS).	Type of job/company=	stress exposure.	Incidence: 24%	₽	,
(**=***********************************	Army soldiers who were		(prevalence)	nBr	Number of deployments
Design:	deployed in Iraq		(prevarence)	St 2	Single deployment
Retrospective	acpioyea iii ii aq			202	OR: Ref.
longitudinal	Inclusion/exclusion= -				Multiple deployments
longitudinar	IIICIdSIOII/ EXCIdSIOII			Do	OR: 0.83 [0.27 2.57]
Follow-up period:				wn	OK. 0.83 [0.27 2.37]
Between 5.7				oa	Months since most recent
months (baseline)				dec	
and 7.5 months	(),			d fro	deployment
	/ _ /	2		m	OR: 1.00 [0.98 1.02]
post-deployment				htt	
(long-term				p://	Composite emotional health
follow-up).				bm d	factor post-deployment
		10.		jop	OR: 1.09 [0.79 1.50]
		Perter		ien	
				.bm	Mental health treatment
			\mathcal{O}_{I}	ıj.c	received post-deployment
			11.	om	<u>No</u>
				O.	OR: Ref.
				∀ ר	<u>Yes</u>
			U/A	pril	OR: 4.12 [2.18 7.80]
				18	
				,30 N	Early life events summary
				02,	score
					OR: 0.92 [0.84 1.00]
				/ g	
				ues	Combat and post-battle
				**	experiences
				orot	OR: 0.99 [0.95 1.03]
				tec	
				ted	Deployment concerns
				by	summary score
				-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyri	OR: 1.01 [0.98 1.04]
				- Py r	C. 1.01 [0.30 1.04]

28			BMJ Open		/bmjopen-2021-0	
					-2021-0-	
					149651 on 25 August 2021.	Life and family concerns OR: 0.99 [0.94 1.03] Post-deployment life events summary score OR: 1.07 [0.96 1.19]
		<i>F</i>			21. Dow	Post-war-zone social support OR: 0.92 [0.89 0.95]
	Name: World Trade Center Health Registry Design: Prospective longitudinal Follow-up period: 10 years	n= 2,204 Country= USA %Female= 13% Age= 38 (median) Type of job/company= Police responders to the 9/11 WTC attacks Inclusion/exclusion= Those with at least one shift at the disaster site, those without pre-9/11 PTSD and with follow-up	Exposure assessment: Self-reported Year of assessment: 2001 Exposure categories: Demographic, injury, stressors, life threatening event, support.	Type of symptoms: Probable PTSD Way of assessment: Self-reported using a combination of the PCL checklist and DSM-4 criteria. Incidence: 11% (prevalence)	Adjusting for all other eyed from http://bmjopen.bmj.com/ on April 18, 20	Age group at 9/11 18-44 OR: Ref. 45-69 OR: 0.6 [0.3 1.3] Gender Male OR: Ref. Female OR: 1.3 [0.7 2.5] Hispanic No OR: Ref. Yes OR: 1.2 [0.7 2.0]
10. Cone, 2015		measurements.			2024 by guest. Protected by copyrig	Household gross income at wave 3 ≥75K OR: Ref. <75K OR: 2.0 [1.2 3.4] Having social support All of the time



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					:1- ₀	
					4965	OR: 3.3 [1.9 5.6]
		<u>n</u> = 217 exposed and			21-049651 on 25 August 2021. Downloaded from http://b	Number of injuries sustained during the 9/11 attacks None OR: Ref. One OR: 1.1 [0.6 2.0] Two or more OR: 1.4 [0.6 3.4] Report of unmet mental health care needs at wave 3 No OR: Ref.
			C/-		http://	<u>Yes</u>
	Names National	n 217 avecand and	Fire source seeses seet.	Time of a montanes	Univariate and	OR: 9.5 [5.3 16.9]
	Name: National Comorbidity	<u>n</u> = 217 exposed and 2,110 unexposed.	Exposure assessment: Self-reported	Type of symptoms: PTSD (according to	multivage and	Exposure No exposure
	Survey	z,110 unexposed.	Sell-reported	DSM-4 criteria)	analysesadjusting	OR: Ref
	Replication (NCS-	Country=USA	Year of assessment:	DSIVI-4 CITCETIA)	for age of exposure,	On. Rei
	R)	<u>country</u> os/t	2001-2002	Way of assessment:	age of onset	Exposure to
	,	%Female= 0%		Self-reported (no	diagnoses, race	peacekeeping/relieve work
	Design:	<u>701 0111010</u> 070	Exposure categories:	specific questionnaire		and combat
	Retrospective	Age= 55.0(0.9) for	Participants who were	mentioned)	pri.	OR: 11.2 [2.9 43.2]
	longitudinal	exposed workers, 43.8	exposed to combat and		128	
		(0.9) for non-exposed	peacekeeping/relieve	<u>Incidence</u> :	20	Exposure to combat only
	Follow-up period:	workers	work or combat only vs	29/(217+2110)=1%	024	OR: 7.3 [3.3 15.8]
	-		non-exposed		by	
		Type of job/company=	participants.		gue	According to the authors the
		Participants employed in			est.	results remained the same in
		combat or service as			Pro	multivariate analyses (data
		peacekeeper or relief worker.			otec	not reported)
		WOIKEI.			ted	
11. Connorton,		Inclusion/exclusion=			by	
2011 ²⁹		Females were excluded			April 18, 2024 by guest. Protected by copyright.	
	1	T. S. Hares Here exchanged	I	I	У Угі.	I
					ight	
			10		:	

				<u> </u>	
Name: Weill	<u>n</u> = 2,960	Exposure assessment:	Type of symptoms:		Occupational exposure
Cornell 9/11		Self-reported	PTSD	baseline TSD and	<u>No</u>
Screening	Country= USA			demographic	OR: Ref.
Program		Year of assessment:	Way of assessment:	variables	<u>Yes</u>
	<u>%Female</u> = -	2002-2004	Using the CAPS	₽u	OR: 1.31 [1.13 1.51]
Design:			standardized clinical	gus	
Prospective	<u>Age</u> = -	Exposure categories:	interview and using	st 2	
longitudinal		Occupational exposure	the PCL-C	02	
	Type of job/company=		questionnaire using		
Follow-up period:	9/11 WTC disaster		DSM-4 criteria. CAPS	Jo _×	
Up to 4 years.	recovery workers.		data were used for	/nlc	
. ,			exposure-outcome) ad	
	Inclusion/exclusion= -		assessment.	e d	
				fror	
			Incidence: 9%, 5% and		
				n t p	
		- / L	•	://b	
			•	mj.	
) pe	
				n.b	
			_	<u>3</u> .	
				8	
Name: HERRICK	n= 3600	Exposure assessment:	Type of symptoms:	Unadjusted (model	Deployment
	_			, <u> </u>	Not deployed
•	Country= UK				OR: Ref.
. ,			Way of assessment:		OR: Ref.
Design:	%Female= -	Year of assessment:	-		Regulars
Prospective		2003	the PCL-C		OR: 1.03 [0.79 1.36] ¹
longitudinal	Age= -		questionnaire.	4 b	OR: 1.13 [0.82 1.54] ²
_	_	Exposure categories:		/ 9	Reservists
Follow-up period:	Type of job/company=	Deployment, rank,	Incidence: 4%	ser	OR: 2.90 [1.37 6.12] ¹
-	Armed forces who were			.÷ .÷	OR: 2.83 [1.23 6.51] ²
	deployed in Iraq and	and time since		rot	
				ect	Location of deployment
	_	, ,		ed	Not deployed in
	forces who were not			by	Iraq/Afghanistan
			1	_	
	Cornell 9/11 Screening Program Design: Prospective longitudinal Follow-up period: Up to 4 years. Name: HERRICK cohort (and other samples) Design: Prospective longitudinal	Cornell 9/11 Screening Program Design: Prospective longitudinal Follow-up period: Up to 4 years. Name: HERRICK cohort (and other samples) Design: Prospective longitudinal Name: HERRICK cohort (and other samples) Design: Prospective longitudinal Design: Prospective longitudinal Follow-up period: - Type of job/company= Armed forces who were deployed in Iraq and Afghanistan, who were compared to armed	Cornell 9/11 Screening Program Design: Prospective longitudinal Name: HERRICK cohort (and other samples) Design: Prospective longitudinal Design: Follow-up period: Up to 4 years. Name: HERRICK cohort (and other samples) Design: Prospective longitudinal Name: HERRICK cohort (and other samples) Design: Prospective longitudinal Age = - Follow-up period: Inclusion/exclusion = - Year of assessment: Deployment administration Year of assessment: Deployment, rank, number of deployments and time since deployment.	Cornell 9/11 Screening Program Country= USA Year of assessment: 2002-2004 Using the CAPS Standardized clinical interview and using the PCL-C questionnaire using DSM-4 criteria. CAPS data were used for exposure-outcome assessment.	Name: Weill Cornell 9/11 Self-reported Self-reported

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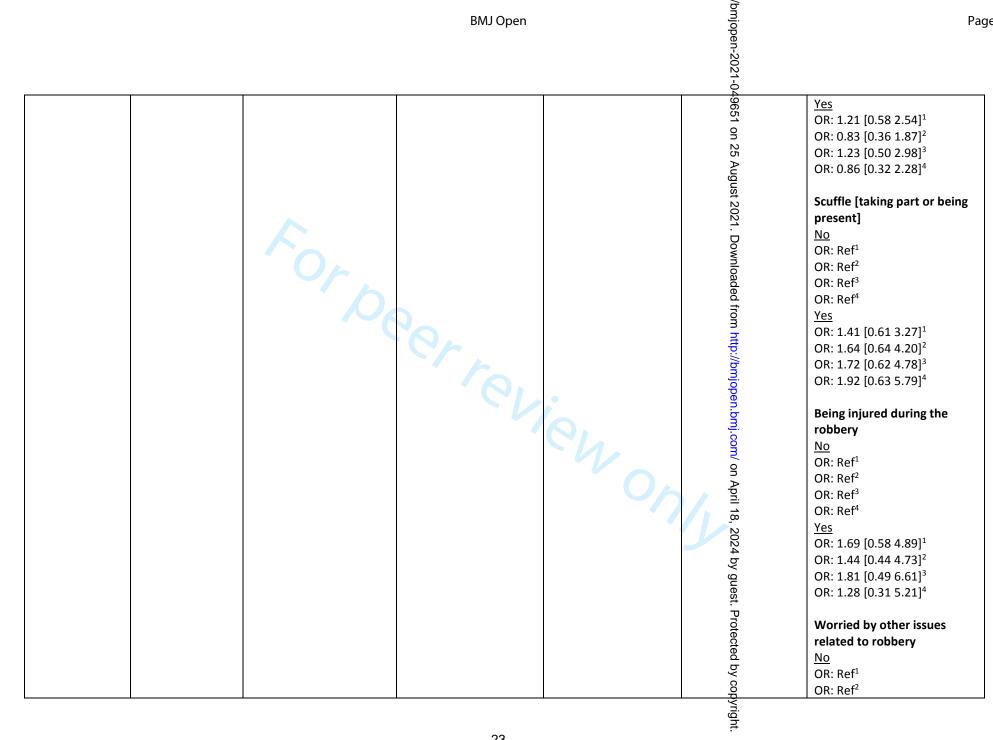
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<u>Des</u> Ret		~O_			:1-049651 on 25 August 2021. Downloaded fro	OR: 1.19 [0.76 1.86] ¹ OR: 1.18 [0.75 1.86] ² <u>Up to 3 years</u> OR: 1.95 [1.16 3.27] ¹ OR: 1.80 [1.05 3.10] ² <u>Up to 4 years</u> OR: 1.98 [1.08 3.65] ¹ OR: 1.88 [0.98 3.62] ² <u>Up to 5 years</u> OR: 1.59 [0.99 2.57] ¹ OR: 1.53 [0.92 2.55] ²
<u>Des</u> Ret		FO ₂				OR: 1.18 [0.75 1.86] ² <u>Up to 3 years</u> OR: 1.95 [1.16 3.27] ¹ OR: 1.80 [1.05 3.10] ² <u>Up to 4 years</u> OR: 1.98 [1.08 3.65] ¹ OR: 1.88 [0.98 3.62] ² <u>Up to 5 years</u> OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		Forn			on 25 August 2021. Downloac	Up to 3 years OR: 1.95 [1.16 3.27] ¹ OR: 1.80 [1.05 3.10] ² Up to 4 years OR: 1.98 [1.08 3.65] ¹ OR: 1.88 [0.98 3.62] ² Up to 5 years OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		Corp			25 August 2021. Downloac	OR: 1.95 [1.16 3.27] ¹ OR: 1.80 [1.05 3.10] ² Up to 4 years OR: 1.98 [1.08 3.65] ¹ OR: 1.88 [0.98 3.62] ² Up to 5 years OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		Corp			August 2021. Downloac	OR: 1.80 [1.05 3.10] ² <u>Up to 4 years</u> OR: 1.98 [1.08 3.65] ¹ OR: 1.88 [0.98 3.62] ² <u>Up to 5 years</u> OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		For			igust 2021. Downloac	Up to 4 years OR: 1.98 [1.08 3.65] ¹ OR: 1.88 [0.98 3.62] ² Up to 5 years OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		Ford			st 2021. Downloac	OR: 1.98 [1.08 3.65] ¹ OR: 1.88 [0.98 3.62] ² Up to 5 years OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		Ford			.021. Downloac	OR: 1.88 [0.98 3.62] ² Up to 5 years OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		FOLD			1. Downloac	<u>Up to 5 years</u> OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		TOP			ownloac	OR: 1.59 [0.99 2.57] ¹
<u>Des</u> Ret		Orbo			/nloac	OR: 1 53 [0 92 2 55]2
<u>Des</u> Ret					ac	UN. 1.JJ [U.JZ Z.JJ]
<u>Des</u> Ret					<u>-</u>	Up to 6.5 years
<u>Des</u> Ret					ed .	OR: 1.79 [0.98 3.26] ¹
<u>Des</u> Ret					fror	OR: 1.89 [0.99 3.60] ²
Ret	ame: -	<u>n</u> = 120	Exposure assessment:	Type of symptoms:	Unadjus <mark>t</mark> ed	Combat exposure scale [1 5]
Ret			Self-reported.	PTSD symptoms	t p	OR: 1.98 [1.50, 2,62]
	esign:	Country= Portugal	h		//br	
lonį	etrospective		Year of assessment: -	Way of assessment:	njo	Sense of coherence
	ngitudinal	<u>%Female</u> = 0%		Self-reported using	per	OR: -5.08 [-3.32, -7.78]
			Exposure categories:	the Impact of Event	ı.br	
<u>Foll</u>	ollow-up period:	Age= 64 [59-72]	Combat exposure,	Scale Revised (with a	nj.c	Observation of abusive
-			abusive violence, sense	cut-off score: >=33)	om	violence
		Type of job/company=	of coherence.		/ or	<u>No</u>
		Colonial war veterans		Incidence: 41%	. ⊢	OR: Ref.
				(prevalence)	prii	<u>Yes</u>
		Inclusion/exclusion=			p://bmjopen.bmj.com/ on April 18,	OR: 8.36 [4.56, 15.35]
		Participants who			20	
		received psychiatric and)24	Participation in abusive
		psychological treatment			by	violence
		during the last 5 years,			gue	<u>No</u>
		and no history of			est.	OR: Ref.
		traumatic brain injury,			P	Yes
		neurological disorders or			ote	OR: 3.32 [1.81, 6.08]
14. Ferrajao,		physical disability were			2024 by guest. Protected	
2016 ³²		included.	Exposure assessment:	Type of symptoms:	Adjusting for all	Number of robberies during
15. Fichera, Nar		n= 383				

128			BMJ Open		/bmjopen-2	
2015 33	Design: Prospective longitudinal, with baseline 7-15 days post- robbery Follow-up period: 45 days after the first session	Country= Italy %Female= 52% Age= 43 (9) years Type of job/company= Employees of a large bank who were victims of robberies. Inclusion/exclusion= Participants who had voluntarily joined and employer sponsored post-robbery support	Self-reported (questionnaires and interviews) Year of assessment: 2010-2012 Exposure categories: Personal characteristics and characteristics of the robberies	PTSD Way of assessment: Self-reported using the Impact of Events Scale (IES). Incidence: 14%	other essoures (model 1), when additionally adjusting for baseline ptsD (models in which random intercepts were adopted from http://b	working life OR: 1.25 [1.07 1.44] ¹ OR: 1.15 [0.97 1.36] ² OR: 1.27 [1.07 1.51] ³ OR: 1.18 [0.97 1.44] ⁴ Gender Males OR: Ref ¹ OR: Ref ² OR: Ref ³ OR: Ref ⁴ Females OR: 0.63 [0.31 1.29] ¹ OR: 0.72 [0.33 1.58] ² OR: 0.77 [0.34 1.78] ³ OR: 0.85 [0.33 2.13] ⁴
		program.		ien on	nloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyrig	Being cashier No OR: Ref¹ OR: Ref² OR: Ref⁴ Yes OR: 0.52 [0.22 122]¹ OR: 0.94 [0.36 2.42]² OR: 0.40 [0.14 1.07]³ OR: 0.76 [0.25 2.25]⁴ Physical contacts with robbers No OR: Ref² OR: Ref² OR: Ref² OR: Ref³ OR: Ref³ OR: Ref³ OR: Ref⁴



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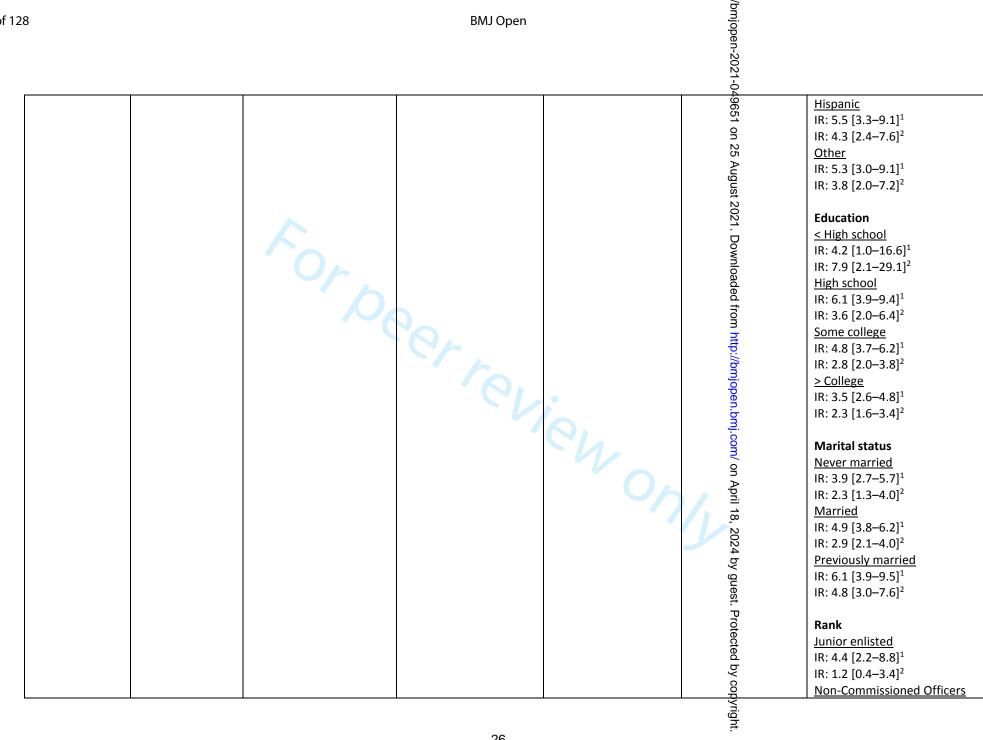
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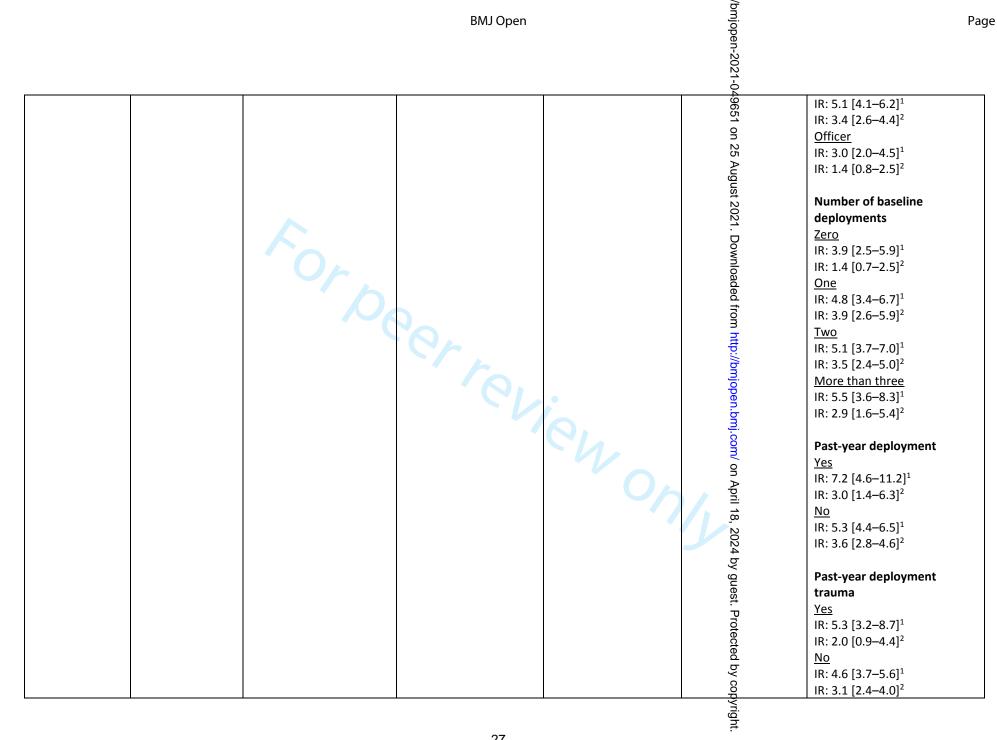
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					-049651 on 25 August 2021:	OR: Ref ² OR: Ref ³ OR: Ref ⁴ Yes OR: - OR: 1.11 [1.07 1.15] ² OR: - OR: 1.11 [1.07 1.16] ⁴
	Name: Reserve	<u>n</u> = 2,003	Exposure assessment:	Type of symptoms:	Univariate models	Effects in incidence rate (IR)
	and National		Self-reported	PTSD	using the sensitive	per 100/per-years
	Guard (RNG)	Country= USA			(model and	
	study.		<u>Year of assessment</u> :	Way of assessment:	specific model 2)	Age
		<u>%Female</u> = 18%	2010	Self-reported using	outcom <u></u> definition.	18–24 years
	Design:			the PCL-C checklist,	om	IR: 4.8 [3.0–7.5] ¹
	Prospective	<u>Age</u> = -	Exposure categories:	based on DSM-4	htt	IR: 1.9 [0.8–4.3] ²
	longitudinal	Tune of job /company	Personal characteristics,	criteria. Criteria that	p://l	25–34 years IR: 4.4 [3.2–6.1] ¹
	Follow up pariod:	Type of job/company=	deployment history and rank.	sensitive and specific	o <u>m</u> .	IR: 4.4 [3.2-6.1] ²
	Follow-up period:	Army reservists	rafik.	were used leading to two different PTSD	ope	
	4 years	Inclusion/exclusion= -		definitions.	en.t	>35 years IR: 4.9 [3.8–6.3] ¹
		<u>IIICIUSIOII/ EXCIUSIOII</u> – -		definitions.	<u>om</u> .	IR: 3.4 [2.5–4.7] ²
				Incidence: 4.7 and 2.9	om http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by cop	III. 3.4 [2.3–4.7]
				per 100 person-year	m/ c	Sex
				for sensitive and	ъ ,	Male
				specific definition,	pri	IR: 4.6 [3.8–5.7] ¹
				respectively.	1 18	IR: 3.2 [2.5–4.2] ²
					,33 N	Female
					02,	IR: 4.9 [3.2–7.4] ¹
					4 b,	IR: 1.4 [0.7–2.8] ²
					, gr	
					lest	Race/ethnicity
					 P	Non-Hispanic, white
					rote	IR: 4.3 [3.4–5.3] ¹
					cte	IR: 2.4 [1.8–3.3] ²
					l g	Non-Hispanic, black
) У с	IR: 6.4 [4.0–10.2] ¹
16. Fink, 2016 ³⁴) Ö	IR: 4.6 [2.6–8.2] ²



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BMJ Open	/bmjopen-2021	Page
Design: Prospective Iongitudinal. %Female= 11% 2004-2006. Year of assessment: 2004-2006. Way of assessment: Self-reported using Char of assessment: Char of	Industring services adjusting services stand solocyment ractions and services stand services standard standa	Male DR: Ref. Female DR: 1.46 [0.64 3.36] ¹ Age 635 DR: Ref. 235 DR: 0.71 [0.38 1.34] ¹ Marital status n a relationship DR: Ref. Single, divorced, separated, Midowed DR: 0.92 [0.39 2.14] ¹ Service Naval services DR: 0.40 [0.14 1.19] ¹ DR: 0.45 [0.16 1.28] ² Army DR: Ref. DR: Ref. DR: Ref. DR: 0.23 [0.07 0.81] ¹ DR: 0.53 [0.15 1.87] ² Rank Dfficer DR: 0.17 [0.05 0.57] ¹ DR: 0.21 [0.06 0.72] ² Dther rank DR: Ref. DR: Ref. DR: Ref. DR: Ref. DR: Ref.

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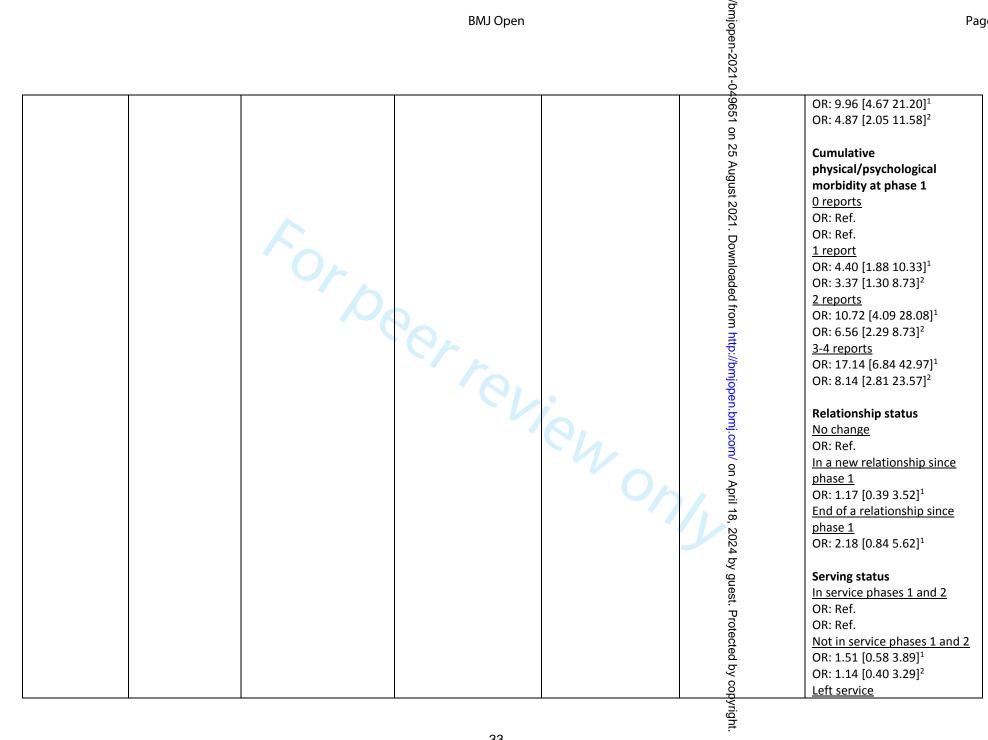
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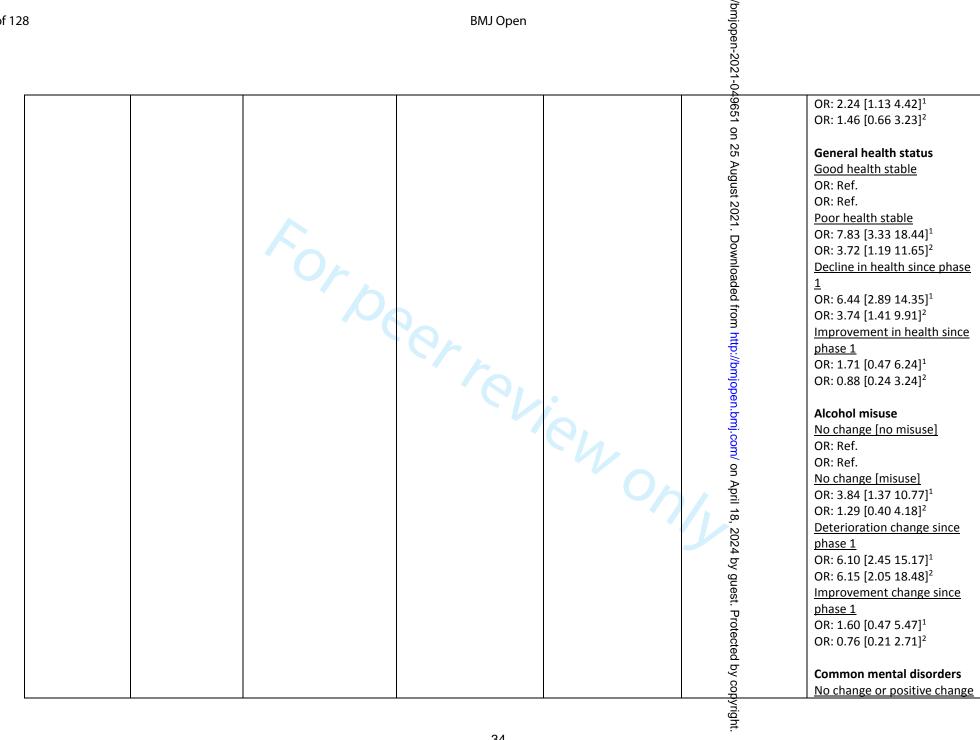
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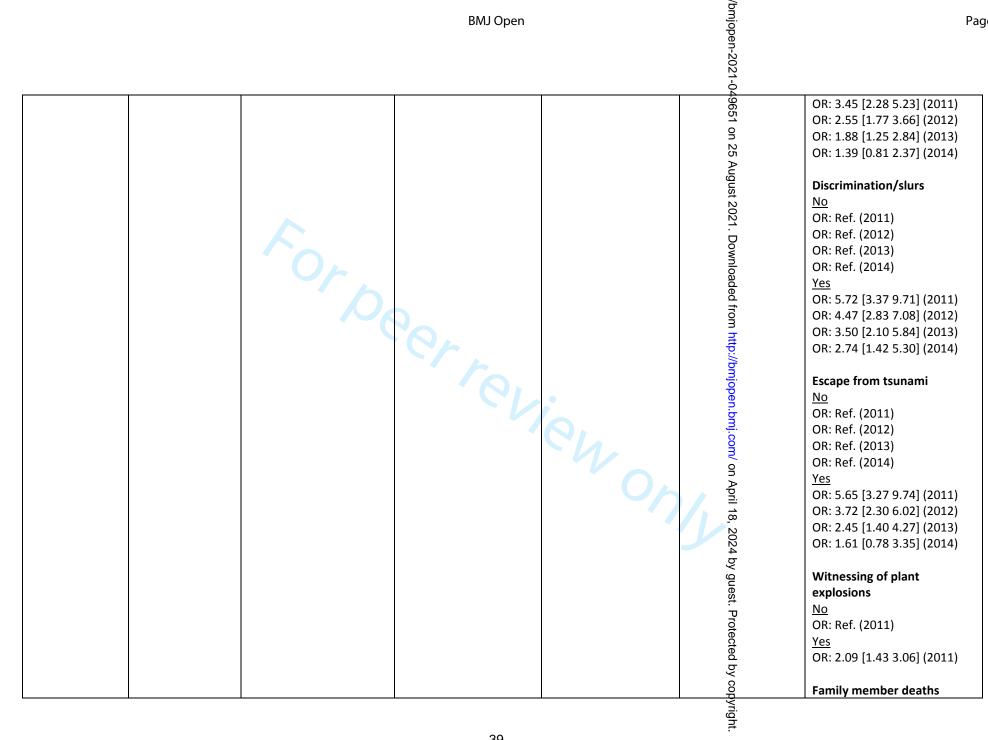
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			BMJ Open		/bmjopen-20	Page
18. Green, 2016	Name: Project VALOR Design: Retrospective longitudinal Follow-up period: -	n= 738 Country= USA %Female= 51% Age= 37.7 (9.9) years. Type of job/company= Iraq and Afghanistan army and marine corps veterans. Inclusion/exclusion= Participants who had undergone mental health evaluation at a veterans facility were included. Participants with probable PTSD and females were oversampled to get a	Exposure assessment: Self-reported Year of assessment: - Exposure categories: Deployment risk and resilience.	Type of symptoms: PTSD Way of assessment: Using a structured clinical interview with DSM-4 criteria. Incidence: 73% and 68% for females and males, respectively.	/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyri	OR: Ref. OR: Ref. Negative change since phase 1 OR: 6.29 [3.24 12.21]¹ OR: 7.12 [3.07 16.52]² Multiple physical symptoms No change or improvement OR: Ref. OR: Ref. Decline in health since phase 1 OR: 9.73 [4.56 20.76]¹ OR: 7.85 [2.86 21.52]² Age OR: 1.01 [0.81 1.03] Race White OR: Ref. Black OR: 1.83 [0.76 4.41] Other OR: 0.46 [0.19 1.11] Combat experiences OR: 1.03 [1.00 1.07] Aftermath of battle OR: 1.03 [1.00 1.06] Social support OR: 0.96 [0.93 0.98] Length of deployment OR: 0.97 [0.92 1.03]

3			BMJ Open		/bmjopen-2021-049651 on 25 August 202	
					n-202	
		1	I	T	1-049	I
		good representation of			965	Bankanna at at a
		these groups in the final			0	Deployment phase
		sample. Only participants			n 2	<u>Insurgency</u>
		with one deployment			55 >>	OR: Ref.
		were included.			,ug	Invasion
					ust	OR: 0.38 [0.16 0.91]
					20	Surge
		1.000			<u>~</u>	OR: 0.44 [0.21 0.93]
	Name: Mental	<u>n</u> = 1,933	Exposure assessment:	Type of symptoms:	Unadjusted (model	Presence during attack
	Health and Work		Deployment	PTS symptoms	1) and reultivariate	Not present during attack
	Environment	<u>Country</u> = Norway	administration		(model age	10 months
	Factors in the			Way of assessment:	and gender and	OR: Ref. ¹
	Aftermath of the	%Female= 58%	Year of assessment:	Self-reported using a	traumat <u>¶</u> c	OR: Ref. ²
	Oslo Terrorist		2011	Norwegian version of	experiegces,	22 months
	Attack	Age= 45.4(10.9) years		the Posttraumatic	education level and	OR: Ref. ¹
			Exposure categories:	Stress Disorder	leaderstop position.	OR: Ref. ²
	<u>Design:</u>	Type of job/company=	Mental health,	Checklist – Specific	md'	34 months
	Prospective	Employees of the	exposure, work,	(PCL-C), using DSM-4) jop	OR: Ref. ¹
	longitudinal	ministries at the moment	perceived safety and	criteria.	en	OR: Ref. ²
		of the Oslo terrorist	psychosocial variables.		.bm	
	Follow-up period:	attack.		Incidence: 6%, 4%,	بار ن	Present during attack
	10, 22 and 34			and 4% during the	J J	10 months
	months after the	Inclusion/exclusion= -		three follow-up	or	OR: 8.4 [5.6 12.6] ¹
	attack			periods, respectively.	Ž	OR: 9.3 [6.1 14.2] ²
					orii	22 months
					18,	OR: 6.9 [4.3 11.2] ¹
					20	OR: 8.9 [5.2 15.3] ²
					24	34 months
19. Hansen,					by	OR: 8.8 [5.2 15.1] ¹
2017 ³⁷					gu	OR: 10.0 [5.4 18.6] ²
	Name: -	<u>n</u> = 552 in combat group,	Exposure assessment:	Type of symptoms:	//bmjopen.bmj.com/ on April 18, 2024 by gudel (model Univariated for 1) and and 10 and	Combat status
		391 in control group	Deployment	PTSD symptoms (using	_, _, <u>.</u> g,	Control group
	<u>Design:</u>		administration	a cut-off >=50)	gender, gege, rank	Short-term
	Prospective	Country= UK			and serਐੱce (model	OR: Ref
20. Harvey,	longitudinal		Year of assessment:	Way of assessment:	2). <u>ä</u>	OR: Ref
2012 38		<u>%Female</u> = 17% in	2003	17-item National	by cop	Long-term

			BMJ Open		/bmjopen-2021-0	Pag
	Follow-up period: 16 months and 4.8 year post- deployment	combat group, 19% in control group Age= 39.4(7.9) in combat group, 42.0(8.9) in control group	Exposure categories: Combat versus control group	Centre for PTSD Checklist (PCL-C) Incidence: Short term: 2.2% in control group and 6.3% in the combat group. Long-	021-049651 on 25 August 2021. Downloaded	OR: Ref OR: Ref Combat group Short-term OR: 3.01 [1.36 6.64] ¹ OR: 2.91 [1.34 6.31] ²
		Type of job/company= Military personnel that were and were not deployed in the Iraq war Inclusion/exclusion= -		term: 2.0% in the control group and 5.1 in the combat group.	_	Long-term OR: 2.62 [1.12 6.16] ¹ OR: 2.42 [1.04 5.62] ²
	Name: -	<u>n</u> = 675	Exposure assessment: Self-reported	Type of symptoms: PTSD, grouped into	from htt	64.5% of the participants in the 1983 PTSD group
	Design: Prospective longitudinal Follow-up period: 1, 2 and 20 years post-war	Country= Israel %Female= - Age= - Type of job/company= War veterans from the Lebanon war Inclusion/exclusion= -	Year of assessment: 1983 Exposure categories: Combat exposure was self-reported.	four groups: no-PTSD, 1983 PTSD, 1984 delayed onset PTSD and 2002 delayed onset PTSD. Way of assessment: Self-reported using the PTSD inventory, using DSM-3 criteria. Incidence: 16.5%	rom http://bmjopen.bmj.com/ on April 18, 2024 by guest.	reported extreme exposure to danger, compared to 24.5% of the no-PTSD group, 35.8% of the 2002 delayed onset PTSD group and 41.4% of the 1984 delayed onset PTSD group. Whereas 27.9% of the participants in the no-PTSD group reported extreme battles severity, 48.2% of the participants in the 1983 PTSD group reported extreme battles severity. In comparison, 39.6% of the
21. Horesh, 2011 ³⁹ 22. Hourani,	Name: -	<u>n</u> = 2116	Exposure assessment:	Type of symptoms:	y guest. Protected by copy	participants in the 2002 delayed onset PTSD group and 34.5% of the participants in the 1984 delayed onset PTSD group reported extreme battles severity. Those with PTSD symptoms

3			BMJ Open		bmjopen-2021-0	
					2021-0	
2012 40			Self-reported	PTSD symptoms	149651	also were more likely to
	Design:	Country= USA			51	report a previous trauma
	Prospective		Year of assessment:	Way of assessment:	on .	during their lifetime a
	longitudinal	<u>%Female</u> = -	2010	Self-reported using	25	baseline. High comba
				the National Centre	on 25 August 2021. Downloaded from http://	exposure scale scores were
	Follow-up period:	<u>Age</u> = -	Exposure categories:	for PTSD Checklist	snf	associated with PTSD
	6 months		Exposures like number	(PCL-C) of the	t 20	Baseline social support wa
		Type of job/company=	of deployments and	Department of	021	associated with PTSD.
		Marines	stress were used.	Veterans Affairs –		
				Civilian Version.	W	
		Inclusion/exclusion=			nlo	
		Participants who		<u>Incidence</u> : Baseline	ade	
		transitioned from active		prevalence 28%,	ă Ť	
		military duty to civilian		follow-up incidence	rom	
		life were for a minimum		10%) H	
		of 2 months were			it	
		included.	- 1 h		9	
	Name: Fukushima	<u>n</u> = 1,417	Exposure assessment:	Type of symptoms:	Adjusted for age,	Experience of life-
	Nuclear Energy		Self-reported	PTSD symptoms (using	gender <mark>a</mark> nd job	threatening danger
	Worker's Support	<u>Country</u> = Japan		a cut-off >=25)	location	<u>No</u>
	(NEWS) Project.		Year of assessment:	N_{i}).c	OR: Ref. (2011)
		<u>%Female</u> = 5%	2011	Way of assessment:	om	OR: Ref. (2012)
	<u>Design:</u>			Self-reported using	Or Or	OR: Ref. (2013)
	Prospective	Age= 39.3 years	Exposure categories:	the Japanese version	> >	OR: Ref. (2014)
	longitudinal		Sociodemographic,	of the Impact of Event	pr <u>ii</u>	<u>Yes</u>
		Type of job/company=	disaster-related	Scale-Revisited (IES-R),	nj.com/ on April 18,	OR: 4.32 [2.89 6.48] (2011)
	Follow-up period:	Employers of the Tokyo	experiences and	using DSM-4 criteria.		OR: 3.47 [2.43 4.95] (2012)
	Baseline at 2-3	Electric Power Company	psychological distress.)24	OR: 2.78 [1.87 4.14] (2013)
	months post-	in Fukushima.		Incidence: 26%	by	OR: 2.23 [1.34 3.72] (2014)
	disaster, with				gu	
	follow-up 3 years	<u>Inclusion/exclusion</u> = -			2024 by guest.	Major property loss
	after that.				_D	<u>No</u>
					rote	OR: Ref. (2011)
					cte	OR: Ref. (2012)
					b b	OR: Ref. (2013)
23. Ikeda, 2017					Protected by copyrig	OR: Ref. (2014)
41					မြဲ မို	<u>Yes</u>



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				n-2021-0,	
Name: - Design: Retrospective longitudinal Follow-up period: -	n= 453 Country= USA %Female= 24% Age= - Type of job/company= Traumatic surgeons Inclusion/exclusion =	Exposure assessment: Self-reported Year of assessment: Exposure categories: Personal characteristics, and exposure at work.	Type of symptoms: PTSD (symptoms and diagnosed PTSD - only diagnosed PTSD was extracted for this review) Way of assessment: Self-reported using the PCL checklist (with a cut-off score >=44). Incidence: 15% (prevalence)	del for ending sur popen-2021-049651 on 25 August 2021. Downloaded from http://em.japen.simj.com/ on April 18, 2024 by guest. Protected by copyright. Un) all odde uses and the sure population of the sure population of the sure population.	No OR: Ref. (2011) Yes OR: 1.60 [0.80 3.19] (2011) Colleague deaths No OR: Ref. (2011) Yes OR: 2.08 [1.33 3.26] (2011) Home evacuation No OR: Ref. (2011) Yes OR: 1.49 [1.03 2.15] (2011) Age ≤51 years OR: Ref.¹ OR: Ref.² ≥51 years OR: 1.8 [0.7 3.4]¹ Gender Female OR: Ref.¹ OR: Ref.² Male OR: 2.1 [1.4 4.6]¹ OR: 1.8 [0.9 5.3]² Marital status Other OR: Ref.¹ Single OR: 1.2 [0.4 2.8]¹

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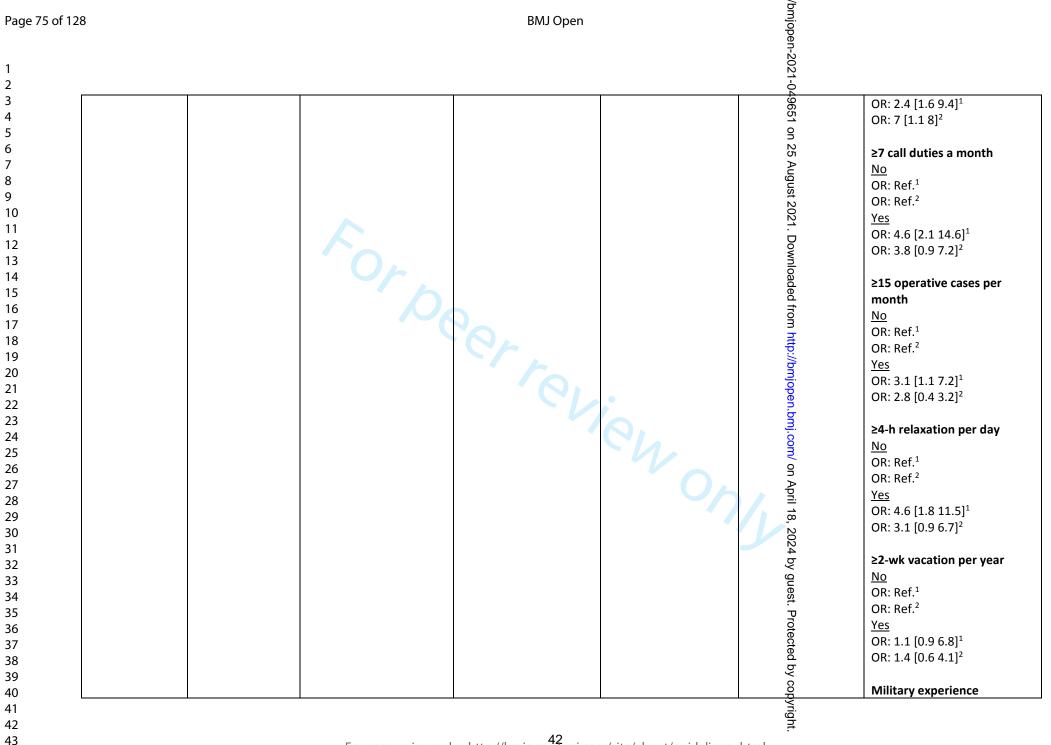
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			T	T	1-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyri	T N -
)65	No. 0. 61
					7 0	OR: Ref.¹
) n	OR: Ref. ²
					15	<u>Yes</u>
					Jug	OR: 1.4 [0.8 5.6] ¹
					just	OR: 1.1 [0.7 3.8] ²
					202	War deployment
						<u>No</u>
					No w	OR: Ref. ¹
					/nlc	OR: Ref. ²
					bad	Yes
					ed	OR: 4.2 [2.8 14.1] ¹
					froi	OR: 2.8 [0.9 7.9] ²
		To poo			3	
					ittp	Smoking
			- / b		://b	No.
					<u>m</u> .	OR: Ref. ¹
					pe	<u>Yes</u>
					n.b	OR: 1.2 [0.8 3.1] ¹
					<u>,⊒.</u>	
				C/A	cor	Alcohol
					1	No
					on .	OR: Ref. ¹
					Apr	<u>Yes</u>
						OR: 1.1 [0.5 2.3] ¹
					, oo	OK. 1.1 [0.3 2.3]
					202	Annual income >\$300,000
					4 0	No
) Y C	OR: Ref. ¹
					Jue	Yes
					st. F	OR: 3.6 [0.9 8.4] ¹
	Name: -	<u>n</u> = 675 (369 who were	Exposure assessment:	Type of symptoms:	- <u>o</u>	Severity of battles
		diagnosed with a combat	Self-reported	PTSD	ect	OR: 0.96 [0.63 1.48] (comba
	Design:	stress reaction and 306			ed.	stress reaction)
5. Karstoft,	Prospective	without)	Year of assessment:	Way of assessment:	by	OR: 0.87 [0.55 1.36] (no
2013 43	longitdinal	<i>'</i>	1983	Self-reported using	<u>ا</u> 2	combat stress reaction)

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					ĸ.	
		<u>Country</u> = Israel		the PTSD inventory,	49651	
	Follow-up period:		Exposure categories:	using DSM-3 criteria.	51	Life threatening war
	1, 2 and 20 years	<u>%Female</u> = 0%	Exposures such as the	Latent growth) N	OR: 1.90 [1.08 3.35] (comba
	post-war.		severity of battles, life	modelling was used to	25 /	stress reaction)
		<u>Age</u> = 25.8(4.7)	threatening war, unit	identify PTSD	gu	OR: 0.95 [0.64 1.43] (no
			atmosphere and social	subgroups. For the	ust	combat stress reaction)
		Type of job/company=	support were assessed.	current review we	20	
		Combat veterans who		only assessed the	21.	Unit atmosphere
		were on active duty in		'delayed onset' PTSD	, D	OR: 1.08 [1.00 1.17] (comba
		the Lebanon war.		group, as this reflects	JW	stress reaction)
				incidence of PTSD.	nloa	OR: 1.02 [0.96 1.09] (no
		Inclusion/exclusion= -			ide	combat stress reaction)
				<u>Incidence</u> : -	d fr	
					om	Social support
					ht	OR: 0.58 [0.25 1.31] (comba
					p://	stress reaction)
					mď	OR: 0.66 [0.29 1.53] (no
		(2.22			j _o	combat stress reaction)
	Name: -	<u>n</u> = 675 (369 who were	Exposure assessment:	Type of symptoms:	on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18,	Severity of battles
		diagnosed with a combat	Self-reported	PTSD	bm	OR: 1.01 [0.67 1.35] (comba
	<u>Design:</u>	stress reaction and 306	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		j.cc	stress reaction)
	Prospective	without)	Year of assessment:	Way of assessment:	ď	OR: 0.87 [0.57 1.32] (no
	longitudinal		1983	Self-reported using	on	combat stress reaction)
		<u>Country</u> = Israel		the PTSD inventory,	Ąp	
	Follow-up period:	0/5	Exposure categories:	using DSM-3 criteria.	<u> </u>	Life threatening war
	1, 2 and 20 years	<u>%Female</u> = 0%	Exposures such as the	Latent growth	18,	OR: 1.91 [1.07 3.24] (comba
	post-war.	25.0(4.7)	severity of battles, life	modelling was used to	20:	stress reaction)
		<u>Age</u> = 25.8(4.7)	threatening war, coping	identify PTSD	24	OR: 1.01 [0.68 1.50] (no
		Tune of ich /commercia	were assessed.	subgroups. For the	by (combat stress reaction)
		Type of job/company=		current review we	gue	Leave of control
		Combat veterans who		only assessed the) St.	Locus of control
		were on active duty in		'delayed onset' PTSD	Pro	OR: 1.12 [0.93 1.35] (comba
		the Lebanon war.		group, as this reflects incidence of PTSD.	otec	stress reaction)
		Inclusion /ovelusion-		incluence of PISD.	tec	OR: 0.88 [0.73 1.05] (no
26 Varstaft		<u>Inclusion/exclusion</u> = -		Incidence) b)	combat stress reaction)
26. Karstoft, 2015 44				<u>Incidence</u> : -	2024 by guest. Protected by copyrig	Problem-focused coping
2015					L ğ	Problem-locused coping

OR: 1.72 [0.80 3.73] Stress reaction) OR: 3.11 [1.16 8.38] Combat stress react Pugust OR: 0.60 [0.26–1.35] Stress reaction)	(no ion) pping] (combat
Stress reaction) On OR: 3.11 [1.16 8.38 Combat stress react Property of the combat stress react On: 0.60 [0.26–1.35 Stress reaction)	pping [(combat
OR: 3.11 [1.16 8.38 combat stress react to the combat stress reaction)	pping [(combat
Emotion-focused or OR: 0.60 [0.26–1.35 stress reaction)	oping] (combat
Emotion-focused or OR: 0.60 [0.26–1.35 stress reaction)] (combat
Emotion-focused control of the contr] (combat
OR: 0.60 [0.26–1.35	
stress reaction)	(no
	l (no
OR: 0.28 [0.09–0.93	
combat stress react	on)
Name: - n= 980 Exposure assessment: Type of symptoms: Multi-væriate Person under train	<u>, </u>
Self-reported PTSD (1 year and analyse with all experience	
<u>Design:</u> <u>Country</u> = Korea <u>lifetime prevalence</u>). <u>other ex</u> eosures <u>No</u>	
Retrospective Year of assessment: - and ageo For 1 year OR: Ref	
longitudinal <u>%Female</u> = 0% <u>Way of assessment</u> : prevalence (model OR: Ref	
Exposure categories: The Korean version of 1) and lifetime Yes	
Follow-up period: Age Most participants Person under train the Composite prevalence (model OR: 1.54 [0.52 4.55]	1
- were in their 40s. experiences and other International 2).	2
work-related exposures Diagnostic Interview	
Type of job/company= were assessed. (K-CIDI) was S	ınder
Subway drivers administered to train experiences	
employed by a public diagnose PTSD, using <u>9</u> <u>0 experiences</u>	
company in Seoul DSM-4 criteria. OR: Ref	
OR: Ref	
<u>Inclusion/exclusion=</u> <u>Incidence</u> : 1.6% (one <u>3</u> . <u>1 experience</u>	
Participants currently on year prevalence) OR: 1.77 [0.31 4.47]	
sick leave and female OR: 1.45 [0.55 3.85]	2
drivers were excluded. ≥2 experiences	
OR: 2.36 [0.57 9.70]	
면 OR: 3.57 [1.32 3.65]	2
Severity of victim's	injury
Alive Alive	
OR: Ref	
OR: Ref	
Death Sound for the control of the c	-11
Type of job/company= Subway drivers employed by a public company in Seoul Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion/exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion / exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion / exclusion= Participants currently on sick leave and female drivers were excluded. Inclusion / exclusion= Participants currently on sick leave and female drivers were exclusion= Participants	<u>]</u>

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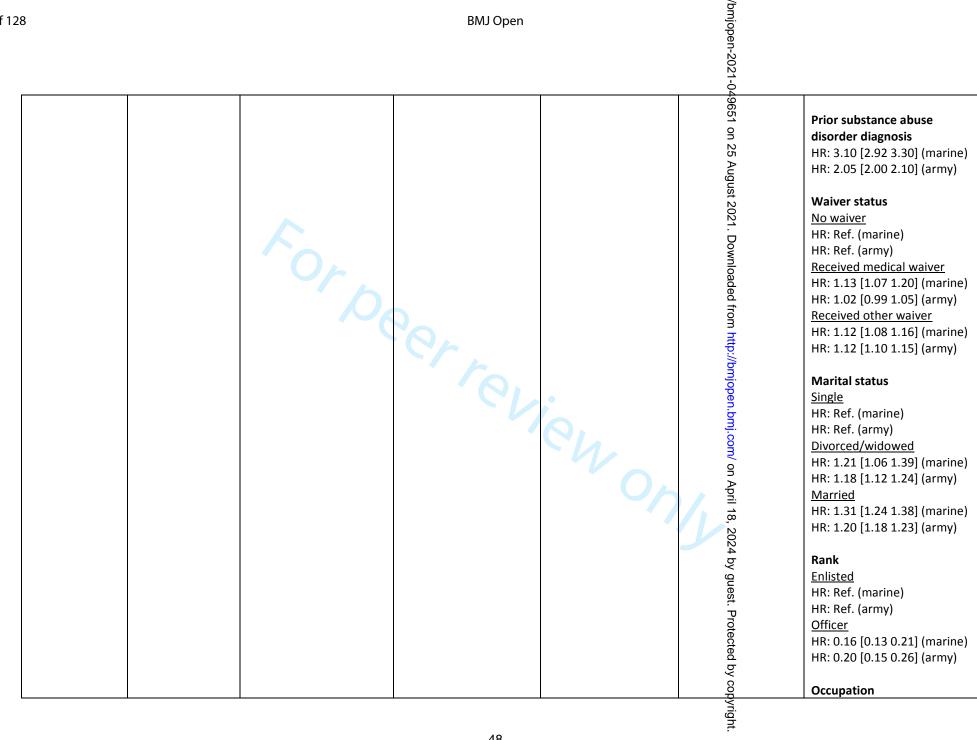
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			BMJ Open		mjopen-20	P
Manp Cente Caree and A Medic Perso (CHAN the Ex Medic Encou Datab Design Prosp longit Follow	power Data fer (DMDC), er History Archival lical onnel System AMPS), and Expeditionary lical ounter lbase (EMED)	n= 332,093 (marine) and 773,359 (army) Country= USA %Female= 7% (marine) and 17% (army) Age= 20.0 (3.9) (marine) and 21.7 (2.1) (army) Type of job/company= All service members who went into the army or navy between 2001 and 2011. Inclusion/exclusion= -	Exposure assessment: Military databases Year of assessment: 2001-2011 Exposure categories: Personal and deployment characteristics.	Type of symptoms: PTSD Way of assessment: Diagnosed PTSD obtained from military records. Incidence: 4.3% (marine); 7.6% (army).	for ith for winjopen-2021-049651 on 25 August 2021. Downstaged from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyright. A clu ui	OR: 1.71 [0.48 6.14]¹ OR: 1.89 [0.75 4.75]² Person under train experience of colleague No OR: Ref.¹ OR: Ref.² Yes OR: 0.55 [0.12 2.47]² OR: 2.84 [1.32 6.12]² Sex Female HR: Ref. (marine) HR: Ref. (army) Male HR: 0.40 [0.36 0.44] (marine) HR: 0.57 [0.55 0.59] (army) Age at accession HR: 0.99 [0.98 1.00] (marine) HR: 1.01 [1.00 1.01] (army) Race White HR: Ref. (army) Non-white HR: 0.95 [0.91 1.00] (marine) HR: 0.96 [0.94 0.98] (army) Ethnicity Non-Hispanic HR: Ref. (marine) HR: Ref. (army) HISPANIC HR: Ref. (army) HISPANIC HR: 0.80 [0.75 0.84] (marine) HR: 0.86 [0.84 0.89] (army)



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					.1-0	
					8, 2024 by gues	Combat specialist HR: Ref. (marine) HR: Ref. (army) Communications/intelligence HR: 0.54 [0.48 0.62] (marine) HR: 0.73 [0.70 0.77] (army) Craft/repair specialist HR: 0.46 [0.40 0.54] (marine) HR: 0.62 [0.60 0.65] (army) Functional support/other HR: 0.46 [0.41 0.51] (marine) HR: 0.56 [0.53 0.59] (army) Service and supply HR: 0.77 [0.68 0.87] (marine) HR: 0.84 [0.80 0.88] (army) Healthcare specialist HR: 1.03 [0.98 1.08] (army) Cumulative years deployed HR: 2.04 [1.93 2.15] (marine) HR: 1.74 [1.71 1.76] (army) Unit cumulative high deployment stress rate (per 100) HR: 1.04 [1.03 1.05] (marine) HR: 1.05 [1.04 1.06] (army) Unit stability HR: 1.11 [0.92 1.33] (marine) HR: 0.69 [0.64 0.74] (army)
	Name: Defence	<u>n</u> = 8,064 (3,416 health	Exposure assessment:	Type of symptoms:	Univariate (model	Health Care Occupation
	Manpower Data	care profession, 4,648 no	Self-reported.	PTSD	1) and multivariate	No
	Center (DMDC)	health care profession)			(model 🖺) adjusting	OR: Ref. (1 deployment)
			Year of assessment:	Way of assessment:	for all remaining	OR: Ref. (2 deployments)
29. MacGregor,	<u>Design:</u>	<u>Country</u> = USA	2001-2008	Diagnosed, according	exposures	OR: Ref. (3 deployments)
2015 47	Prospective			to ICD-9-CM criteria,	Ö	<u>Yes</u>
					yrig	

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longitudinal	<u>%Female</u> = 0%	Exposure categories:	from inpatient and outpatient databased.	1-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyright.	OR: 2.02 [1.45 2.80] ¹ (1 deployment)
Follow up poriods	Ago- Danging from 27.0	military occupation,	outpatient databased.	0	_ · · · · · · · · · · · · · · · · · · ·
Follow-up period:	Age = Ranging from 27.9	combat rank,	Incidence Dencine	n 2	OR: 2.27 [1.26 4.08] ¹ (2
Up to 60 days.	(5.7) to 30.2 (7.0) in	deployment specific variables	Incidence: Ranging from 1.9% to 17.9%	δi Σ	deployments)
	various participating	variables		Ugu	OR: 4.37 [1.25 15.28] ¹ (3
	groups.		for various	ust	deployments)
			participating groups.	20	
	Type of job/company=			21.	Age
	Navy personnel with one,			D	OR: 0.97 [0.94 0.99] ¹ (1
	two or three			Ĭ,	deployment)
	deployments in Iraq			nlos	OR: 0.97 [0.93 1.02] ¹ (2
	and/or Afghanistan.			ade	deployments)
				d fr	OR: 0.94 [0.86 1.03] ¹ (3
	Inclusion/exclusion=			'n.	deployments)
	Participants who			<u> </u>	
	completed a health			tp:/	Rank
	assessment within 60			/bm	<u>Enlisted</u>
	days post-deployment	10.		ojo Jo	OR: Ref.
	were included. Women			oer	OR: Ref.
	were excluded			ı.br	<u>Officer</u>
		4	\mathbf{O}_{i}	<u>j.</u>	OR: 0.35 [0.18 0.65] ¹ (1
				Ϋ́	deployment)
				0	OR: 0.54 [0.12 2.47] ¹ (2
		Per tev		n Ap	deployments)
)	Married
				, o	No
				.02	OR: Ref. (1 deployment)
				4 b	OR: Ref. (2 deployments)
				y 9	OR: Ref. (3 deployments)
				ue	Yes
				št. F	OR: 0.93 [0.67 1.30] ¹ (1
				γ _{ro}	deployment)
				tec	OR: 0.54 [0.32 0.89] ¹ (2
				ted	deployments)
				by	OR: 0.96 [0.36 2.56] ¹ (3
				Q	deployments)

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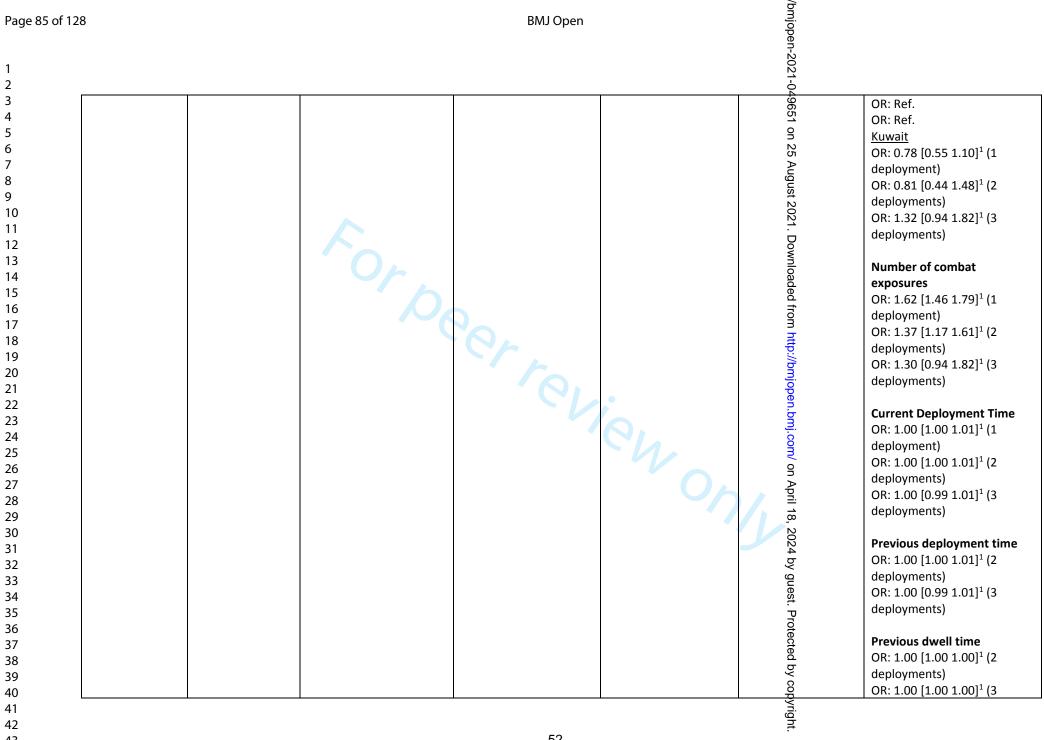
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3		BMJ Open		′bmjope	
				ʻbmjopen-2021-0	
Name: Defence Manpower Data Center (DMDC) Design: Prospective longitudinal Follow-up period: 4 years	n=65,704 Country= USA %Female= - Age= 22 (19-53) Type of job/company= Marine corps personnel deployed to Iraq or Kuwait. Inclusion/exclusion= Deployments between 4 and 8 months were considered. Special forces and participants with earlier mental health issues were excluded. Only those with more than one deployment were analysed.	Exposure assessment: Deployment adminstration Year of assessment: 2003-2007 Exposure categories: Dwell-to-deployment ratios were categorised into <1:1, 1:1 and 2:1.	Type of symptoms: PTSD Way of assessment: Diagnosed PTSD with ICD-9-CM criteria were obtained from impatient and outpatient registers Incidence: 1.5%	e a k of or an a k of or a k of or an a k of	Exposed to wounded/dead enemy No OR: Ref.¹ Yes OR: 1.79 [1.38 2.34]¹ Dwell to deployment ratio <1:1 OR: Ref. 1:1 OR: 0.83 [0.60 1.13] 2:1 OR: 0.47 [0.32 0.70]
Name: Department of Veterans Affairs 31. Maguen, 2012 49 (VA) database	<u>n</u> = 968 <u>Country</u> = USA %Female= 12%	Exposure assessment: Department of Veterans Affairs administrative data (including self- reports)	Type of symptoms: PTSD Way of assessment: Using the self-	Univariate (model 1) and raultivariate (model 2), adjusting for age, Gex, race, marital status, unit,	Number of exposures None OR: Ref. OR: Ref. One
		, , ,		copyright.	·

			BMJ Open		ʻbmjopen-2021	P
			T		-02	00 400 (0.0 7.0)
	Design:	20.2(0.4)		reported Primary Care	branch f service,	OR: 4.93 [3.3 7.3] ¹
	Retrospective	Age= 30.3(8.4) years	Year of assessment:	PTSD Screen (PC-	rank and number of	OR: 4.67 [3.1 7.1] ²
	longitudinal		2007-2010	PTSD) screening	deployments.	Two +
		Type of job/company=		instrument	55 >>	OR: 6.96 [5.1 9.6] ¹
	Follow-up period:	War veterans who have	Exposure categories:		guv	OR: 6.15 [4.4 8.7] ²
	11 days	been deployed in Iran	Exposure to traumatic	<u>Incidence</u> : -	August 2021. Downloaded from http://bmjopen.bmj.cc	
		and Afghanistan.	brain injury		20	Type of exposure
			mechanisms		21.	None
		Inclusion/exclusion=			D	OR: Ref.
		Participants with either) W	OR: Ref.
		no head injury or a head			llo _e	Blast only
		injury with traumatic			<u>ā</u>	OR: 5.13 [3.2 8.2] ¹
		brain injury were			d fr	OR: 4.72 [2.9 7.7] ²
		included, but not those			om	Blast plus
		with head injury without			b <u>t</u>	OR: 7.45 [5.4 10.3] ¹
		brain damage.			h:/	OR: 6.52 [4.6 9.3] ²
					/bm	1 Non blast
			10.		Ji Q	OR: 4.53 [2.4 8.6] ¹
)en	OR: 4.60 [2.4 8.8] ²
					.bm	2+ Non blast
				\mathbf{O}_{I}	ار. C.i.	OR: 2.94 [1.17 7.4] ¹
				11.	ă .	OR: 3.36 [1.32 8.6] ²
	Name:	<u>n</u> = 329,049	Exposure assessment:	Type of symptoms:	Univariate models	Age
	Department of		Deployment data	PTSD	were conducted for	<u>16–24</u>
	Veterans Affairs	Country= USA			females <u>∃</u> model 1)	RR: Ref.
	(VA) database		Year of assessment:	Way of assessment:	and males (model 2)	RR: Ref.
		<u>%Female</u> = 12%	2001	PTSD obtained from	separately.	<u>25–29</u>
	<u>Design:</u>			medical health)24	RR: 1.05 [0.99 1.11] ¹
	Retrospective	<u>Age</u> = 31.2(9.0)	Exposure categories:	records of those who	by	RR: 0.96 [0.94 0.97] ²
	longitudinal		Demographic and	visited veteran	gu	<u>30–39</u>
		Type of job/company=	military service data.	facilities from 2002 to	by guest.	RR: 1.24 [1.17 1.32] ¹
	Follow-up period:	War veterans who have		2008. Diagnosis was	P	RR: 0.98 [0.96 0.99] ²
	-	been deployed in Iran		done with ICD-9-CM	ote.	<u>40–71</u>
		and Afghanistan.		criteria.)cte	RR: 1.21 [1.13 1.30] ¹
					j ğ	RR: 0.79 [0.77 0.81] ²
32. Maguen,		Inclusion/exclusion= -		Incidence: 17% among	Protected by copyrig	
2010 ⁵⁰				females, 22% among	Öp	Race/Ethnicity

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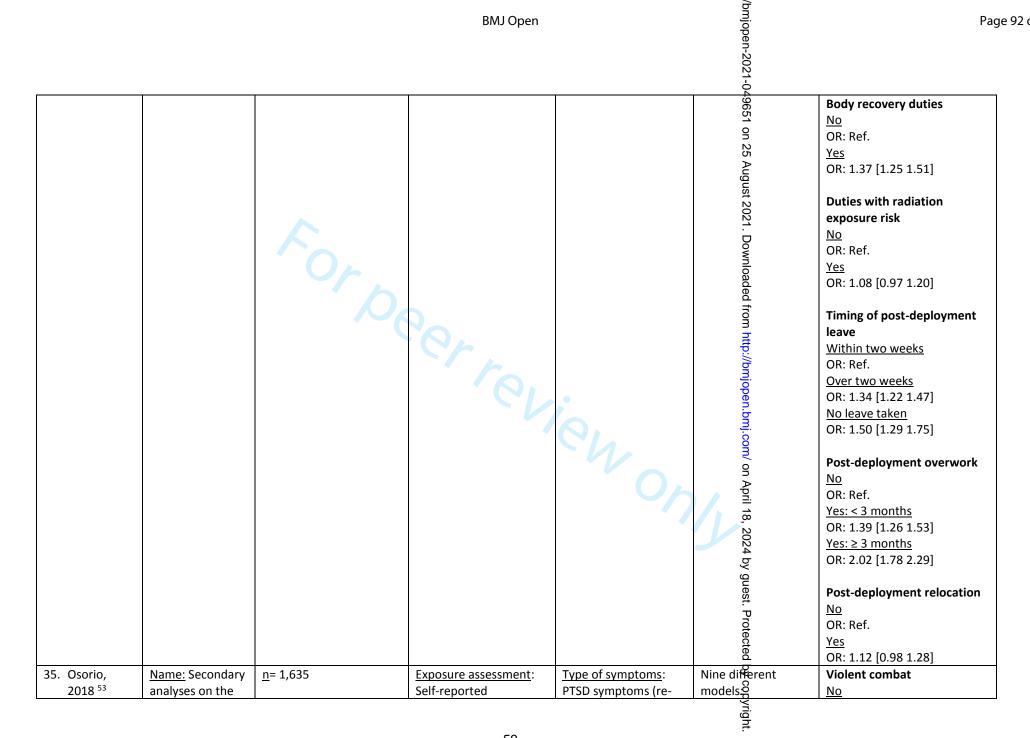
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28			BMJ Open		/bmjopen-	
28	Name: - Design: Prospective longitudinal, with baseline measurements one month post- deployment. Follow-up period: 6 and 12 months post-deployment.	Inclusion/exclusion= Participants with a history in traumatic brain injury or other neurological or mental disorders were excluded. n= 56,753 Country= Japan %Female= 3% Age=- Type of job/company= Members of the ground defence force at 2011 Great East Japan Earthquake. Inclusion/exclusion= -	Exposure assessment: Self-reported Year of assessment: - Exposure categories: Information on personal attributes and mission duties.	respectively. Type of symptoms: PTSD symptoms (using a cut-off: >- 25) Way of assessment: Self-reported with the Impact of Event Scale-Revised (IES-R). Incidence: 2283/56753=4%	bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2	Age OR: 1.39 [1.27 1.52] Sex Male OR: Ref. Female OR: 1.61 [1.29 2.00] Rank Enlisted/private OR: Ref. Officer OR: 0.77 [0.67 0.88] Administrative official OR: 1.24 [0.82 1.87] Deployment length < 1 month OR: Ref. 1−3 months
				0/7	on April 18, 2024 by gu	< 1 month
34. Nagamine, 2018 ⁵²					2024 by guest. Protected by copyri	Personally affected No OR: Ref. Yes OR: 2.19 [1.95 2.44]



28			BMJ Open		bmjop	
					bmjopen-2021-0	
	Battlemind RCT.	Country= UK		experience is	Model 18	RR: Ref. ¹
			Year of assessment:	extracted for this	Unadjusted	RR: Ref. ²
	Design:	<u>%Female</u> = 2%	2009	review - in the paper	Model 2 Adjusted	RR: Ref. ³
	Prospective			also: avoidance,	Model 3 Adjusted	RR: Ref. ⁴
	longitudinal	Age= 39% was younger	Exposure categories:	numbing, arousal and	for proxemity to	RR: Ref. ⁵
		than 25 years.	Violent combat	anxious is reported)	woundigg or death.	RR: Ref. ⁶
	<u>Follow-up period</u> :		situations, proximity to		Model 45Adjusted	RR: Ref. ⁷
	4-6 months post	Type of job/company=	wounding or death and	Way of assessment:	for encountering	RR: Ref. ⁸
	deployment.	Members of three	encountering explosive	Using the National	explosive devices.	RR: Ref. ⁹
		branches of the army	devices.	Center for	Model 🧏 adjusted	<u>Yes</u>
		forces, returning from		Posttraumatic Stress	for PTS ਨ੍ਰਿੰre-	RR: 2.43 [1.95 3.02] ¹
		deployment in		Disorders Checklist –	experiegcing,	RR: — ²
		Afghanistan.		Civilian Version (PCL-	avoidan <mark>ĕ</mark> e,	RR: 1.56 [1.21 2.01] ³
				C). PTSD in general,	numbin © , or	RR: 2.04 [1.62 2.58] ⁴
		Inclusion/exclusion= -		but also avoiding,	arousal.	RR: 1.81 [1.43 2.29] ⁵
				numbing and arousal	Model 🔂 Adjusted	RR: 2.63 [2.10 3.31] ⁶
			- h	behaviour were	for distress.	RR: 2.32 [1.85 2.89] ⁷
			10.	reported. For this	Model 适 ·Adjusted	RR: 2.36 [1.89 2.95] ⁸
				review we only	for alconol.	RR: 1.35 [1.01 1.81] ⁹
				extracted PTSD.	Model & Ranks,	
				N.	deployment and	Proximity to wounding or
				Incidence: 34%	gender.	death
					Model & Adjusted	<u>No</u>
					for violent combat,	RR: Ref. ¹
					proximi <u>≅</u> y to	RR: Ref. ²
					wounding or death,	RR: Ref. ³
					encountering	RR: Ref. ⁴
					explosive devices,	RR: Ref. ⁵
					PTSD reg	RR: Ref. ⁶
					experiencing,	RR: Ref. ⁷
					avoidan <mark>g</mark> e,	RR: Ref. ⁸
					numbing arousal,	RR: Ref. ⁹
					distress	<u>Yes</u>
					consumotion, rank,	RR: 3.01 [2.42 3.74] ¹
					gender, eserves,	RR: 2.42 [1.89 3.11] ²
					deployment.	RR: — ³
					l ŏg	RR: 2.62 [2.08 3.31] ⁴
					opyright.	
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			60			

					Ó	
					1-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 202	RR: 2.02 [1.59 2.56] ⁵
					551	RR: 3.03 [2.42 3.80] ⁶
					on on	RR: 2.94 [2.36 3.67] ⁷
					25	RR: 3.01 [2.41 3.75] ⁸
					è	RR: 1.67 [1.25 2.23] ⁹
					gu	-
					st 2	Encountering explosive
					02	devices
					1 .	<u>No</u>
					Jo _N	RR: Ref. ¹
					/nlc	RR: Ref. ²
)ad	RR: Ref. ³
		To po			ed .	RR: Ref. ⁴
					fror	RR: Ref. ⁵
					ן ד	RR: Ref. ⁶
					r tt b	RR: Ref. ⁷
			- / L		://b	RR: Ref. ⁸
					nj _o	RR: Ref. ⁹
					pe	Yes
					n.b	RR: 2.14 [1.71 2.67] ¹
				$\mathbf{O}_{\mathbf{i}}$	<u>3</u> .	RR: 1.66 [1.30 2.10] ²
					Con	RR: 1.54 [1.21 1.95] ³
					0 / 0	RR: —4
					Ď >	RR: 1.70 [1.33 2.16] ⁵
					þr _i	RR: 2.17 [1.72 2.73] ⁶
					1 18	RR: 2.01 [1.60 2.52] ⁷
					,u N	RR: 2.06 [1.65 2.59] ⁸
					024	RR: 1.26 [0.95 1.66] ⁹
	Name: Everyday	<u>n</u> = 1,763	Exposure assessment:	Type of symptoms:	Crude noodel	Frequency of violence
	violence project		Self-reported.	PTSD	adjusting for age	No violence
		<u>Country</u> = Denmark			and gen <mark>g</mark> er (model	OR: Ref.
	<u>Design:</u>		Year of assessment:	Way of assessment:	1), additionally	OR: Ref.
	Prospective	<u>%Female</u> = 78%	2016-2017	Self-reported using	adjusting for BMI,	OR: Ref.
	longitudinal			the International	alcohol, wears of	Low frequency
36. Pihl-		Age= 48.7 (9.4) years.	Exposure categories:	Trauma	experie (ce, critical	OR: 4.4 [1.3 14.8] ¹
Thingvad,	Follow-up period:		Patient-initiated	Questionnaire, with	incidents outside of	OR: 3.0 [0.90 10.4] ²
2019 54	12 months	Type of job/company=	violence.	ICD-11 criteria.	work, pesttraumatic	OR: 4.0 [1.0 16.3] ³
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			BMJ Open		bmjopen-2021	
					.2021-0	
		Social educators working			stress d	Medium frequency
		with disabled adults.		Incidence: 3.5%	symptom level at	OR: 6.3 [1.8 22.9] ¹
					baseline trauma	OR: 3.7 [1.0 13.8] ²
		Inclusion/exclusion=			coping self-efficacy,	OR: 5.9 [1.4 24.2] ³
		Participants in leadership			workpla∉e social	High frequency
		position and with PTSD			capital king, and	OR: 10.2 [2.9 36.3] ¹
		at baseline were			training model 2).	OR: 4.2 [1.1 15.9] ²
		excluded.			In mode№3,	OR: 6.5 [1.6 25.6] ³
					additional for	
					frequen y and	Severity of violence
		() 6			severity of violence	<u>No violence</u>
					was donge.	OR: Ref.
					ð f	OR: Ref.
					rom	OR: Ref.
					from http://bmjopen.bmj.com/ on April 18,	Max. mild violence
					tp:/	OR: 2.3 [0.2 22.8] ¹
					/bm	OR: 2.3 [0.2 24.4] ²
			10.		Jj. Qoji	OR: 3.8 [0.3 46.2] ³
) en	Max. threats of violence
					.bm	OR: 5.1 [1.5 17.5] ¹
				\mathbf{O}_{I}	ر. o.زر	OR: 3.6 [1.0 12.4] ²
				1/1/	9	OR: 5.4 [1.2 24.2] ³
					or or	Max. moderate violence
					Ď	OR: 4.1 [1.1 14.5] ¹
) r <u>i</u>	OR: 2.1 [0.6 8.1] ²
					18,	OR: 2.6 [0.6 10.8] ³
					20	Max. severe violence
					24	OR: 13.7 [3.1 37.1] ¹
					by	OR: 5.3 [1.5 19.5] ²
	Name: Readiness	<u>n</u> = 426	Evnocuro accessment:	Type of symptoms:	2024 by guille for all	OR: 6.5 [1.6 26.0] ³ Baseline PTSD symptoms
	and Resilience in	<u>11</u> - 420	Exposure assessment: Self-reported	Type of symptoms: Probable PTSD (new	other pre-	· ·
	National Guard	Country= USA	Jen-reported	onset)	deployrent factors	No OR: Ref. ¹
	Soldiers.	Country - OSA	Year of assessment:	onset)	(model <u>\$</u>),	OR: Ref. ²
	Jointers.	<u>%Female</u> = 12%	2006	Way of assessment:	additionally	OR: Ref. ³
7. Polusny,	Design:	701 EIIIaic - 1270	2000	Self-reported using	adjusting for	Yes
2011 ⁵⁵	Prospective	Age= Mostly younger	Exposure categories:	the PCL checklist, with	deployment	OR: 0.73 [0.34 1.58] ¹
	1 . 10390001140	1 150 Woodly younger	ENDOGATE CATEGOTICS.	and i de checking, with	~~~~	[0.1. 0.75 [0.54 1.50]
					right.	

		BMJ Open		/bmjopen-2021-0	Page
longitudinal Follow-up period: 2 months	than 30. Type of job/company= National Guard soldiers Inclusion/exclusion= Those with PTSD at baseline were excluded.	Psychosocial risk, protective factors and deployment exposures.	DSM-4 criteria. Incidence: 14%	2) el e	OR: 0.79 [0.34 1.85] ² OR: 0.69 [0.27 1.79] ³ Military preparedness No OR: Ref. ¹ OR: Ref. ² OR: Ref. ³ Yes OR: 0.58 [0.39 0.87] ¹ OR: 0.62 [0.40 0.95] ² OR: 0.77 [0.48 1.25] ³ Concerns about life/family disruptions No OR: Ref. ¹ OR: Ref. ² OR: Ref. ³ Yes OR: 1.38 [0.97 1.97] ¹ OR: 1.31 [0.88 1.95] ² OR: 1.12 [0.71 1.77] ³ Unit support No OR: Ref. ¹ OR: Ref. ² OR: Ref. ³ Yes OR: 1.43 [0.95 2.15] ¹ OR: Ref. ³ Yes OR: 1.43 [0.71 1.79] ² OR: 1.15 [0.70 1.89] ³ Combat experiences No OR: Ref. ²

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	Design: Prospective	Country= Netherlands	Year of assessment: 2005-2008	Way of assessment:	021-049651 or	OR: Ref 1 month post-deployment OR: 2.12 [1.4 3.3]
	longitudinal with baseline measurements 1 month prior to deployment Follow-up period: 2 years post deployment.	<u>%Female</u> = 9% <u>Age</u> = 28.5 (9.0) <u>Type of job/company</u> = Dutch military personnel who were deployed to Afghanistan <u>Inclusion/exclusion</u> =-	Exposure categories: Different categories of time since deployment (compared to predeployment)	Self-reported with the Dutch Self-Rating Inventory for PTSD, using DSM-4 cut-off values Incidence: 8.9%	/bmjopen-2021-049651 on 25 August 2021. Downloade	6 months post-deployment OR: 2.18 [1.4 3.4] 1 year post-deployment OR: 1.62 [1.0 2.6] 2 years post-deployment OR: 1.33 [2.8 5.8]
	Name: - Design: Prospective longitudinal Follow-up period: 6 months post deployment.	n= 238 Country= USA %Female= 8% Age= 33.5 (9.5) years. Type of job/company= Members of the National Guard units recently returned from deployment to Iraq and Afghanistan. Inclusion/exclusion= -	Exposure assessment: Self-reported Year of assessment: 2006-2009 Exposure categories: Personal characteristics, pre-deployment and deployment characteristics.	Type of symptoms: PTSD Way of assessment: Diagnosed during a CAPS structured interview. Incidence: 13%	Adjusting for demographics (model additionally adjusting for predeployment characteristics (model additionally adjusting for deployment-related variables (model 3), and additionally adjusting for post-deployment characteristics (model 4).	It is unclear what the reference group is for the below associations Gender OR: 1.03 [0.12 8.89] ¹ OR: 0.46 [0.04 5.14] ² OR: 0.94 [0.03 28.56] ³ OR: 1.12 [0.03 38.70] ⁴ Ethnicity OR: 0.33 [0.04 2.64] ¹ OR: 0.17 [0.02 1.61] ² OR: 0.08 [0.00 1.45] ³ OR: 0.07 [0.00 1.18] ⁴ Age OR: 1.09 [0.69 1.72] ¹ OR: 1.01 [0.60 1.72] ² OR: 0.7 [0.34 1.41] ³ OR: 1.12 [0.31 1.45] ⁴ Negative temperament
39. Shea, 2013					/ copy	OR: 2.95 [1.66 5.23] ² OR: 2.23 [1.18 4.22] ³

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		BMJ Open		/bmjopen-2021	Page
Prospective longitudinal Follow-up period: 9 years, with follow-up measurements every 18 months.	<pre>%Female= 0% Age= 39.5 (7.4) years Type of job/company= New York firefighters involved in the 9/11 WTC attacks. Inclusion/exclusion= Firefighters who arrived at the site more than 14 days before the close of the WTC site were included. Women were excluded.</pre>	were obtained from databases. Other variables were self-reported. Year of assessment: 2002 Exposure categories: Exposure to the WTC sites	Self-reported using the PCL-C checklist. Incidence: 8% (after the first follow-up).	with pen-2021-04:55-8 as eline (model and 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyr. 4.), for at least 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyr. 4.).	HR: Ref³ HR: Ref⁴ Group 1 HR: 0.76 [0.58-1.00]¹ HR: 0.74 [0.56-0.99]² HR: 2.21 [1.80-2.70]³ HR: 1.38 [1.12-1.70]⁴ Group 2 HR: 0.97 [0.75-1.25]¹ HR: 0.85 [0.66-1.11]² HR: 1.16 [0.98-1.39]³ HR: 0.90 [0.75-1.08]⁴ ≥1 death at firehouse on 9/11 No HR: Ref.¹ HR: Ref.² HR: Ref.³ HR: Ref.⁴ Yes HR: 0.84 [0.71-1.00]¹ HR: 0.87 [0.73-1.04]² HR: 1.31 [1.12-1.54]³ HR: 1.11 [0.95-1.31]⁴ Received counselling during year 1 No HR: Ref.⁴ HR: 0.89 [0.76-1.04]¹ HR: 0.98 [0.83-1.15]² HR: 2.02 [1.74-2.35]³

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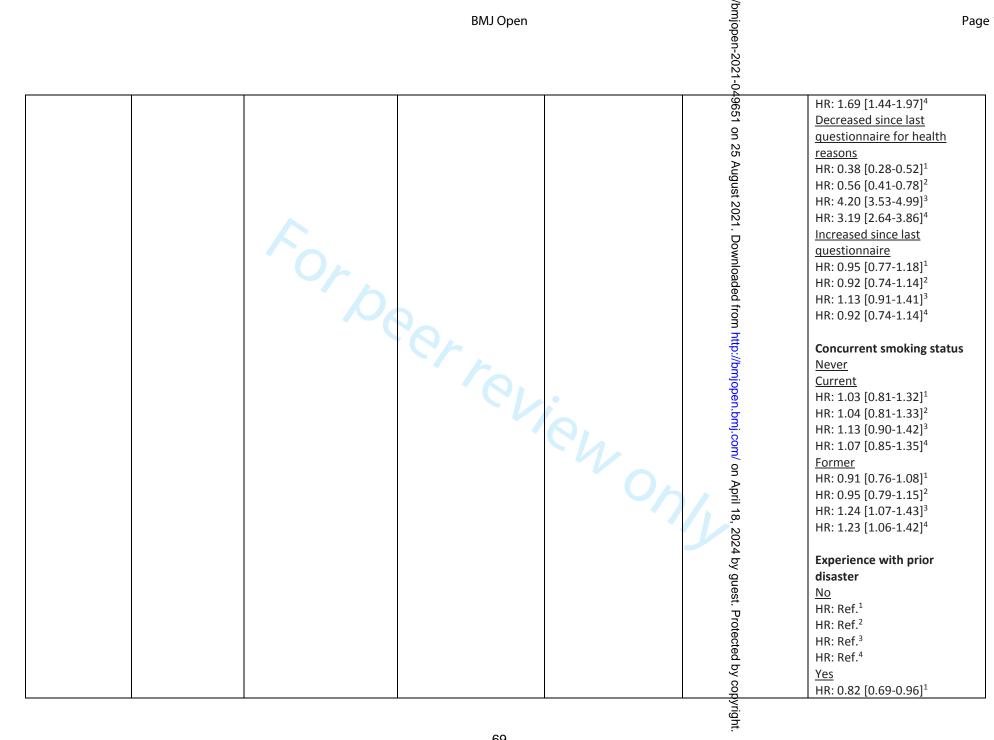
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8			BMJ Open		omjope	
					bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjope	
					496	HR: 0.86 [0.73-1.02] ²
					51	HR: 1.29 [1.13-1.48] ³
					On	HR: 1.11 [0.96-1.27] ⁴
					25	
					Aug	Non-white race/ethnicity
					snf	<u>No</u>
					t 20	HR: Ref. ¹
)21	HR: Ref. ²
					, D	HR: Ref. ³
					JWr	HR: Ref. ⁴
					iloa	<u>Yes</u>
					dec	HR: 0.98 [0.70-1.36] ¹
					d fr	HR: 1.05 [0.75-1.46] ²
		/ / /			Om Om	HR: 1.20 [0.94-1.54] ³
			NL		htt	HR: 1.37 [1.07-1.75] ⁴
)://k	Age on 9/11
					<u> </u>	HR: 1.02 [1.01-1.04] ²
			' (2)		ope	HR: 1.00 [0.99-1.01] ⁴
	Name: HERRICK	<u>n</u> =8,093	Exposure assessment:	Type of symptoms:	Unadjusted (model	Deployment
	cohort	_ ′	Deployment	Probable PTSD	1) and adjusted for	Regulars
		Country= UK	administration	1/1	age, geneler, marital	Not deployed
	Design:			Way of assessment:	status, education,	OR: Ref ¹
	Retrospective	<u>%Female</u> = 13% and 8%	Year of assessment:	Self-reported with the	service and rank	OR: Ref ²
	longitudinal	for those who were	2014-2016	PCL-C checklist.	(model <u>ᢓ</u>).	Deployed
		deployed and not			18,	OR: 1.34 [1.00 1.78] ¹
	Follow-up period:		Exposure categories:	Incidence: 5.2% and		OR: 1.41 [1.04 1.90] ²
	-	Age= 40.0 (13.0) and 40.2	Deployment and service	6.9% for those who)24	
		(9.4) for those who were	status.	were not deployed	by	Reservists
		not and were deployed,		and deployed,	gue	Not deployed
		respectively.		respectively.	st.	OR: Ref ¹
		Tune of ich /c			Pro	OR: Ref ²
		Type of job/company=			otec	<u>Deployed</u>
		Military personnel that were and were not			¥ec	OR: 2.25 [1.14 4.46] ¹ OR: 2.48 [1.20 5.16] ²
1. Stevelink		deployed in Iraq.			by	ON. 2.40 [1.20 3.10]
2018 ⁵⁹	'	deployed in Italy.			2024 by guest. Protected by copyrig	Serving status
2010		<u>I</u>	I	l	<u> </u>	Je. villa status

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		Inclusion/exclusion= -			049651 on 25 Au	Not serving OR: Ref¹ OR: Ref² Serving OR: 1.60 [1.25 2.06]¹
		100 pg	20.		1-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/	OR: 1.73 [1.25 2.40] ² Role during last deployment Serving regulars No combat OR: Ref ¹ OR: Ref ² Combat OR: 1.70 [1.08 2.67] ¹ OR: 1.58 [0.98 2.55] ²
			Tev.	ieu	0	Ex-serving regulars No combat OR: Ref¹ OR: Ref² Combat OR: 3.39 [2.25 5.11]¹ OR: 2.53 [1.60 3.99]²
	Name: PIT-PTSD+ study	<u>n</u> = 1,483	Exposure assessment: Deployment	Type of symptoms: PTSD	Unadjusted	Population Control group
		<u>Country</u> = Germany	administration		pril 18, 2024 by guest. Protected by copyright.	OR: Ref. (12 month diagnosis)
	<u>Design:</u> Retrospective	%Female= -	Year of assessment:	Way of assessment: Diagnosed with a	202	OR: Ref. (12 month incidence) OR: Ref. (lifetime prevalence)
	longitudinal	<u>/oremale</u> = -	2010	structured interview	24 b	Deployed soldiers
	iongreadina.	Age= -	2010	using DSM-4 criteria.	y 9	OR: 2.5 [1.1 5.6] (12 month
	Follow-up period:		Exposure categories:		ues	diagnosis)
	On average 12	Type of job/company=	Deployment	Incidence: 12 month		OR: 4.2 [0.7 24.5] (12 month
	months post-	Soldiers deployed in	characteristics.	incidence: 2.1% and	rote	incidence)
	deployment.	Afghanistan, and those		0.2% in the deployed	cte	OR: 1.7 [0.96 3.1] (lifetime
		who have not been		and non-deployed group ,respectively.	d b	prevalence)
42. Wittchen,		deployed.				

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Supplementary file 4. Risk of bias of included articles. The risk of bias (i.e. low, moderate and high risk of bias) in six domains (i.e. gludy participation, study attrition, prognostic factor (i.e. exposure), outcome, study confounding and statistical analysis) is depicted, while also sum scores are shown.

First author, year of publication

Participation Attrition Prognostic factor Outcome Confounding Analysis (reporting)

First author, year of publication	Participation	Attrition	Prognostic factor	Outcome	Confounding	Analysis/reportir
1 Armed Forces Health Surveillance Center, 2011	Moderate	Moderate	Moderate	Low	High	High
2 Andersen, 2019	Moderate	Moderate	Moderate	Moderate	Low	Low
3 Anderson, 2019	Low	Moderate	Moderate	Moderate	Low	Low
4 Berninger, 2010	High	High	Low	Moderate	Low	Low
5 Brownlow, 2018	Moderate	Moderate	Moderate	Moderate	High	Low
6 Brundage, 2015	Low	Low	Low	Low	High	High
7 Cameron, 2019	Low	Low	Low	Low	Low	Low
8 Chiu, 2011	Low	Moderate	Moderate	Moderate	Low	Low
9 Ciarleglio, 2018	Low	Moderate	Moderate	Low	Low	Low
10 Cone, 2015	High	High	Moderate	Moderate	Low	Low
11 Connorton, 2011	Moderate	Moderate	High	High	Moderate	Low
12 Cukor, 2011	Low	Moderate	Moderate	Moderate	Low	Low
13 Fear, 2010	High	High	Low	Moderate	Low	Low
14 Ferrajao, 2016	High	High	Moderate	Moderate	High	Low
15 Fichera, 2015	High	High	Moderate	Moderate	Low	Low
16 Fink, 2016	High	High	Moderate	Moderate	High	Low
17 Goodwin, 2012	Low	Low	Moderate	Moderate	Low	Low
18 Green, 2016	Moderate	Moderate	Moderate	Low	High	Low
19 Hansen, 2017	High	Moderate	Moderate	Moderate	Low	Low
20 Harvey, 2012	High	Moderate	Low	Moderate	Low	Low
21 Horesh, 2011	Moderate	Moderate	Moderate	Moderate	High	Moderate
22 Hourani, 2012	Moderate	High	Moderate	Moderate	High	High
23 Ikeda, 2017	Moderate	Moderate	Moderate	Moderate	Low	Low
24 Joseph, 2014	Moderate	Moderate	Moderate	Moderate	Low	Low
25 Karstoft, 2013	Moderate	Low	Moderate	Moderate	High	Low
26 Karstoft, 2015	Moderate	Low	Moderate	Moderate	High	Low
27 Kim, 2014	Low	Low	Moderate	Low	Low	Low
28 Levin-Rector, 2018	Low	Low	Low	Low	Moderate	Low
29 MacGregor, 2015	Moderate	Moderate	Low	Low	Low	Low
30 MacGregor, 2012	Low	Low	Low	Low	Low	Low
31 Maguen, 2012	Moderate	Moderate	Moderate	Moderate	Low	Low
32 Maguen, 2010	Moderate	Moderate	Low	Low	High	Low
33 Martindale, 2018	High	Moderate	Moderate	Low	High	High
34 Nagamine, 2018	Moderate	Moderate	Moderate	Moderate	High	Low
35 Osorio, 2018	High	High	Moderate	Moderate	Low	Low
36 Pihl-Thingvad, 2019	Low	Low	Moderate	Moderate	Low	Low
37 Polusny, 2011	Moderate	Moderate	Moderate	Moderate	Low	Low
38 Reijnen, 2015	High	High	Moderate	Moderate	High	Low
	Moderate	Moderate	Moderate	Low	Low	
39 Shea, 2013						Low
40 Soo, 2011	Moderate	Moderate	Moderate	Moderate	Low	Low
41 Stevelink, 2018	High	High	Moderate	Moderate	Low	Low
42 Wittchen, 2012	Moderate	Moderate	Moderate	Low	High	Low

Supplementary file 5. Risk of bias of includ	ed studies.
First author, Year;	Item

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			- O
			-202
			24
Supplementary file 5. Risk of bias of inclu	idad studias)49
First author, Year;	Item	Risk of	Reason
Thist dutilor, real,	l tem	bias	9
	Participation	Moderate	All armed forces were eligible, but no non-participant analysis has been presented by the
	- ar area partient		authors.
	Attrition	Moderate	No loss to follow-up analyses were presented by the authors.
Armed Forces Health Surveillance	Prognostic factor	Moderate	Although prognostic factors were self-reported, no substantial bias can be expected from
Center, 2011 ²¹			self-reports of the current prognostic factors
,	Outcome	Low	Outcomes were diagnosed in a hospital
	Confounding	High	No confounding analysis has been conducted ≤
	Analysis/reporting	High	No proper analysis has been conducted, only descriptives were presented.
	Participation	Moderate	No non-participant analysis has been presented by the authors.
	Attrition	Moderate	No loss to follow-up analyses were presented by the authors.
2 Andrews 2010 19	Prognostic factor	Moderate	Prognostic factors were self-reported
2. Andersen, 2019 ¹⁹	Outcome	Moderate	Outcomes were self-reported
	Confounding	Low	Multivariate analyses were done with all available exposures
	Analysis/reporting	Low	Adequate analyses were used
	Participation	Low	86% of eligible participants, participated at baseling.
	Attrition	Moderate	60% of the participants were filled out their follow up questionnaires
3. Anderson, 2019 ²⁰	Prognostic factor	Moderate	Prognostic factors were self-reported
5. Alluerson, 2019	Outcome	Moderate	Outcomes were self-reported
	Confounding	Low	Multivariate analyses were done with all available exposures
	Analysis/reporting	Low	Adequate analyses were used
	Participation	High	There were differences (e.g. in PTSD status) between participants and non-participants
	Attrition	High	Participants without follow-up data were excluded. The above therefore also holds for those
			lost at follow-up
4. Berninger, 2010 ²²	Prognostic factor	Low	Prognostic factors were self-reported and from registers
	Outcome	Moderate	Outcomes were self-reported
	Confounding	Low	Multivariate analyses were done with all available exposures
	Analysis/reporting	Low	Adequate analyses were used
	Participation	Moderate	No non-participant analysis has been presented by the authors.
	Attrition	Moderate	No loss to follow-up analyses were presented by the authors.
5. Brownlow, 2018 ²³	Prognostic factor	Moderate	Prognostic factors were self-reported
	Outcome	Moderate	Outcomes were self-reported $\frac{\ddot{\Omega}}{\sigma}$
	Confounding	High	Only univariate analyses were reported
			Only univariate analyses were reported opyriginate
			rigt
			, i

			BMJ Open Spen-2021-0	Pa
			2021-04	
	Analysis/reporting	Low	Adequate analyses were used 9	
	Participation	Low	It appears as if all eligible participants were analysed.	
	Attrition	Low	It appears as if all eligible participants were analyse्ष.	
C Drumdone 2015 24	Prognostic factor	Low	Deployment records were used	
6. Brundage, 2015 ²⁴	Outcome	Low	Outcomes were diagnosed (it appears).	
	Confounding	High	No confounding adjustment were done	
	Analysis/reporting	High	Only descriptive statistics were provided	
	Participation	Low	It appears as if all eligible participants were analysed.	
	Attrition	Low	It appears as if all eligible participants were analys.	
7 0 2040 25	Prognostic factor	Low	Deployment records were used §	
7. Cameron, 2019 ²⁵	Outcome	Low	Outcomes were diagnosed	
	Confounding	Low	Multivariate analyses were done with all available exposures	-
	Analysis/reporting	Low	Adequate analyses were used	
	Participation	Low	There were some differences between responders and non-responders.	
	Attrition	Moderate	Since data were gathered retrospective, participation and attrition are similar.	-
0 01: 0044.26	Prognostic factor	Moderate	Both self-reports and employer data were used	-
8. Chiu, 2011 ²⁶	Outcome	Moderate	Outcomes were self-reported using a validated questionnaire	-
	Confounding	Low	Confounding adjustment was performed.	-
	Analysis/reporting	Low	Adequate analyses were used	
	Participation	Low	11% non-response	
	Attrition	Moderate	Since data were gathered retrospective, participation and attrition are similar.	
2 2 1 1 2 2 2 2 2 2 7	Prognostic factor	Moderate	Both self-reports and employer data were used	
9. Ciarleglio, 2018 ²⁷	Outcome	Low	Outcome was diagnosed	
	Confounding	Low	Multivariate analyses were done with all available exposures	
	Analysis/reporting	Low	Adequate analyses were used	
	Participation	High	There are substantial differences between responders and non-responders.	
	Attrition	High	There was substantial loss to follow-up	
10 0 001739	Prognostic factor	Moderate	Prognostic factors were self-reported &	
10. Cone, 2015 ²⁸	Outcome	Moderate	Outcomes were self-reported (2	
	Confounding	Low	Adjustment for confounding was performed.	
	Analysis/reporting	Low	Adequate analyses were conducted	
	Participation	Moderate	No non-participant analysis has been presented by the authors.	
	Attrition	Moderate	No loss to follow-up analyses were presented by the authors.	
11. Connorton, 2011 ²⁹	Prognostic factor	High	Prognostic factors were self-reported and it is unclear how	
	Outcome	High	Outcomes were self-reported and it is unclear howo	

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	Confounding	Moderate	Multivariate analyses are not reported and it is un reported and i
	Analysis/reporting	Low	Adequate analyses were done.
	Participation	Low	There was 86% participation
	Attrition	Moderate	There was 67% participation at follow-up
	Prognostic factor	Moderate	Prognostic factors were self-reported.
12. Cukor, 2011 ³⁰	Outcome	Moderate	Outcomes were self-reported and obtained from interviews, with interview data used for
			exposure-outcome associations.
	Confounding	Low	exposure-outcome associations. Name of the property of the
	Analysis/reporting	Low	Adequate analyses were conducted
	Participation	High	There are substantial differences between responders and non-responders.
	Attrition	High	There was substantial loss to follow-up
13. Fear, 2010 ³¹	Prognostic factor	Low	Deployment administrative data were used
13. Fear, 2010	Outcome	Moderate	Outcomes were self-reported
	Confounding	Low	Outcomes were self-reported Adjustment for confounding was performed.
	Analysis/reporting	Low	Adequate analyses were conducted
	Participation	High	Unclear but probably low participation rate
	Attrition	High	Since data were gathered retrospective, participation and attrition are similar.
14. Ferrajao, 2016 ³²	Prognostic factor	Moderate	Prognostic factors were self-reported
14. Ferrajao, 2016 ³²	Outcome	Moderate	Outcomes were self-reported
	Confounding	High	No adjustment for confounding was performed.
	Analysis/reporting	Low	Adequate analyses were conducted
	Participation	High	There was substantial non-response
	Attrition	High	There was substantial loss to follow-up
15. Fichera, 2015 ³³	Prognostic factor	Moderate	Prognostic factors were self-reported 9
15. Fichera, 2015 **	Outcome	Moderate	Outcomes were self-reported
	Confounding	Low	Adjustment for confounding was performed.
	Analysis/reporting	Low	Adequate analyses were conducted
	Participation	High	There was substantial non-response
	Attrition	High	There was substantial loss to follow-up
16 Fink 2016 34	Prognostic factor	Moderate	Prognostic factors were self-reported
16. Fink, 2016 ³⁴	Outcome	Moderate	Outcomes were self-reported $ abla $
	Confounding	High	No adjustment for confounding was performed.
	Analysis/reporting	Low	Adequate analyses were conducted
17. Coodwin 2012 35	Participation	Low	There were no substantial differences between responders and non-responders.
17. Goodwin, 2012 ³⁵	Attrition	Low	There were no substantial differences between kesponders and non-responders (includi
	·		ору
			·pyright.
			<u>.</u> ∓

18. Green, 2016 ³⁶	Prognostic factor Outcome Confounding Analysis/reporting Participation Attrition	Moderate Moderate Low	those lost to follow-up). Prognostic factors were self-reported. Outcome was self-reported	/bmjopen-2021-049651 ¢
18. Green, 2016 ³⁶	Outcome Confounding Analysis/reporting Participation	Moderate Low	Prognostic factors were self-reported. Outcome was self-reported	2
18. Green, 2016 ³⁶	Outcome Confounding Analysis/reporting Participation	Moderate Low	Prognostic factors were self-reported. Outcome was self-reported	2
18. Green, 2016 ³⁶	Outcome Confounding Analysis/reporting Participation	Moderate Low	Outcome was self-reported	0
18. Green, 2016 ³⁶	Analysis/reporting Participation			o
18. Green, 2016 ³⁶	Analysis/reporting Participation			N
18. Green, 2016 ³⁶	Participation	Low	Appropriate analyses were used.	D C C C C C C C C C C C C C C C C C C C
18. Green, 2016 ³⁶	Attrition	Moderate	There was a substantial non-response (20%)	us
18. Green, 2016 ³⁶	Attition	Moderate		
18. Green, 2016 ³⁰	Prognostic factor	Moderate	Prognostic factors were self-reported.	2021
	Outcome	Low	Outcome was diagnosed in an interview	
	Confounding	High	No confounding adjustment was conducted	<u> </u>
	Analysis/reporting	Low	Appropriate analyses were used.	<u> </u>
	Participation	High	There was a substantial amount of non-responders	ត្ត gand no non-responder analysis.
	Attrition	Moderate	There was a substantial amount of participants	gst to follow-up and no loss to follow-up
			analysis.	om .
19. Hansen, 2017 ³⁷	Prognostic factor	Moderate	Prognostic factors were self-reported	h tt
	Outcome	Moderate	Outcomes were self-reported	9://I
	Confounding	Low	Confounding was properly adjusted for	3.
	Analysis/reporting	Low	Appropriate analyses were used.	0
	Participation	High	There were substantial differences (e.g. in age a responders.	d gender) between responders and non
	Attrition	Moderate	No loss to follow-up analysis were reported	
20. Harvey, 2012 ³⁸	Prognostic factor	Low	Prospective factors were determined based on dep	ਤ੍ਰੋ Novment characteristics
20. Harvey, 2012	Outcome	Moderate	Outcome was self-reported	5
	Confounding	Low		>
	Analysis/reporting	Low	Appropriate analyses were used.	<u> </u>
	Participation	Moderate	No non responder analysis was performed	,∞
	Attrition	Moderate	No loss to follow-up analysis was performed	<u>2</u> 02
	Prognostic factor	Moderate		g
21. Horesh, 2011 ³⁹	Outcome	Moderate	†	۵۲ ا
	Confounding	High		L es:
	Analysis/reporting	Moderate	The description of the analysis is unclear	70
	Participation	Moderate	No non-responder analysis was performed	ot
	Attrition	High	There was substantial loss to follow-up in this stud	<u>&</u>
22. Hourani, 2012 ⁴⁰	Prognostic factor	Moderate	Prognestic factors were self reported	<u>ö</u> .
	Outcome	Moderate	Outcome was salf reported	by copyright.

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	Confounding	High	No confounding analyses were conducted (ag least, not for the exposure-outcom
			associations)
	Analysis/reporting	High	Only descriptive statistics were reported (at least, for the exposure-outcome associations)
	Participation	Moderate	About 15% non-response.
	Attrition	Moderate	There was substantial loss to follow-up with differences between those who were and wer
			not lost.
23. Ikeda, 2017 ⁴¹	Prognostic factor	Moderate	Prognostic factors were self-reported
	Outcome	Moderate	Outcome was self-reported
	Confounding	Low	Confounding was properly adjusted for
	Analysis/reporting	Low	Appropriate analyses were used.
	Participation	Moderate	There was a substantial non-response
	Attrition	Moderate	There was a substantial loss to follow-up
24 1 2044 42	Prognostic factor	Moderate	Prognostic factors were self-reported
24. Joseph, 2014 ⁴²	Outcome	Moderate	Outcome was self-reported
	Confounding	Low	Confounding was properly adjusted for
	Analysis/reporting	Low	Appropriate analyses were used.
	Participation	Moderate	No non-responder analyses were presented
	Attrition	Low	Loss to follow-up analyses indicated no substantia differences between those who remaine
			in the cohort or not.
25. Karstoft, 2013 43	Prognostic factor	Moderate	Prognostic factors were self-reported 3
	Outcome	Moderate	Outcome was self-reported
	Confounding	High	No adjustment for confounding were performed
	Analysis/reporting	Low	Adequate statistical analyses were conducted
	Participation	Moderate	No non-responder analyses were presented ੂ ਰੁੱ
	Attrition	Low	Loss to follow-up analyses indicated no substantia differences between those who remaine
			in the cohort or not.
26. Karstoft, 2015 44	Prognostic factor	Moderate	Prognostic factors were self-reported
	Outcome	Moderate	Outcome was self-reported
	Confounding	High	No adjustment for confounding were performed 👱
	Analysis/reporting	Low	Adequate statistical analyses were conducted $\overline{\mathbb{Q}}$
	Participation	Low	Very high >99% participation rate
	Attrition	Low	
27. Kim, 2014 ⁴⁵	Prognostic factor	Moderate	Prognostic factors were self-reported
	Outcome	Low	Very high >99% participation rate in follow-up Prognostic factors were self-reported Outcome was diagnosed during an interview Adjustment for confounding was performed Opyright
	Confounding	Low	Adjustment for confounding was performed
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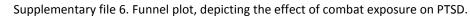
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	Analysis/reporting	Low		74. 96
	Participation	Low	Responders comprised >90% of the eligible popular	
	Attrition	Low	Participants during follow-up comprised >90% of the	
	Prognostic factor	Low	Prognostic factors were obtained from database in	
28. Levin-Rector, 2018 ⁴⁶	Outcome	Low	Outcomes were obtained from diagnosed register,	
	Confounding	Moderate	Only adjustment for clustering within units was do	
	Analysis/reporting	Low	· · · · · · · · · · · · · · · · · · ·	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
	Participation	Moderate	It is unclear what the non-response in this study we	
	Attrition	Moderate	It is unclear what the loss to follow-up in this study	
47	Prognostic factor	Low	Prognostic factors were obtained from register data	
29. MacGregor, 2015 ⁴⁷	Outcome	Low	Outcomes were obtained from register data and w	
	Confounding	Low	Adjustment for confounding has been conducted	D
	Analysis/reporting	Low	Adequate statistical analyses were used.	2
	Participation	Low	All eligible participants were analysed.	9
	Attrition	Low	All eligible participants were analysed.	<u>-</u>
20.10.49	Prognostic factor	Low	Register data were used	.
30. MacGregor, 2012 ⁴⁸	Outcome	Low	Diagnosed register data were used	3
	Confounding	Low	Adjustment for confounding has been conducted	D C C C C C C C C C C C C C C C C C C C
	Analysis/reporting	Low	Adequate statistical analyses were used.	<u></u>
	Participation	Moderate	No non-responder analyses were presented	<u>.</u>
	Attrition	Moderate		
24 . N 2042 49	Prognostic factor	Moderate	Prognostic factors were self-reported	
31. Maguen, 2012 ⁴⁹	Outcome	Moderate	Outcome was self-reported	5
	Confounding	Low	Adjustment for confounding was done	bri:
	Analysis/reporting	Low	Adequate analyses were used	12
	Participation	Moderate	No non-responder analyses were presented	<u>v</u>
	Attrition	Moderate	No loss to follow-up analyses were presented	024
22 Maguan 2010 ⁵⁰	Prognostic factor	Low	Prognostic factors were obtained from company da	- 其a.
32. Maguen, 2010 ⁵⁰	Outcome	Low	Outcome was diagnosed	
	Confounding	High	No adjustment for confounding was done	est
	Analysis/reporting	Low	· · · · · · · · · · · · · · · · · · ·	- -
	Participation	High	No non-responder analyses were presented, with §	bstantial non-response.
33. Martindale, 2018 ⁵¹	Attrition	Moderate	No loss to follow-up analyses were presented	Cre
55. Ividi tilludie, 2018	Prognostic factor	Moderate	Prognostic factors were obtained from an interview	<u> </u>
	Outcome	Low	Outcome was diagnosed during an interview	c copyright

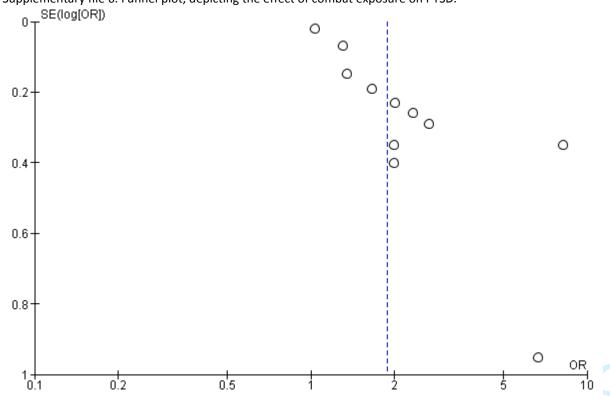
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	Confounding	High	No adjustment for confounding was done 6
	Analysis/reporting	High	No statistical analysis was done on the exposure-outcome association (only other analysis).
	Participation	Moderate	No non-responder analyses were presented
	Attrition	Moderate	No loss to follow-up analyses were presented
24 N : 2040 57	Prognostic factor	Moderate	Prognostic factors were self-reported
34. Nagamine, 2018 ⁵²	Outcome	Moderate	Outcome was self-reported
	Confounding	High	
	Analysis/reporting	Low	No adjustment for confounding was done Adequate analyses were used
	Participation	High	A substantial amount of eligible participants did pt participate. No non responder analys
			was conducted.
	Attrition	High	A substantial amount of participants were lost in $\frac{1}{100}$ e follow-up. No loss to follow-up analys
25 Occasio 2018 53			was conducted.
35. Osorio, 2018 ⁵³	Prognostic factor	Moderate	Prognostic factors were self-reported
	Outcome	Moderate	Outcome was self-reported
	Confounding	Low	Confounding analyses were conducted
	Analysis/reporting	Low	Adequate statistical analyses were performed.
	Participation	Low	Responders and non-responders did not differ substantially from one another (only in age)
	Attrition	Low	Variables that predicted loss to follow-up (e.g. baseline PTSD) were adjusted for
26 Pibl Thinguad 2010 54	Prognostic factor	Moderate	Prognostic factors were self-reported
36. Pihl-Thingvad, 2019 54	Outcome	Moderate	Outcome was self-reported <u>3</u>
	Confounding	Low	Confounding analyses were conducted
	Analysis/reporting	Low	Adequate statistical analyses were performed.
	Participation	Moderate	There were slight differences between responders and non-responders
	Attrition	Moderate	There were slight differences between those with র্ফ্রাব without follow-up data
27 Delivery 2011 55	Prognostic factor	Moderate	Prognostic factors were self-reported
37. Polusny, 2011 55	Outcome	Moderate	Outcome was self-reported
	Confounding	Low	Confounding analyses were conducted
	Analysis/reporting	Low	Adequate statistical analyses were performed.
	Participation	High	There were substantial differences (e.g. in mental health) between responders and nor
			responders.
	Attrition	High	Participants without follow-up data were excluded of the above therefore also holds for those
38. Reijnen, 2015 ⁵⁶			lost at follow-up
	Prognostic factor	Moderate	Prospective factors were self-reported
	Outcome	Moderate	Outcome was self-reported
	Confounding	High	No confounding adjustment was conducted
			No confounding adjustment was conducted Opposite was sen reported Opposit
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	Analysis/reporting	Low	Appropriate analyses were used.	1496
	Participation	Moderate	It is unclear what the non-response in this study v	- Si Vas
	Attrition	Moderate	It is unclear what the loss to follow-up in this stud	v Q was
39. Shea, 2013 ⁵⁷	Prognostic factor	Moderate	Prognostic factors were self-reported	N O
	Outcome	Low	Outcome was diagnosed during a structured inter	→ væw
	Confounding	Low	Confounding analyses were conducted	gus
	Analysis/reporting	Low	Adequate statistical analyses were performed.	\$ 1 20
	Participation	Moderate	It is unclear what the non-response in this study v	
	Attrition	Moderate	It is unclear what the loss to follow-up in this stud	
40. Soo, 2011 ⁵⁸	Prognostic factor	Moderate	Prognostic factors were self-reported	<u>/</u>
	Outcome	Moderate	Outcome was self-reported	nloa
	Confounding	Low	Confounding analyses were conducted	<u>a</u> 0 e
	Analysis/reporting	Low	Adequate statistical analyses were performed.	Q .
	Participation	High	There was substantial non-response	from
41. Stevelink, 2018 ⁵⁹	Attrition	High	There was substantial loss to follow-up	htt
	Prognostic factor	Moderate	Prognostic factors were self-reported	'p ://
	Outcome	Moderate	Outcomes were self-reported	
	Confounding	Low	Adjustment for confounding was performed.	jo po
	Analysis/reporting	Low	Adequate analyses were conducted	<u>0</u>
	Participation	Moderate	It is unclear what the non-response in this study v	vas
	Attrition	Moderate	It is unclear what the loss to follow-up in this stud	
	Prognostic factor	Moderate	Prognostic factors were self-reported	2
42. Wittchen, 2012 ⁶⁰	Outcome	Low	Outcomes was diagnosed during a structured inte	r y iew
	Confounding	High	No adjustment for confounding was performed	pr
	Analysis/reporting	Low	Adequate analyses were conducted	1 18
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Supplementary file 7. Forest plot depicting the effect of number of army deployments (one versus multiple) with PTSD, stratified for risk of bias.

Supplementary me 7. 19	orest plot depicting	g tile ei	iect of flui	Odds Ratio	Odds Ratio
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI
2.1.1 Low methodolo	gical quality				25 /
Fear, 2010	-0.13	0.21	0.0%	0.88 [0.58, 1.33]	Aug
Hotorogenoity: Not an	nlicable		0.070	0.00 [0.00, 1.00]	wst:
Test for overall effect:	Z= 0.62 (P = 0.54))			202
	,				1.
2.1.2 High methodolo	gical quality			0.0010.07.0.501	owr
Clarlegilo, 2018 Maguen 2010	-0.19 0.14	0.57	0.0% 100.0%	0.83 [0.27, 2.53] 1 15 [1 14 1 16]	- lioa
Subtotal (95% CI)	0.14	0.004	100.0%	1.15 [1.14, 1.16]	de d
Heterogeneity: Tau² =	0.00; Chi ² = 0.34 ,	df = 1 (F	o = 0.56);	l² = 0%	fron
Test for overall effect:	Z = 35.00 (P < 0.0)	0001)			n ht
Total (95% CI)			100.0%	1.15 [1.14, 1.16]	tp://t
Heterogeneity: Tau²=	0.00; Chi² = 1.99,	df = 2 (F	P = 0.37);	I² = 0%	10 10
Test for overall effect:	Z = 34.98 (P < 0.0)	0001)			0.01 0.1 1 10 1000
Test for subgroup diff	erences: Chi ² = 1.6	65, df=	1 (P = 0.2	0), I ^z = 39.5%	ı.bm
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					Odds Ratio N, Random, 95% CI Odds Ratio N, Random, 95% CI Odds Ratio N, Random, 95% CI Odds Ratio N, Random, 95% CI
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Supplementary file 8. Forest plot depicting the effect of combat exposure with PTSD, stratified for risk of bias.							
				Odds Ratio	Odds Ratio		
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI		
2.2.1 Low methodolo	gical quality						
Connorton, 2011	2.1	0.35	7.1%	8.17 [4.11, 16.22]			
Green, 2016	0.03	0.02	14.0%	1.03 [0.99, 1.07]	+		
Osorio, 2018	0.3	0.15	11.9%	1.35 [1.01, 1.81]	-		
Stevelink, 2018	0.7	0.23	9.9%	2.01 [1.28, 3.16]			
Wittchen, 2012	1.89	0.95	1.7%	6.62 [1.03, 42.60]			
Subtotal (95% CI)			44.7%	2.17 [1.23, 3.85]	•		
Heterogeneity: Tau² =	0.32; Chi ² = 49.80	df = 4	(P < 0.00	0001); I² = 92%			
Test for overall effect:	Z= 2.66 (P = 0.008	3)					
2.2.2 High methodolo	gical quality						
Cukor, 2011	0.27	0.07	13.6%	1.31 [1.14, 1.50]	-		

Ziziz riigii motilodological quality				
Cukor, 2011	0.27	0.07	13.6%	1.31 [1.14, 1.50]
Goodwin, 2012	0.69	0.4	6.2%	1.99 [0.91, 4.37]
Harvey, 2012	0.98	0.29	8.4%	2.66 [1.51, 4.70]
MacGregor, 2015	0.51	0.19	10.9%	1.67 [1.15, 2.42]
Polusny, 2011	0.85	0.26	9.1%	2.34 [1.41, 3.89]
Shea, 2013	0.69	0.35	7.1%	1.99 [1.00, 3.96]
Subtotal (95% CI)			55.3%	1.80 [1.37, 2.37]

Heterogeneity: $Tau^2 = 0.06$; $Chi^2 = 11.87$, df = 5 (P = 0.04); $I^2 = 58\%$

Test for overall effect: Z = 4.20 (P < 0.0001)

Total (95% CI) 100.0% 1.89 [1.46, 2.45]

Heterogeneity: Tau z = 0.12; Chi z = 88.86, df = 10 (P < 0.00001); I z = 89%

Test for overall effect: Z = 4.79 (P < 0.00001)

Test for subgroup differences: $Chi^2 = 0.33$, df = 1 (P = 0.57), $I^2 = 0\%$



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Supplementary file 9. F	orest plot depicting	the ef	fect of a	rmy deployment with Odds Ratio	PTSD, stratified for risk of bias. Odds Ratio	/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyright.
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95%	CI S
2.3.1 Low methodolo				,		25
Reijnen, 2015	0.56	0.12	79.2%	1.75 [1.38, 2.21]		Ą
Stevelink, 2018	0.52		15.6%	1.68 [0.99, 2.86]	-	gu
Wittchen, 2012 Subtotal (95% CI)	1.44	0.91	1.4% 96.2%	4.22 [0.71, 25.12] 1.76 [1.42, 2.18]	•	st 202
Heterogeneity: Tau² =	: 0,00; Chi²= 0,95, d	f= 2 (i			'	<u>-</u>
Test for overall effect:			,	,		Downl
2.3.2 High methodolo	gical quality					loac
Joseph, 2014 Subtotal (95% CI)	1.03	0.55	3.8% 3.8%	2.80 [0.95, 8.23] 2.80 [0.95, 8.23]		— led fro
Heterogeneity: Not ap	•					m ht
Test for overall effect:	Z = 1.87 (P = 0.06)					tp://
Total (95% CI)			100.0%	1.79 [1.45, 2.21]	•	ʻbmjo
Heterogeneity: Tau² =			P = 0.65)	; I² = 0%	0.01 0.1 1	10 100
Test for overall effect: Test for subgroup dif	•		1 (P = 0	41) P= 0%		.bm
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Supplementary file 10. Forest plot depicting the effect of number of army deployments (one versus multiple) with PTSD, stratified for study design.

			Odds Ratio	Odds Ratio 55
Study or Subgroup log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI
3.1.1 Retrospective design				25
Ciarleglio, 2018 -0.19		0.0%	0.83 [0.27, 2.53]	Aug
	0.004	100.0%	1.15 [1.14, 1.16]	- Just
Subtotal (95% CI)		100.0%	1.15 [1.14, 1.16]	120
Heterogeneity: Tau ² = 0.00; Chi ² = 0.34		P = 0.56);	I ² = 0%	2.1
Test for overall effect: Z = 35.00 (P < 0.0	10001)			D
3.1.2 Prospective design				w <u>n</u>
Fear, 2010 -0.13	0.21	0.0%	0.88 [0.58, 1.33]	<u> </u>
Subtotal (95% CI)	0.2.	0.0%	0.88 [0.58, 1.33]	→ ded
Heterogeneity: Not applicable				fro
Test for overall effect: $Z = 0.62$ (P = 0.54)			3
				ittp:
Total (95% CI)		100.0%	1.15 [1.14, 1.16]	
Heterogeneity: Tau ² = 0.00; Chi ² = 1.99		P = 0.37);	F= 0%	0.01 0.1 1 10 10
Test for overall effect: Z = 34.98 (P < 0.0 Test for subgroup differences: Chi ² = 1		1 /B = 0.2	∩\ IZ = 20.50¢	oe n
restror subgroup unlerences. Crit = 1	05, ui –	1 (F = 0.2	0),1 = 38.076	bm
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				Odds Ratio IV, Random, 95% CI Odds Ratio Od
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Supplementary file 11.	Forest plot depicting the effect of	f combat exposure with PTSI	D, stratified for study design.

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Supplementary file 11.	Forest plot depiction	ng the	effect of	combat exposure with Odds Ratio	n PTSD, stratified for study design. Odds Ratio	90	
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95% C	:I :	
3.2.1 Retrospective							
Connorton, 2011	2.1	0.35	7.1%	8.17 [4.11, 16.22]	_	 }	
Green, 2016	0.03	0.02	14.0%	1.03 [0.99, 1.07]	+	č.	
Stevelink, 2018	0.7	0.23	9.9%	2.01 [1.28, 3.16]		<u> </u>	
Wittchen, 2012 Subtotal (95% CI)	1.89	0.95	1.7% 32.8%	6.62 [1.03, 42.60] 2.82 [1.08, 7.36]	•	- 2	
Heterogeneity: Tau ² =	= 0.79; Chi ² = 46.90	i, df = 3	(P < 0.0	0001); I² = 94%		Ç	
Test for overall effect	Z = 2.11 (P = 0.03))				Σ Z I	
3.2.2 Prospective de	esign					α α c	
Cukor, 2011	0.27	0.07	13.6%	1.31 [1.14, 1.50]	-	<u> </u>	
Goodwin, 2012	0.69	0.4	6.2%	1.99 [0.91, 4.37]	 •	=	
Harvey, 2012		0.29	8.4%	2.66 [1.51, 4.70]		Ę	
MacGregor, 2015	0.51	0.19	10.9%	1.67 [1.15, 2.42]	-	<u>َ</u>	
Osorio, 2018		0.15	11.9%	1.35 [1.01, 1.81]	-	Ę	
Polusny, 2011		0.26	9.1%	2.34 [1.41, 3.89]		<u> </u>	
Shea, 2013 Subtotal (95% CI)	0.69	0.35	7.1% 67.2%	1.99 [1.00, 3.96] 1.66 [1.34, 2.05]	*		
Heterogeneity: Tau ² :		-	6 (P = 0.01)	6); I² = 50%		<u>-</u>	
Test for overall effect	: ∠= 4.70 (P < 0.00)	001)				<u> </u>	
Total (95% CI)			100.0%	1.89 [1.46, 2.45]	•	- 7	
Heterogeneity: Tau² :	= 0.12; Chi ² = 88.86	i, df = 1	0 (P < 0.1	00001); I²= 89%			
Test for overall effect			`	,,	0.01 0.1 1		
Test for subgroup dif	•	-	1 (P = 0.	.29), I²= 10.2%		70	
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Supplementary file 12. Forest	plot depicting the effect of arm	v deployment with PTSD.	stratified for study design.

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Supplementary file 12. F	orest plot depictii	ng the	effect of	army deployment wit Odds Ratio	h PTSD, stratified for study design. Odds Ratio	/bmjopen-2021-049651 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by copyright.	
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI	o _n	
3.3.1 Retrospective de				,	, ,	25	
Joseph, 2014	1.03	0.55	3.8%	2.80 [0.95, 8.23]	-	- ≥	
Stevelink, 2018	0.52	0.27	15.6%	1.68 [0.99, 2.86]	-	gus	
Wittchen, 2012 Subtotal (95% CI)	1.44	0.91	1.4% 20.8%	4.22 [0.71, 25.12] 1.96 [1.24, 3.10]	•	—— st 202	
Heterogeneity: Tau² = 1	0.00° Chi² = 1.45	df = 2				<u> </u>	
Test for overall effect: 2			(1 0.10)	,. 02		Down	
3.3.2 Prospective des	_				_	lloade	
Reijnen, 2015 Subtotal (95% CI)	0.56	0.12	79.2% 79.2%	1.75 [1.38, 2.21] 1.75 [1.38, 2.21]	•	ed fro	
Heterogeneity: Not app Test for overall effect: 2		004\				m htt	
restion overall ellect. 2	2 = 4.67 (F < 0.00)	301)				p://	
Total (95% CI)			100.0%	1.79 [1.45, 2.21]	•	bmj.	
Heterogeneity: Tau² = 1			(P = 0.65)	; I² = 0%	0.01 0.1 1	10 1005	
Test for overall effect: 2	•					10 1005 g	
Test for subgroup diffe	rences: Chi²= 0.1	9. df=	= 1 (P = 0.	67), I² = 0%	- (> /	<u>j</u> .c	
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Supplementary file 13. Forest plot depicting the effect of number of army deployments (one versus multiple) with PTSD, stratified for type of PTSD ascertainment.

Supplementary me 13	s. Forest plot depicti	ng the e	errect or m	Odds Ratio	Odds F	atio 57	זכ
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Randon	1, 95% CI S	
4.1.1 Probable PTS	D					25	_
Fear, 2010	-0.13	0.21	0.0%	0.88 [0.58, 1.33]	<u></u>	Aug	
Subtotal (95% CI)	annii an bio		0.0%	0.88 [0.58, 1.33]	T	lust	
Test for overall effer	applicable tr 7 = 0.62 (P = 0.54)	١				202	
	(,					
4.1.2 Diagnosed PT	SD					owr	
Ciarleglio, 2018	-0.19	0.57	0.0%	0.83 [0.27, 2.53]		— ■	
Subtotal (95% CI)	0.14	0.004	100.0%	1.15 [1.14, 1.16]	TI.	ded	
Heterogeneity: Tau ^a	= 0.00; Chi² = 0.34,	df = 1 (F	P = 0.56);	I² = 0%		fror	
Test for overall effec	t: Z = 35.00 (P < 0.0	0001)				n n	
Total (95% CI)			100.0%	1.15 [1.14, 1.16]		tp://	
Heterogeneity: Tau ^a	'= 0.00; Chi² = 1.99,	df = 2 (F	P = 0.37);	I ² = 0%	0.04	—— <u> </u>	
Test for overall effect	t: Z = 34.98 (P < 0.0	0001)			0.01 0.1 1	10 100	
Test for subgroup d	ifferences: Chi ^z = 1.	65, df=	1 (P = 0.2	0), I²= 39.5%		ı.br	
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pplementary file 14.	Forest plot depictir	ng the	effect of	•	n PTSD, stratified for type of PTSD ascertainmen
Study or Subgroup	log[Odds Ratio]	SF	Weight	Odds Ratio IV, Random, 95% CI	Odds Ratio IV, Random, 95% CI
I.2.1 Probable PTSD		JL	Weight	IV, Random, 35% CI	iv, randon, 33% ci
3oodwin, 2012	0.69	0.4	6.2%	1.99 [0.91, 4.37]	 • •
Harvey, 2012		0.29	8.4%	2.66 [1.51, 4.70]	
Osorio, 2018		0.15	11.9%	1.35 [1.01, 1.81]	
Polusny, 2011	0.85	0.26	9.1%	2.34 [1.41, 3.89]	
Stevelink, 2018	0.7	0.23	9.9%	2.01 [1.28, 3.16]	
Subtotal (95% CI)			45.5%	1.90 [1.44, 2.52]	•
Heterogeneity: Tau² =			(P = 0.15)	; I² = 41%	
Test for overall effect:	Z = 4.48 (P < 0.000)	001)			
I.2.2 Diagnosed PTS	SD.				
Connorton, 2011	2.1	0.35	7.1%	8.17 [4.11, 16.22]	
•		0.07	13.6%	1.31 [1.14, 1.50]	-
ZUKUL ZUTT		0.02	14.0%	1.03 [0.99, 1.07]	+
Cukor, 2011 Green, 2016	0.03				
3reen, 2016	0.03	0.19	10.9%	1.67 [1.15, 2.42]	l l
			7.1%	1.67 [1.15, 2.42] 1.99 [1.00, 3.96]	
Green, 2016 MacGregor, 2015	0.51 0.69		7.1% 1.7%		-
Green, 2016 MacGregor, 2015 Ghea, 2013 Vittchen, 2012 Subtotal (95% CI)	0.51 0.69 1.89	0.35 0.95	7.1% 1.7% 54.5 %	1.99 [1.00, 3.96] 6.62 [1.03, 42.60] 1.80 [1.28, 2.54]	•
Green, 2016 MacGregor, 2015 Ghea, 2013 Wittchen, 2012 Subtotal (95% CI) Heterogeneity: Tau² =	0.51 0.69 1.89 = 0.11; Chi ^z = 57.78	0.35 0.95 , df = 5	7.1% 1.7% 54.5 %	1.99 [1.00, 3.96] 6.62 [1.03, 42.60] 1.80 [1.28, 2.54]	•
Green, 2016 MacGregor, 2015 Ghea, 2013 Vittchen, 2012 Subtotal (95% CI)	0.51 0.69 1.89 = 0.11; Chi ^z = 57.78	0.35 0.95 , df = 5	7.1% 1.7% 54.5 %	1.99 [1.00, 3.96] 6.62 [1.03, 42.60] 1.80 [1.28, 2.54]	•
Green, 2016 MacGregor, 2015 Ghea, 2013 Wittchen, 2012 Subtotal (95% CI) Heterogeneity: Tau² =	0.51 0.69 1.89 = 0.11; Chi ^z = 57.78	0.35 0.95 , df = 5	7.1% 1.7% 54.5 %	1.99 [1.00, 3.96] 6.62 [1.03, 42.60] 1.80 [1.28, 2.54]	IV, Random, 95% CI

4.2.1 Probable PTSD				
Goodwin, 2012	0.69	0.4	6.2%	1.99 [0.91, 4.37]
Harvey, 2012	0.98	0.29	8.4%	2.66 [1.51, 4.70]
Osorio, 2018	0.3	0.15	11.9%	1.35 [1.01, 1.81]
Polusny, 2011	0.85	0.26	9.1%	2.34 [1.41, 3.89]
Stevelink, 2018	0.7	0.23	9.9%	2.01 [1.28, 3.16]
Subtotal (95% CI)			45.5%	1.90 [1.44, 2.52]
Hotorogonoity: Tauz - C	i 0.4÷ Chi≅ – 6.94	df = A	(D = 0.16)	IZ — #1.0%

4.2.2 Diagnosed PTSD

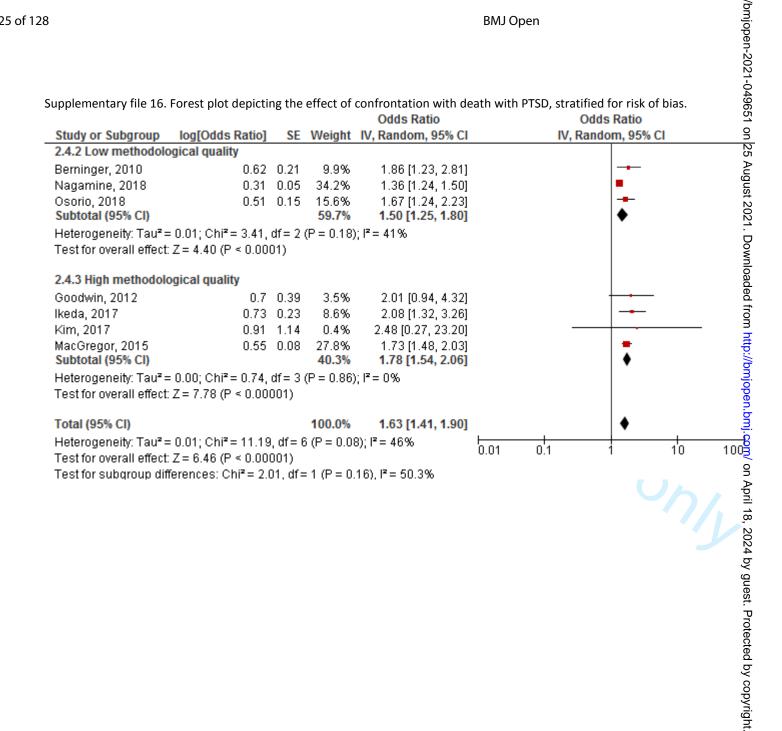
Connorton, 2011	2.1	0.35	7.1%	8.17 [4.11, 16.22]
Cukor, 2011	0.27	0.07	13.6%	1.31 [1.14, 1.50]
Green, 2016	0.03	0.02	14.0%	1.03 [0.99, 1.07]
MacGregor, 2015	0.51	0.19	10.9%	1.67 [1.15, 2.42]
Shea, 2013	0.69	0.35	7.1%	1.99 [1.00, 3.96]
Wittchen, 2012	1.89	0.95	1.7%	6.62 [1.03, 42.60]
Subtotal (95% CI)			54.5%	1.80 [1.28, 2.54]

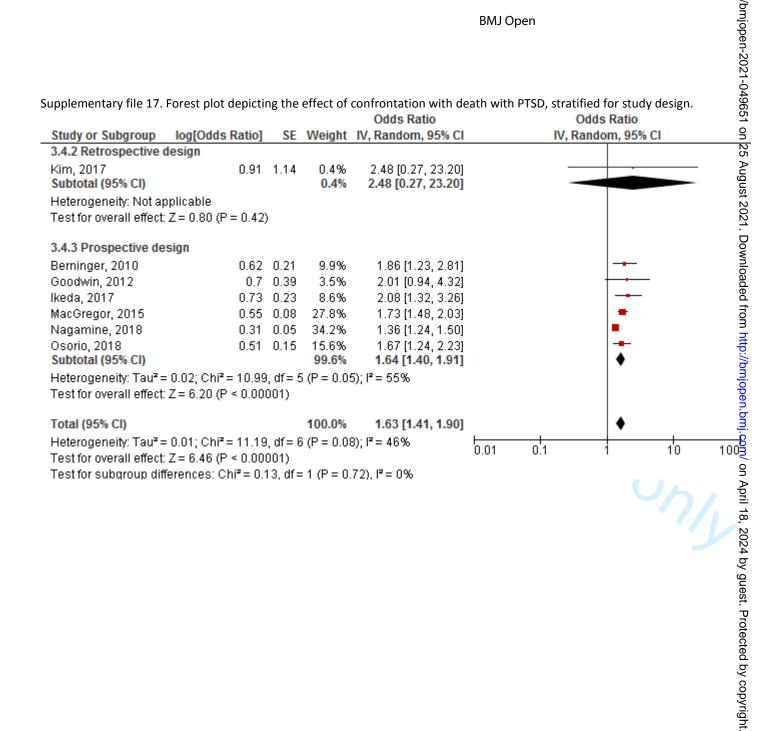
Total (95% CI) 1.89 [1.46, 2.45] 100.0%

Test for subgroup differences: $Chi^2 = 0.06$, df = 1 (P = 0.81), $I^2 = 0\%$



				Ouus Rauo	Odus	Rauo	_
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Rando	m, 95% CI	9
4.3.1 Probable PTSD)						25
Reijnen, 2015	0.56	0.12	79.2%	1.75 [1.38, 2.21]			Ą
Stevelink, 2018		0.27	15.6%	1.68 [0.99, 2.86]	•	-	gu
Subtotal (95% CI)			94.9%	1.74 [1.40, 2.16]		♦	st 2
Heterogeneity: Tau ² =	0.00; Chi ² = 0.02,	df = 1	(P = 0.89)); I² = 0%			8
Test for overall effect	Z= 5.05 (P < 0.00	001)					1.
							۷o۷
4.3.2 Diagnosed PTS	SD						'nlc
Joseph, 2014	1.03	0.55	3.8%	2.80 [0.95, 8.23]	-		ad
Wittchen, 2012	1.44	0.91	1.4%	4.22 [0.71, 25.12]	-		ed
Subtotal (95% CI)			5.1%	3.13 [1.24, 7.86]			frog
Heterogeneity: Tau² =			(P = 0.70)); I² = 0%			<u> </u>
Test for overall effect	Z = 2.42 (P = 0.02))					Ę.
Total (OFN, CI)			400.00	4 70 (4 45 2 24)		•	1 on 25 August 2021. Downloaded from http://bmjopen.bmj.com/ on April 18, 2024 by guest. Protected by
Total (95% CI)	0.00: 01:3 4.04	-14 0	100.0%	1.79 [1.45, 2.21]		▼	ے 19
Heterogeneity: Tau ² =			(P = 0.65)); 1= 0%	0.01 0.1 1	1'0	100
Test for overall effect Test for subgroup dif			- 1 /D - 0	22/ 12 - 22 00/			.bn
restror subdroap air	ierences. Oni = 1.	47, ui-	- 1 (F - 0.	.23),1 = 32.0%	· (V)		<u>ب</u> 20.
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Supplementary file 18. Forest plot depicting the effect of confrontation with death with PTSD, stratified for type of PTSD ascertainment.

, , ,				Odds Ratio	Odds Ratio 55
Study or Subgroup	log[Odds Ratio]	SE	Weight	IV, Random, 95% CI	IV, Random, 95% CI
4.4.2 Probable PTSD					25
Berninger, 2010	0.62	0.21	9.9%	1.86 [1.23, 2.81]	Aug
Goodwin, 2012		0.39	3.5%	2.01 [0.94, 4.32]	- gus
Ikeda, 2017		0.23	8.6%	2.08 [1.32, 3.26]	120
Nagamine, 2018		0.05	34.2%	1.36 [1.24, 1.50]	- 22
Osorio, 2018	0.51	0.15	15.6%	1.67 [1.24, 2.23]	*
Subtotal (95% CI)			71.8%	1.61 [1.33, 1.94]	▼ Ow
Heterogeneity: Tau² =			(P = 0.14)); I² = 42%	nlos
Test for overall effect:	Z = 4.99 (P < 0.00)	JU1)			de l
4.4.3 Diagnosis PTSI)				Odds Ratio IV, Random, 95% CI Odds Ratio IV, Random, 95% CI
Kim, 2017	0.91	1.14	0.4%	2.48 [0.27, 23.20]	
MacGregor, 2015	0.55	0.08	27.8%	1.73 [1.48, 2.03]	• ttp
Subtotal (95% CI)			28.2%	1.74 [1.48, 2.03]	.//b
Heterogeneity: Tau² =			(P = 0.75)); I² = 0%	<u>m</u> ic
Test for overall effect:	Z = 6.91 (P < 0.00)	001)			per
Total (95% CI)			100.0%	1.63 [1.41, 1.90]	1.bm
Heterogeneity: Tau ² =	. በ በ1+ ∩hi≅ – 11 10	df – f			▼ 3.5.
Test for overall effect:	•	-) (i — 0.0i	0),1 = 40 %	0.01 0.1 1 10 1008
Test for subgroup diff			1 (P = 0	54) P= 0%	on
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PRISMA 2	009	BMJ Open Checklist Checklist	
Section/topic	#	Checklist item 64965	Reported on page #
TITLE	•	on 25	
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT		gust	
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION	•	nloac	
Rationale	3	Describe the rationale for the review in the context of what is already known.	3
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, in expressions, comparisons, outcomes, and study design (PICOS).	3
METHODS		»://br	
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and if available, provide registration information including registration number.	4
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	4
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	4
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	4
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	4
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	5
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	5
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	5
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	5
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including nearly assures of consistency (e.g., I²) for each meta-analysis. For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml	5



PRISMA 2009 Checklist

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PRISMA 20	09	BMJ Open Checklist Page 1 of 2	
		Page 1 of 2 9	
Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	5
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	5-6
RESULTS		. 1 D	
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reach stage, ideally with a flow diagram.	7
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	7
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	7
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summare data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	7-9
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	7-9
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	7-9
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	7-9
DISCUSSION		9 >	
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	10
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	10-11
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	12
FUNDING		<u>#</u> D	
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of datage; role of funders for the systematic review.	13

41 From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The RISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

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