Original Article

Post-Traumatic Stress Disorder and Killing in Combat: A Review of Existing Literature

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Abstract

Background: Killing during combat is a unique experience and, for the majority, is limited to military service. For those working with military and veteran populations, it is essential to be able to understand this experience and any psychological ramifications.

Purpose: This review provides a synthesis of existing literature, addressing the specific question: what is known about the relationship between post-traumatic stress disorder and killing in combat? It summarises what is known of the relationship between these variables and the clinical implications of these findings.

Method: A search of existing literature was conducted in a systematic manner in 2017 using electronic databases. A critical appraisal tool was used to inform data extraction and guide the literature review.

Results: The literature suggests that those who kill during combat are more likely to report symptoms of PTSD; however, disparity exists as to the statistical significance of this relationship. Factors such as gender and victim characteristics may be influencing factors.

Conclusion: The impact of killing during combat must be considered when working therapeutically with military and veteran populations. Future research should aim to recruit military participants from different populations and address some of the difficulties with recruitment—ensuring samples are representative and generalisable.

Key words: Post-traumatic stress, combat, killing, military, veteran

Introduction

Military trauma is reported to result in higher levels of psychological distress than other traumatic events.[1] Post-traumatic stress disorder (PTSD) is one possible consequence faced by those from all nations of experiencing military trauma. Recent literature identified that 20% of Australian veterans and 17% of United Kingdom (UK) veterans, who had deployed overseas, met criteria for PTSD.[2] In a United States (US) study of Iraq war veterans, 17% were found to meet criteria for PTSD.[3]

A recent UK paper identified that rates of PTSD, common mental disorders and alcohol misuse are higher amongst veterans who deployed to conflicts when compared with those who did not deploy.[4]

suggesting that deployment is a factor that increases the risk of mental disorders. Active deployment is expected to increase the risk of exposure to a traumatic event and therefore, subsequent mental health difficulties. Exposure to more intense combat1 and exposure to life-threatening situations[5] are known combat-related risk factors for PTSD. These types of trauma events support a more traditional view that PTSD develops from a fear-based trauma. However, more recent evidence demonstrates that PTSD encompasses many different emotions, for example, guilt, shame and anger, not solely fear.[6] This has led to changes in how PTSD is classified—the Diagnostic and Statistical Manual (DSM-5) removed PTSD from the anxiety disorder classification and placed it under its own category titled 'Trauma and Stressor-related Disorders'.[7]

Research into PTSD and the origins of psychological distress in combat veterans supports this notion. Several stressor types that do not constitute life-threatening situations have been found to correlate with PTSD; such as witnessing atrocities, the loss of close friends and the act of killing.[8] Carrying out a traumatic act, such as killing in combat, has been identified as equally psychologically damaging when compared to being subjected to trauma.[9] Clinicians began to notice that engaging in killing had a psychological impact on the veteran population as early as the 1970s.[10]

Despite being trained to kill, evidence suggests that the act of killing in combat can cause significant psychological distress. The impact of psychological distress is reflected in the high rates of suicide in this population. The United States Department of Veterans Affairs[11] estimated 22 veterans died by suicide every day in the year 2010; accounting for 22.2% of all suicides in the US that year. Litz et al. sought to explain some of the intricacies present in the psychological distress of combat veterans. They concluded that psychological distress occurs due to an internal conflict that arises when actions 'transgress deeply held moral beliefs',[12] that is, the event violates the moral beliefs and expectations that the person has.[13] This is often referred to in the literature as a moral injury. Litz et al. assert that inner conflict often leads to feelings of guilt and shame.[12] A recent review identified the role of shame in suicide risk in a US help-seeking veteran population, concluding that shame accounted entirely for the effects of PTSD on suicidal ideation.[14] This raises questions about what risk factors are involved, that means those with PTSD also experience shame. Given the theoretical assumptions that Litz et al. present, shame is assumed to be present for those who carry out transgressive acts, such as killing.[12] To understand the complexities of this relationship fully, it is essential to explore the factors involved in the relationship between PTSD and killing.

The psychological distress caused by PTSD can have a long-term impact on veterans and cause difficulties when adjusting back to civilian life.[15] Individuals with military-related PTSD have been shown to have a higher tendency for isolation,[16] less social inclusion,[15] and heightened aggression.[17] In a study of Iraq and Afghanistan combat veterans receiving medical care, an estimated 25–56% reported difficulties with social functioning, productivity, community involvement and self-care.[15] Sayer et al. importantly note that many of these identified difficulties lie outside the traditional role of healthcare,[15] therefore, highlighting the need for professionals to be trained specifically to work with the complexities present in this population.

Studies have shown that while deployment increases the risk of PTSD, there are protective post-traumatic factors. In a study of US active-duty military personnel, PTSD symptoms were less likely to occur when support was received from individual, family and community sources.[18] Specifically, self-efficacy, family coping, spouse/partner support, financial resources and religious participation, all moderated the relationship between stressful deployment experiences and PTSD symptoms.[18] It is important to note that not all ex-serving personnel will struggle with PTSD.

This review aims to provide a synthesis of existing literature, addressing the specific question: what is known of the relationship between post-traumatic stress disorder and killing in combat? For this purpose, the focus is on serving military and veteran populations. Killing during combat is a unique experience and, for the majority, is limited to military service. Therefore, clinicians working with this population must understand the psychological factors involved in military-related PTSD.

Method

Search strategy

A systematic search of existing literature was conducted. Several databases were selected through the following host websites: EBSCOhost, Web of Science and Cochrane. The databases included; PsychINFO, PsychARTICLES, AMED, CINAHL Plus, SPORTDiscus, MEDLINE, PsychBOOKS and eBook Collection. Grey literature was consulted by searching Ethos, an online host for unpublished dissertations. Reference lists from key texts were also hand searched.

The literature search was conducted in August 2017 using the following search terms: (PTSD OR post-traumatic stress disorder OR posttraumatic stress disorder OR post traumatic stress disorder) AND (combat OR military OR war OR veteran OR arm* force OR deployment OR deployed) AND (kill* OR atrocity* OR fatal OR taking life OR exec* OR transgressive act). A start date of 1980 was applied as a limiter, as this was when PTSD was first included in the Diagnostic and Statistical Manual (DSM).

Studies were included in this review if the participants had a diagnosis of PTSD or had completed a valid measure of PTSD as part of the research process. To be included, the study also had to report on the direct relationship between PTSD and killing in combat; additionally, the killing had to be a variable. Studies were excluded if they were not published in the English language due to a lack of translational

resources. Additional exclusion criteria included participants that were not currently serving military personnel or veterans, and any with participants under the age of 16 years; as this review focuses on a population that has served legitimately in the military and not as child soldiers.

The initial search produced 1 420 articles. Of these, 768 duplicates were removed. The first author was solely responsible for all stages of the search process.

Data extraction and quality considerations

The critical appraisal tool used to inform data extraction was compiled by the first author in line with recommendations by Young and Solomon[19] and the Strengthening the Reporting of Observational

Studies in Epidemiology checklist (STROBE).[20] Despite each of these being a comprehensive guide to reviewing literature, it was not possible to utilise one tool as both included several questions unrelated to the method of the studies reviewed. In addition to Young and Solomon's guidelines, the STROBE checklist provides specific guidance on the critical appraisal of observational studies.[20]

To provide a measure of quality, each study was assessed in respect of whether it addressed each of the questions on the checklist. This was rated on a scale of 'Yes', 'Partial' or 'No' and each was assigned a score from 2–0, which was used to rate the degree to which each study met the conditions of each question.

Table 1: Summary of study design, strengths and limitations

Author and Place	Participants and Setting	Measures	Findings	Strengths	Limitations
Pietrzak et al., 2011 USA	N = 285 Mean age 33.4yrs. Male and female. Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) veterans.	Combat Experience Scale (38). Posttraumatic Stress Disorder Checklist-military version (PCL-M; 39).	Killing significantly associated with re-experiencing symptoms. 45.6% of respondents with PTSD reported killing compared to 15% without PTSD.	Method. Clear results. Confidence intervals. Considered existing literature.	No power calculation. Not representative. Not generalisable.
Shea et al., 2016 USA	N = 206 93% male. Mean age 33.79yrs. National Guard and Reserve members Iraq or Afghanistan. 9.2% met criteria for PTSD.	Clinically-Administered PTSD Scale for DSM-IV (CAPS) (40). Exposure to combat - self-report measure developed by author. Anxiety and depression subscales - Brief Symptom Inventory (BSI; 41).	Having killed not significantly associated with PTSD symptoms of numbing, avoidance, re-experiencing or hyperarousal.	Clear analysis. Acknowledged limitations. Inter-rater reliability good.	Skewness and Kurtosis violated. No confidence intervals. Not generalisable. No power calculation.
Tripp et al., 2016 USA	N = 68 91% male. Mean age 32.31yrs. OEF and OIF veterans. 57% met PTSD criteria.	Deployment Risk and Resilience Inventory (DRRI; 38). Clinician-Administered PTSD Scale for DSM-IV (40). Beck Depression Inventory – II (BDI-II; 42). Alcohol Use Disorders Identification Test (AUDIT;43). Timeline Followback (TLFB;44).	Killing significantly associated with CAPS total severity. Killing = significantly higher mean CAPS score.	Clear analysis. Accounted for missing data. Accounted for confounder. Confidence intervals.	Not generalisable. Reduced statistical power.

Author and Place	Participants and Setting	Measures	Findings	Strengths	Limitations
Maguen et al., 2013 USA	N = 227 84% male. Mean age 34.1yrs. OEF and OIF veterans. All met DSM-IV criteria for sub-threshold or full PTSD.	PCL-M (39). DRRI (38). Participants asked specifics about nature of 'killing'.	Those who killed had twice the odds of more severe PTSD symptoms when compared to those who did not kill. Characteristics of person killed significant.	Confidence intervals. Discussed power. Clear analysis. Considered confounders.	Not generalisable. Recruitment unclear. Sample taken from previous research. Not representative.
Pitts et al., 2014 USA	N = 345 82% male. Mean age 27.97yrs. Army combat medics. Iraq or Afghanistan veterans. 9% probable PTSD.	PCL-M (39). CES (38). Aftermath of Battle Scale (45). Author developed measure of killing.	Those who reported killing were more likely to report symptoms of PTSD. Killing not a predictor of PTSD.	Clear data collection method. Considered implications of findings.	Recall bias. Not generalisable. 2 year follow-up not reported in results or discussion.
MacNair, 2002 USA	N = 1638 Vietnam-era veterans. 2 groups: those who killed (639) and those who did not (963).	Mississippi Scale for Combat-Related PTSD (MCS;46). One item from the National Vietnam Veteran Readjustment Study questionnaire pack.	Mean score on MCS for those who killed higher than those who did not. When battle intensity held constant = killing still predictive.	Considered confounding factors. Stratified sample. Clear analysis. Recognises limitations.	Data not collected for this study design. Did not consider what the findings add. No confidence intervals.
Maguen et al., 2009 USA	N = 1200 Subsample n = 259 Male only. Vietnam veterans.	Measure of killing developed by authors. MCS (46). Minnesota multiphasic Personality Inventory-2 PTSD Keane Scale (MMPI-PK;47). Peri-traumatic Dissociative Experiences Questionnaire (PDEQ;48). Structured Clinical Interview for DSM-III-R (SCID;49). Combat exposure measure developed by authors. Violent behaviour measure developed by authors.	Those who killed combatants scored higher on all symptom measures. Those who reported killing civilians scored higher on MCS. Significant relationship between MCS and killing.	Clear analysis. Considered confounders. Considered what results add to existing evidence.	Not representative. Lacks generalisability. No power calculation. No confidence intervals reported.

Author and Place	Participants and Setting	Measures	Findings	Strengths	Limitations
Maguen et al., 2010 USA	N = 2797 94% male. Mean age 28yrs. 40% reported having killed. OIF soldiers only.	Primary Care PTSD Screen (PC-PTSD; 50). Patient Health Questionnaire (PHQ-9; 51). AUDIT (43). Dimensions of Anger (DAR;52). Relationship problems -developed by authors. Direct and indirect killing – developed by authors.	Direct and indirect killing was a significant predictor of PTSD after controlling for combat exposure.	Accounted for confounders. Large sample size. Representative. Clear analysis. Reported confidence intervals.	Not generalisable. Regressions did not explain a large percentage of the variance. No power calculation.
Van Winkle & Safer, 2011 USA	N = 376 Male only. Vietnam veterans.	Combat exposure variables - developed by author. Inferred combat exposure questions - developed by author. Questions about killing - developed by the author. MCS (46). Questions on domestic physical violence – developed by author.	Inferred measure of killing significantly predicted PTSD. Direct measure of killing significantly predicted PTSD. Killing highly correlated with witnessing trauma.	Possible confounders accounted for. Clear analysis. Authors recognised limitations.	Bias in recruitment. Not representative. No power calculation. No confidence intervals.
Goldstein et al., 2017 USA	N = 383 Female only. Mean age 49.3yrs. 34.5% met PTSD criteria. 15% reported killing in combat.	Eight-item military trauma exposure self-report measure – author developed. PTSD Checklist for DSM-5 (PCL-5;53). PHQ-9 (51).	Killing others not significantly associated with PTSD.	Clear analysis. Generalisable. Consider what the results add to existing literature. Results clearly defined. Large sample size.	Bias in recruitment. Not representative. No power calculation. No confidence intervals.

Results

All of the studies in this review were recruited from US populations. It is not possible to conclude with certainty why there is a lack of literature from other nations on this topic—it may be due to social and political differences between nations that have influenced the direction of military research, although this would need further investigation.

All ten studies in this review used quantitative methodology and were observational, with a cross-sectional design. One study used a comparison group to compare combat veterans who killed with those that did not.[21] The remainder completed regression analyses on the whole participant sample.[22–30] A summary of the participants, design and findings for each study can be found in Table 1, along with the main strengths and limitations.

There was disparity amongst the studies on the relationship between PTSD and killing. Seven of the articles reported a significant relationship between having killed in combat and PTSD symptom severity;[21–26, 29] meaning, those who killed in combat were more likely to report significantly greater severity of PTSD. Three of the studies did not find a significant relationship.[27, 28, 30] One study by Pietrzak et al. looked at four PTSD symptom clusters; identified as re-experiencing, avoidance, dysphoria and hyperarousal symptoms.[24] Only re-experiencing symptoms were significantly associated with having killed in combat. One study also found that the characteristics of the person killed (e.g. age) were an important factor.[26] Specifically, having killed a woman, child or elderly person meant that the individual who killed was 4.6 times more likely to report a high degree of PTSD symptoms.[26]

Participants

Participants in most of the studies were recruited from specific conflicts, with only one study not recruiting from a specific war or military operation.[30] Comparison between conflicts proves challenging due to differences in the type of warfare, fighting conditions, type of combat and purpose of warfare. Some evidence does suggest, however, that Vietnam, Iraq and Afghanistan veterans endorse similar frequencies of taking the life of enemy combatants and civilians.[22] Therefore, the participants across the studies in this review are comparable in terms of the frequency of killing experienced during combat; supporting their comparison for this review.

Most of the studies recruited both male and female participants.[23, 24, 26–29] The percentage of males ranged from 82–94%. Although high, this figure is reflective of the reported percentage of males serving in the US military, which was recorded in 2015 to be 81%.[31] Two studies recruited only male participants.[22, 25] and therefore do not wholly reflect the actual military population. The percentage of women serving in the US military is reported to have increased since the year 2000.[31] The role of women within the forces has also changed, with women more recently being in front-line combat roles. This would explain why any data prior to this time has a higher percentage of male participants. Although, it would be expected that some females would have been eligible had the studies sought to recruit them. Goldstein et al.[30] recruited only female participants—also a limitation—however with a large sample size (n=383) it provides the opportunity to consider any gender differences, which would otherwise be limited by the small number of female participants in the other studies.

It is interesting to note, that the study by Goldstein et al. found no significant relationship between killing in combat and severity of PTSD.[30] Though the sample size of 383 was large, the percentage of those that endorsed having killed in combat was relatively low at 3.9% (n=15). The most commonly experienced trauma type was sexual harassment (65.3%). As such, it should be queried whether the findings reflect the low rate of having killed in combat.

Only four of the studies can be said to have recruited samples through methods that meant the sample was representative.[21, 23, 28, 29] In two of the studies, all serving personnel were eligible for participation on return from active deployment to Iraq[23] or Iraq and Afghanistan[28]. They were recruited at post-deployment health screening assessments, which are mandatory and, therefore, it is not expected that these samples are representative of the returning military populations studied. In the study by MacNair,[21] the sample was a large stratified random sample, which is also anticipated to yield a representative sample of Vietnam veterans.

The method of participant recruitment affected the representativeness of the sample in four of the studies.[22, 24, 26, 27] In particular, Maguen et al. drew on a subsample of participants who had to live within a specified distance of the interview sites; this resulted in bias at the recruitment stage.[22] As such, the sample was not representative of the wider population. Similar geographical difficulties were evident in the studies by Goldstein et al.,[30] Maguen et al.[26] and Pitts et al.[27] whereby participants were recruited from specific geographical locations. Despite this limitation, the study by Goldstein et al. was not limited to any specific conflict and therefore, is likely to be more representative of the female military population within the areas the researchers recruited from.

Pietrzak et al. chose a sample that was the first 1 050 names, alphabetically ordered, of prospective eligible participants.[24] This was due to practical constraints and a high number of eligible veterans. The result strongly limits the representativeness of this sample as it is not random.

Design

The limitation with a cross-sectional design is that it cannot infer causality. When collecting data at one specific time point, it is not possible to know whether certain factors have made an individual more or less likely to develop PTSD as it is not possible to know whether, for example, PTSD was present before the act of killing. It is recognised that causality is often difficult to ascertain and that many other variables, some of which may be confounding factors, would need to be considered. Six of the studies included in this review accounted for possible confounding variables in their design.[21–23, 25, 26, 29]

Analysis

Most studies referred to whether there was missing data, with four of these removing it before analysis,[23, 27, 28, 30] potentially causing bias in the studies. On observation, all studies that removed missing data appeared to have a sufficient sample size,[23, 27, 28, 30] although absent of power calculations this is not certain. Three of the four studies have sample sizes between 300 and 400 with the number of variables ranging from between 6 and 12.[27, 28, 30] The study by

Maguen et al., however, has a considerable sample size of 2 797 with only seven predictor variables.[23] This may have influenced the findings, as a large sample could result in a large probability of obtaining significance, even when the effect is small. Indeed, the final mode in this study accounted for a small proportion of the variance, which may reflect this limitation.

It is likely that the researchers removed missing data prior to analysis due to completing a regression, which requires a full dataset with no missing data.[34] Three studies made no reference to missing data.[21, 24, 26] Maguen et al. did not account for or identify the percentage of missing data and included participant responses that had some data missing in their analysis.[22] While it is not possible to definitively state that the missing data influenced the results, it is a limitation of this study that it is not addressed.

What appeared to be consistent across most articles is that participants that had killed during combat were more likely to report PTSD symptoms.[21–27, 29] They also had higher mean PTSD symptom severity scores when compared with participants that did not report killing.[29] Pietrzak et al. found that 45.6% of participants with PTSD reported killing compared to 15% of participants without PTSD (n=285).[24] In the discussion of this study, Pietrzak et al. identified the difficulty in determining the directional relationship between these variables. They allude to whether individuals with PTSD are more likely to kill during combat due to their symptoms, compared to the assumed direction of developing PTSD by those who have killed in combat.[24]

Characteristics of person killed

Two of the studies investigated the characteristics of the person killed as a predictor variable.[22, 26] Maguen et al. (2009) used data from the National Vietnam Veterans Readjustment Study (NVVRS) study,[22] while Maguen et al. (2013) recruited only Iraq and Afghanistan veterans.[26] Results from the Vietnam veterans study concluded that where participants reported killing civilians, women, children, the elderly or prisoners during combat, their PTSD symptom severity score was higher.[22] There was, however, a low number of participants endorsing the items for having killed each of these particular groups (civilians 3%, women, children or elderly 13%, prisoner 2%); therefore, inferences should be treated cautiously. In the study by Maguen et al., which recruited 227 participants, 39% reported having killed another person. Of these, 50.7% reported killing enemy combatants, and 48.5% reported killing both enemy combatants and at least one other type of person

(child, women, male civilian, elderly or detainee).[26] With a larger percentage of respondents endorsing these items, they found that having reported killing a woman, child or elderly person resulted in that individual being 4.6 times more likely to have a high rate of PTSD symptoms.[26]

During more recent conflicts, where the enemy are unmarked and often in urban areas, the likelihood of harming civilians is increased.[34] Previous research into atrocities, such as killing civilians, suggests such acts correlate with negative emotions (e.g. guilt).[35] This is particularly true when the traumatic event involves acts that violate deeply held moral beliefs.[12] Guilt has also been suggested to precipitate the development of PTSD,[9] which may account for the difference in PTSD symptom severity. For individuals reporting having killed women, children, the elderly or prisoners,[22, 26] their PTSD symptom severity scores may be higher due to feelings of guilt.

Despite the cautionary interpretation, the findings highlight how specific characteristics of those killed may play a role in determining the severity of PTSD. Clinicians should therefore, consider the killing experience that military or veteran clients bring with them. The context is an important consideration; for example, the evidence suggests a scenario in which civilians are killed might lead to greater severity of PTSD. Clinicians should be mindful of the impact that the characteristics of the person killed may have on the individual responsible, with acknowledgement that killing children, the elderly, detainees or civilians may result in greater PTSD severity.

PTSD symptoms

Several articles report a differing relationship between specific PTSD symptoms and killing in combat.[22,24,28] Pietrzak et al. considered four symptoms, namely re-experiencing, avoidance, dysphoria and hyperarousal.[24] The results demonstrated that killing in combat was only related to re-experiencing symptoms. It is a limitation that in this study, they neglected to consider symptoms outside of these four categories. The findings are also in contrast to the results of Shea et al., which similarly investigated the same four symptoms. Interestingly, their study also focused on Iraq and Afghanistan veterans; however, the results showed no significant relationship between killing in combat and any of the PTSD symptoms investigated.[28] Maguen et al. included peri-traumatic dissociation as one of the variables. They found that when controlling for general combat experiences, killing both combatants and non-combatants significantly predicted peri-traumatic

dissociation. In the discussion, they propose that killing another human may increase the likelihood of peri-traumatic dissociation because of the profound sense of unreality associated with this act.[22] They go on to suggest that peri-traumatic dissociation may, as such, serve to shut down or minimise the feelings associated with the act of killing, which then interferes with processing, leading to the development of PTSD. While the findings on different PTSD symptoms and killing in combat are limited to results from only three studies in this review, they do provide foundations for the future consideration of specific factors involved in killing, such as the emotional experience at the time.

Discussion

In summary, the studies in this review had both differences and similarities when considering the relationship between PTSD and killing in combat. Most of the studies acknowledged that killing in combat correlated with higher PTSD symptom scores; although three did not find this relationship to be statistically significant. The inconsistency between some of the findings would suggest that the link between killing in combat and PTSD requires further attention and exploration. What differentiates these findings, aside from the limitations of the studies in this review, may be influencing factors, such as degree of combat exposure or gender. However, these factors need further investigation.

Some of the studies found a difference in the relationship between killing in combat and different PTSD symptoms, such as re-experiencing symptoms.[24] Additionally, concerning the killing of civilians, specific characteristics of the person killed were important, such as whether they were children, women, the elderly or prisoners. This was shown to correspond with a higher reporting of PTSD symptoms.[22] It was beyond the scope of the studies included in this review to determine the factors involved in the killing of these specific types of people that resulted in more severe PTSD presentations. Further examination of other potentially relevant variables is needed.

Overall, all the studies met at least half of the critical appraisal tool questions, although none were without their limitations. Most of the studies were limited by the representativeness of the sample, lack of generalisability and lack of transparency about statistical power. Nearly all studies chose to recruit participants that had served in specific conflicts such as the Vietnam War or the conflict in Afghanistan. Existing literature has shown the degree of combat exposure to be a significant predictor of PTSD.[36]

These studies have, however, recruited from a Vietnam veteran population, whereby symptoms have had longer to surface and may therefore present differently to current serving and recently returned veterans, making the findings less generalisable to the US military population as a whole. There are also geographical limitations within some of the studies. Some of the reasons for this may be down to resources as was the case in the study by Pietrzak et al., whereby only the first 1050 were contacted due to the length of time it would take to sort through over 200 000 eligible veterans.[24]

Clinical implications

Although it is difficult to conclude that a significant relationship exists between killing in combat and PTSD based on the disparity in the studies, some salient points can be highlighted. The majority identified that an individual who killed in combat is more likely to report symptoms of PTSD. This alone indicates the need for clinicians working with serving military personnel and veterans to ask about killing in combat during assessment.

It is also essential to consider the context in which killing in combat occurred, particularly the characteristics of the person killed and specifically how these factors have impacted on the person who killed. Not considering these factors may result in assessment and formulation processes that neglect to account for the inner conflict and emotional distress. This would also indicate a need for interventions to be responsive to individual need. Traditionally, PTSD was assumed to result from exposure to life-threatening situations,[37] therefore, the person who kills emotional distress may derive from a very different set of processes. Within this, it should not be assumed that having killed during combat is the same for everyone. The studies in this review show that different contexts account for differing symptom severities.

Future research

Future research should utilise longitudinal research designs and baseline measures of PTSD, which may be more useful in determining whether killing in combat is a valid predictor of PTSD. Research should aim to recruit participants that are more representative of the populations studied. Several studies have drawn on data collected around the 1980s; there are more up to date military populations that could be recruited from in order to gain current data. It would be necessary, considering the difference in combat experiences between nations and differences in cultural perceptions of killing, for research to be

conducted outside of the US population. This would allow for comparisons across nations and a greater exploration of the factors involved in the relationship between PTSD and killing in combat.

Limitations

There are some limitations to this review which need to be considered. The search strategy did not produce studies outside the US population, and thus, the findings are limited to this nation. Similarly, several studies used data from the same Vietnam War sample with others focusing on Afghanistan and Iraq veterans. This has produced an overview of findings that does not account for other conflicts or those deployed on other military operations.

It is also a limitation that the studies used for this review were all a cross-sectional design. This limits the ability to infer the direction of the relationship between variables, but also to comment on the chronicity of PTSD. When taking data at one point in time, with no indication as to the time that has elapsed since a traumatic event, it is difficult to know whether participants would meet a PTSD diagnosis.

Conclusion

Overall, the evidence for the relationship between PTSD and killing in combat appears complex. Research identifies that those who kill during combat are more likely to report PTSD symptoms.

Disparity exists over whether this relationship is statistically significant, however several studies have shown that those who killed during combat reported a significantly greater severity of PTSD. There are factors such as victim characteristics and gender, which may influence the course of this relationship. The limitations of the studies included in this review should be taken into consideration. The majority, although not all, were limited by lack of a representative sample and generalisability.

There is, sufficient evidence to conclude that the relationship between PTSD and killing in combat is essential to consider. Clinicians should address the topic of killing during combat in their assessments and formulation in order to gain a greater understanding of the origins of a client's distress. Future research should aim to unravel the complexities of this relationship by considering potential influencing factors. Research should aim to provide evidence that is representative, generalisable and from different nations.

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