



Examining the Association Between Moral Injury and Suicidal Behavior in Military Populations: A Systematic Review

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Abstract

The increasing number of suicides among military populations cannot be fully accounted for by conventional risk factors like Post-Traumatic Stress Disorder (PTSD). As a result, researchers and theorists propose that delving into the concept of Moral Injury could offer a more comprehensive understanding of the phenomenon of suicide. Moral Injury is not currently a recognized mental health disorder but can be associated with PTSD. Moral Injury is a multi-dimensional issue that profoundly affects emotional, psychological, behavioral, social, and spiritual well-being. The objective of this systematic review is to examine the association between Moral Injury and suicidal behavior (suicide ideation, plans and or suicide attempt) within military populations. The review will specifically concentrate on identifying and analyzing studies that have investigated the connection between these variables, with a specific focus on the context of military personnel both serving and former serving members. Of the 2214 articles identified as part of this review, 12 studies satisfied the research criteria with a total participant sample having an average age of 40.7 years. The male population accounted for 78.6% of the overall sample. Two studies were identified as high-quality, while the remaining ten were rated as moderate. The analysis of these twelve studies consistently affirms a connection between Moral Injury and suicidal behavior; most obviously, that exposure to morally injurious events substantially amplify the risk of suicide, with higher levels of potential exposure being linked to increased Moral Injury and heightened levels of suicidal behavior. Our review uncovered noteworthy findings regarding the association between Moral Injury and suicidal behavior, marking a pioneering effort in exploring this association and offering valuable insights into this emerging issue. Several limitations are noted regarding this review and recommendations are made concerning the need to prioritize, expand and employ longitudinal research designs that include non-military populations such as first responders (e.g., police, paramedics, firefighters) and medical, nursing, or allied health professionals—all disciplines known to be impacted by Moral Injury.

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Introduction

Moral injury is a concept that has been proposed to better understand factors that can contribute to suicide among military and veteran populations. The term ‘**Moral Injury**’ was first coined by veteran Psychiatrist Jonathon Shay in 1994 (Shay, 1994). While there are various definitions of Moral Injury in the literature, the most thorough and inclusive ones describe Moral Injury as a form of bio-psycho-social-spiritual distress that arises from a breach or betrayal of one’s moral values and or beliefs (Boudreau, 2011; Carey & Hodgson, 2018; Drescher et al., 2018; Hodgson & Carey, 2017; Jamieson et al., 2020; Molendijk et al., 2022; Shay, 1994, 2014).

It is common for military members to experience events that may leave them feeling isolated and subjected to psychological and social stigma due to the unique and morally challenging demands of military service, as well as the ethically controversial engagements which military commanders know occur during times of war. As noted however by Hodgson and Carey (2017), some organizations and researchers, when developing their own definition of moral injury, placate leadership and/or chain of command regarding their contribution to moral injury among veterans. Such researchers have hijacked Shay’s term ‘moral injury’, and ‘refocused the scope away from those of ‘legitimate authority’, to focusing specifically upon the behavior of the individual.

‘Whether deliberate or unintentional, diminishing the responsibility of organizational leadership, can subsequently minimalize and undervalue the sense of betrayal perceived by current and former serving personnel, and effectively exonerate corporate culpability and the liability of organizations with respect to moral injury’ (Hodgson & Carey, 2017).

In addition, some of the literature conflates Moral Injury with Post-Traumatic Stress Disorder (PTSD). Although these share certain symptoms, such as anger, sleep disturbances, and emotional detachment, there are significant differences between them. For instance, unlike PTSD, Moral Injury uniquely manifests through emotions and feelings such as self-blame, grief, sorrow, betrayal, and a sense of existential crisis (Griffin et al., 2019; Jamieson et al., 2020; Litz et al., 2009).

Moral Injury

Moral codes are developed over time and continue to evolve, guiding our decision-making, behavior, and actions. However, when actions or experiences violate our moral compass, it can result in a Moral Injury. Although the history of Moral Injury can be traced back to The Iliad and Shakespearean eras (Shay, 1994), contemporary research on Moral Injury has primarily focused on the US Armed Forces. Several studies have been conducted, including one by Jordan et al. (2017), which found that around 25% of active-duty US Marines ($n=867$) reported perpetration and/or

betrayal items on a measure for Moral Injury (Jordan et al., 2017). Similarly, Wisco et al. (2017) found analogous results in a study of US combat veterans.

In the USA, there are multiple validated brief measures that can be used to measure symptoms of Moral Injury among veterans such as the Moral Injury Symptom Scale-Military Version [MISS-M] (Koenig et al., 2018). Research using this measurement tool showed that over 50% of veterans with PTSD symptoms had four or more symptoms of Moral Injury in the severe range (9 or 10 on a 1–10 scale; Volk & Koenig, 2019), and almost 60% of veterans with PTSD had five or more symptoms of Moral Injury (Koenig, 2018).

Currently, available data on the prevalence of Moral Injury among Australian military populations are limited. The first exploratory research undertaken among a sample of Royal Australian Air Force personnel (RAAF; $n = 187$) who had been deployed to either a war or war-like zone and who had not been diagnosed with PTSD, indicated that approximately 62% had a potential moral injury of one kind or another due to witnessing transgressions, perpetrating transgressions, or feeling betrayed by allied forces or their own leaders (Hodgson & Carey, 2019; Hodgson, Carey & Koenig, 2022). Other research findings regarding Moral Injury will be noted later as part of this review.

Suicide and Moral Injury

Suicide is complex, and the factors that contribute to the higher prevalence of suicide among some veteran populations, such as those ADF members who were involuntarily medically discharged (AIHW, 2022), cannot be fully explained by traditional risk factors, such as PTSD alone. Therefore, many theorists are suggesting that exploring the concept of Moral Injury could provide a more comprehensive understanding of this phenomenon (Bryan et al., 2018; Hodgson & Carey, 2017; Jinkerson, 2016; Jones et al., 2022; Jordan et al., 2017; Kelley et al., 2019; McCarthy, 2016).

The Australian Institute of Health and Welfare (AIHW, 2022) reported that between 1997 and 2020 there were 1600 certified deaths by suicide among members with ADF service since 1 January 1985. When broken down, this included 1330 (83%) deaths by suicide which occurred among ex-serving members, 154 among permanent members, and 115 among reservists. ADF veterans under 30 years old in Australia had a suicide rate twice as high as the civilian average (AIHW, 2022) with males who leave the ADF involuntarily, being three times higher risk than those who leave voluntarily (AIHW, 2022). Self-harm and suicide are major causes of post-ADF service deaths and injuries, which rather worryingly, surpasses overseas operational service-related deaths (Department of Defence, 2016). When comparing these figures, the USA has a much higher rate of veteran suicides with approximately 6100 deaths by suicide per year in 2020, exceeding those of non-veteran adults (Veterans Affairs, 2022). On the other hand, the United Kingdom reported a significantly lower number of veteran suicides with 309 deaths between 1998 and 2017, averaging 15 per year (AIHW, 2019).

Much of the literature reviewed suggests a possible connection between Moral Injury and suicidal behavior in military populations, indicating the potential significance of Moral Injury specifically influencing suicide among veterans, where suicide rates consistently remain high (Bryan et al., 2014; Kelley et al., 2019; Tripp et al., 2016; Zerach & Levi-Belz, 2018). The military environment can expose personnel to traumatic events, such as witnessing or causing human suffering, which can increase their susceptibility to Moral Injury (Brock, Keizer, & Lettini, 2012) and subsequent suicide behavior (Bryan et al., 2018; Jamieson et al., 2020).

Moral Injury usually occurs through actions or inactions by oneself or others, that betray or violate one's moral code, resulting in a negative impact on beliefs about one's goodness and the goodness of the world (Litz et al., 2009; Shay, 2014). Negative self-beliefs, a hallmark of Moral Injury, can lead to self-sabotaging and self-harming behaviors, as well as stigmatizing attitudes towards others (actual and perceived) (Kelley et al., 2019; Shay, 2014; Westphal & Convoy, 2015). The fear of being rejected by others (i.e., social rejection) can escalate feelings of shame, which is a common consequence of Moral Injury. This shame can cause further withdrawal from social interactions, increasing a lack of belongingness, loneliness and isolation. These factors further reinforce self-annihilating behaviors, including suicide (Boudreau, 2011; Bryan et al., 2016; Hodgson & Carey, 2017; Jamieson et al., 2020; Jordan et al., 2017; Kelley et al., 2019; Litz et al., 2009).

Purpose

This review considered whether the experience of Moral Injury in a military context (including both serving and former serving veterans) might be linked to suicide behavior. We suggest, similar to other researchers, that the increasing number of suicides among military populations may not be fully accounted for by conventional risk factors such as PTSD (Ames et al., 2019; Jamieson et al., 2020; Zerach & Levi-Belz, 2018). Thus, it is imperative to analyze the literature that may indicate an association between Moral Injury and suicide behavior, particularly in military populations. This review will specifically concentrate on identifying and analyzing studies that have investigated the connection between these variables. The review aims to provide a comprehensive understanding of the nature and extent of this relationship, as well as to identify potential gaps for future research.

Methodology

This systematic review adhered strictly to a published protocol registered in PROSPERO (CRD42023426918), and no deviations were made during the study.

Search Strategy

In accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Liberati et al., 2009), a comprehensive search was

conducted of databases, including PubMed, Google Scholar, PsycINFO, Scopus, British Medical Journals (BMJ), and ScienceDirect. Peer-reviewed literature was searched from January 2009 to April 2023. The year 2009 was chosen to capture the most contemporary literature since Litz et al. (2009) published a proposed working definition on Moral Injury as "...the lasting psychological, biological, spiritual, behavioral and social impact of perpetrating, failing to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs and expectations' (p. 697) which has now become, either partly or in full, one of the most cited definitions to date.

Relevant journal articles were scrutinized, and recent systematic reviews and meta-analyses were searched through bibliographic analysis. To perform the searches, terms such as ("Moral Injury") AND ("Veteran" OR "Military") AND ("Moral Injury") AND ("Suicid*" OR "Suicide") in different combinations were used. Each database was searched individually using a combination of Boolean operators (AND) and (OR), as well as Medical Subject Subheadings (MeSH) terms and key text words. A thorough examination of titles, abstracts, and full-text articles was conducted to eliminate studies that did not meet the inclusion criteria. To obtain a broader range of literature, we did not limit our criteria to a specific study design.

Inclusion Criteria for the Selected Studies

The eligibility criteria were established in accordance with the Population, Intervention, Comparators, Outcomes, Timing/Setting (PICOTS) framework (Matchar, 2012). The following inclusion criteria were applied: Population(s): Military personnel (active serving) or veterans (former serving) from countries that have similar military operational frameworks (US, Australia, UK, New Zealand, Europe, Canada, and Israel); Intervention/Exposure(s): Assessment of Moral Injury and evaluation or documentation of suicide behavior; Comparator(s). No comparison group was required; Outcome(s): Prevalence of suicide behavior, among individuals with Moral Injury or reporting the association between Moral Injury with suicide behavior; and timing/setting. No limitations were placed on timing, setting, or study design. Further inclusion criteria consisted of the presentation of original study data in a peer-reviewed journal article, without any gender or associated pathology restrictions. Additionally, sufficient data were required to examine the reported rate and/or association between Moral Injury with suicide behavior. The full-text article had to be written in English and published between 1 January, 2009, and 30 April, 2023.

Exclusion Criteria for the Selected Studies

The exclusion criteria were as follows: (a) duplicate datasets (i.e., re-analysis of a previously reported dataset); (b) inadequate data that did not allow for the association between our variables; (c) dissertations, conference proceedings, commentaries, editorials, letters, books, book chapters, duplicate datasets, and reviews.

Data Extraction and Quality Appraisal

The titles, and abstracts, were screened by the authors in a dual review process to identify studies that met our inclusion criteria. The full texts of potentially eligible studies were obtained and independently assessed for eligibility by two members of the review team. In cases where there was disagreement between them over the eligibility of specific studies, all authors participated in a discussion to resolve the issue.

Data were collected in duplicates using a standard data form, and the following information was extracted: source article, country, study design, sample, sample demographics, measurement scale of Moral Injury, measurement scale of suicide behavior, prevalence, or association of Moral Injury with suicide behavior, conclusion, limitations, and any additional relevant data.

Since the articles examined in our review focused on the prevalence of suicide behavior among individuals exposed to Moral Injury, we employed a standardized tool to assess the quality for epidemiological studies (Boyle, 1998; Loney et al., 1998). The assessment tool consisted of eight criteria as presented in Table 1. The total score on this tool could range from 0 to 8. Studies achieving a score of 80–100% were considered of “high quality,” those scoring 60–79% were regarded as “moderate quality,” and those scoring below 59% were deemed of “low quality.”

Statistical Analysis

Due to the heterogeneity of the studies and outcome measures, we were not able to conduct a statistical meta-analysis. However, our descriptive analysis has furnished a comprehensive summary of the connection between the chosen variables of Moral Injury and suicide behavior.

Results

Literature Search

A comprehensive search was conducted across six databases, relevant journals, and bibliographic sources, resulting in the identification of 2214 records. Following the removal of duplicates and a screening process based on titles and abstracts, 196 full-text articles were selected for further evaluation. Among these, 182 articles were excluded as these did not meet the inclusion criteria of focusing upon Moral Injury as a primary contributor of suicide behavior, intervention-based and mechanism/risk factor-based studies, and excluding studies centered on non-suicidal signs or symptoms.

Two studies were excluded during the data extraction stage for specific reasons. The first study focused on examining the combined effect of PTSD and Moral Injury on suicide behavior (Bryan et al., 2018). The second study was excluded because it

Table 1 Assessment of quality of included studies (*n* = 12)

Criterion	(Schwartz et al., 2022)	(Levi-Belz et al., 2022)	(Maguen et al., 2022)	(Cameron et al., 2021)	(Nichter et al., 2021)	(Hamrick et al., 2020)	(Corona et al., 2018)	(Kelley et al., 2019)	(Zerach & Levi-Belz, 2018)	(Ames et al., 2019)	(Wisco et al., 2017)	(Bryan et al., 2014)
Target population definition	+	+	+	+	+	+	+	+	+	+	+	+
Probability sampling	-	-	+	-	+	-	+	-	-	-	+	-
Response rate $\geq 80\%$	-	+	-	+	+	+	+	+	+	+	+	+
Clear descriptions of non-responders	+	-	-	+	-	-	-	+	+	+	-	+
Representative sample	-	-	-	-	-	-	+	-	-	-	+	-
Standardized data collection methods	+	+	+	+	+	+	+	+	+	+	+	+
Validated criteria for diagnosis	+	+	+	+	+	+	+	+	+	+	+	+
Prevalence estimates	+	+	+	+	+	+	+	+	+	+	+	+
Score obtained	5/8	5/8	5/8	6/8	6/8	5/8	7/8	6/8	6/8	6/8	7/8	6/8
Percentage (%)	62.5	62.5	62.5	75	75	62.5	87.5	75	75	75	87.5	75

Points were assigned based on answering each question with a YES, denoted by a+, while a response of NO was indicated by a -

used the same sample population that had already been observed in another study conducted by the same author. This duplication of data would have resulted in redundant information, and therefore, it was not included in the analysis (Levi-Belz & Zerach, 2018). In the end, 12 studies published between January 2009 and April 2023 were included in the analysis. The selection process and inclusion of studies are visually depicted in Fig. 1 using the PRISMA flowchart.

Quality Appraisal of Included Studies

According to the quality assessment tool (Boyle, 1998; Loney et al., 1998), two studies demonstrated a high level of quality, while the remaining ten studies were considered moderate. There were no studies which rated below moderate. All the

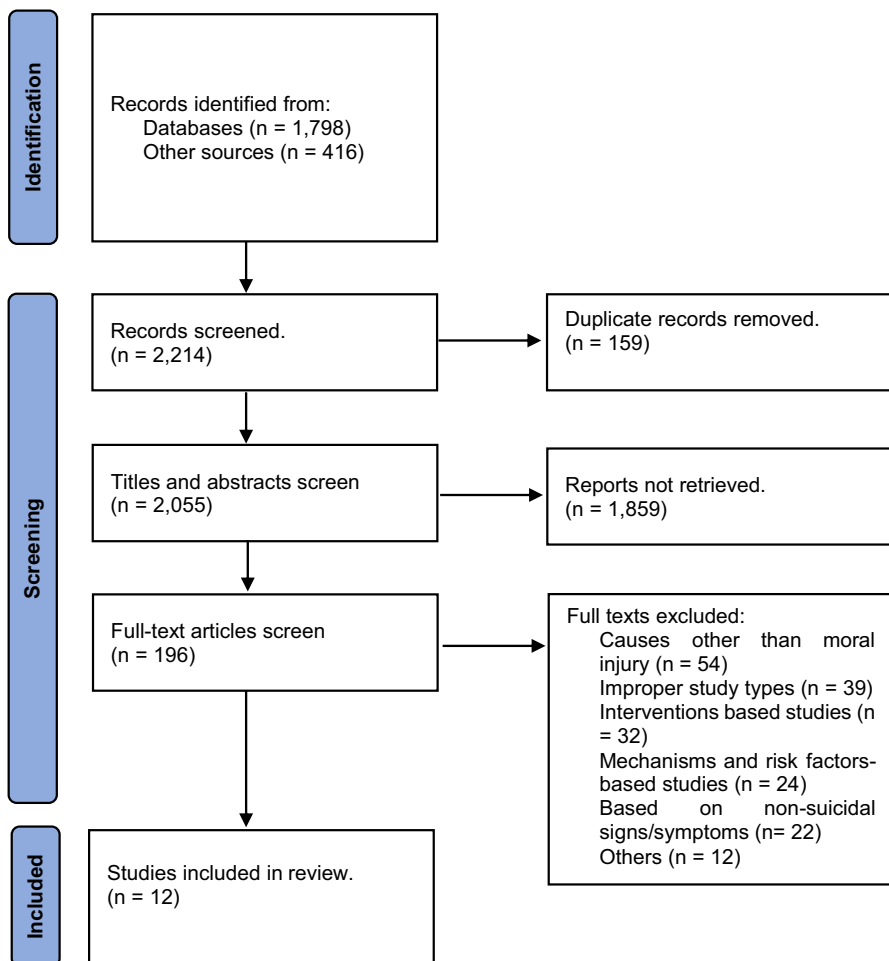


Fig. 1 PRISMA flowchart of the searching and screening studies

studies met the criteria for target population definition, standardized data collection methods, validated criteria for diagnosis, and prevalence estimates. However, four assessment criteria were only partially fulfilled. Notably, representative sampling was not fully achieved in 10 of the studies. Table 1 displays the outcomes of the quality assessment.

Baseline Characteristics of Included Studies

Out of twelve selected studies, nine were conducted in the United States (US) and three in Israel. All of our selected studies utilized a cross-sectional design. The combined sample size, including both active duty and veterans, consisted of 18,458 participants, with a mean age of 40.74. The male population accounted for 78.6% of the overall sample. The Moral Injury Event Scale (MIES; Nash et al., 2013) was commonly employed to assess Moral Injury. The MIES comprises three subscales designed to measure various Moral Injury types: (a) MIES-Self (Moral Injury exposure via actions or decisions made by the respondent that contravenes their own moral values); (b) MIES-Others (Moral Injury exposure via learning of or witnessing others' actions that the respondent perceives as morally wrong); (c) MIES-Betrayal (Moral Injury exposure via the respondent experiencing perceived betrayal from trusted others) (Nash et al., 2013). Suicide behavior was mostly measured using the Suicidal Behaviors Questionnaire-Revised (SBQ-R; Osman et al., 2001) and the Patient Health Questionnaire (PHQ; Kroenke & Spitzer, 2002) in three studies.

Findings on the Association Between Moral Injury and Suicidal Behavior

Our analysis of 12 studies confirms consistent findings regarding the association between Moral Injury and suicidal behavior. It is apparent that exposure to Moral Injury events, contributes to increased suicide risk, with higher levels of potential exposure associated with greater Moral Injury and higher levels of suicidal behavior. On examining specific subscales of Moral Injury (Self, Others, and Betrayal), potentially morally injurious events perpetrated by oneself (PMIE-Self) showed a positive association with suicide ideation (Bryan et al., 2014; Levi-Belz et al., 2022; Nichter et al., 2021; Schwatz et al., 2022; Wisco et al., 2017) and suicide attempt (Maguen et al., 2022).

Notably, potentially morally injurious events through perceived betrayal by others (PMIE-Betrayal) were found to have significant implications for suicidal behavior (Corona et al., 2019; Maguen et al., 2022; Nichter et al., 2021; Wisco et al., 2017). Potentially morally injurious events perpetrated by others (PMIE-Other) have also shown an association with suicidal ideation and behavior, albeit not as strongly as PMIE-Self (Levi-Belz et al., 2022; Nichter et al., 2021). However, other studies show mixed (Maguen et al., 2022), or no association between PMIE-Other and suicidal behavior (Wisco et al., 2017).

The impact of gender on the relationship between Moral Injury and suicide behavior was also apparent. Among male military personnel, PMIE-Self was

associated with a 50% higher likelihood of suicide attempts during service. In contrast, among women, experiencing betrayal is linked to over a 50% higher suicide risk during and after service, whereas PMIE-Self does not significantly affect suicide attempts (Maguen et al., 2022). One study by Schwartz et al. (2022), specifically explored the mediating role of trauma-related shame and the moderation role of collective hatred in association with Moral Injury and suicide ideation. The findings indicated that PMIE-Self demonstrates a positive association with suicide ideation but mediated by shame.

Additionally, collective hatred moderates the direct and indirect relationships between PMIE-Self, shame, and suicide ideation (Schwartz et al., 2022). Two other studies examined the impact of psychological factors on the association between Moral Injury and suicide behavior. Stronger beliefs, goals, and purpose in life is linked to reduced suicide ideation amid higher levels of MI-Others and MI-Betrays. Conversely, over-identification with Moral Injury intensifies the connection between MI-Self and suicide behavior. Moreover, elevated mindfulness and social connectedness attenuate the relationship between MI-Others and suicide behavior (Corona et al., 2019; Kelley et al., 2019).

In our review of included studies, significant findings were observed regarding the association between Moral Injury and suicide behavior. However, it is crucial to acknowledge the existence of certain limitations in these studies that cannot be overlooked. Common limitations include the use of cross-sectional retrospective data, small samples that may not be representative of the general population, insufficient examination of mental health diagnoses and symptoms, and the inability to independently verify reported diagnoses. Furthermore, the measures employed to assess suicide risk were not validated against established measures, introducing uncertainty regarding the reliability of the findings. An additional limitation includes the reliance on self-reported methodologies for data collection. The data regarding the findings on the association between Moral Injury and suicide behavior are presented in Table 2.

Discussion

The primary objective of this systematic review was to examine the association between Moral Injury and suicide behavior within military populations. While there is an abundance of data available regarding the prevalence of suicide behavior and other psychological conditions such as PTSD and depression (Pompili et al., 2013; Ribeiro et al., 2012), the connection between Moral Injury and suicide behavior has not previously been thoroughly examined. Our review represents the first attempt to explore this aspect. In our review, we have introduced novel insights into this new mechanism of the association between Moral Injury and suicide behavior. In addition to investigating the relationship between Moral Injury and suicide behavior, various other aspects were also explored. One included a study which examined the differences of three types of Moral Injury (Self, Other and Betrayal) with suicide attempt based on gender. It was concluded

Table 2 Summary of Included Studies on the Association between Moral Injury and Suicidal Behavior in Military Populations (*n* = 12)

Study	Country	Study design	Sample	Sample demographics	Measurement scale (MI)	Measurement scale (Suicidality)	Main reported findings	Main reported limitations
(Schwartz et al., 2022)	Israel	Cross-sectional study	336 IDF combat veterans	Age, 26.1 years; 83.9% male	MIES (Nash et al., 2013)	SBQ-R (Osman et al., 2001)	MIES-Self is positively associated with suicide ideation, mediated by shame. Collective hatred moderates both direct and indirect associations between PMIE-Self, shame, and suicide ideation	Cross-sectional data, non-generalizable sample, did not examine prior exposure to trauma, and data derived from self-report measures
(Levi-Belz et al., 2022)	Israel	Cross-sectional study	190 IDF combat veterans	Age, 26 years; 87% male	MIES (Nash et al., 2013)	SBQ-R (Osman et al., 2001)	MIES-Self and MIES-Betrayal were positively correlated with current suicidal ideation and behavior, while MIES-Other showed a non-significant positive trend	Cross-sectional data, and non-generalizable sample

Table 2 (continued)

Study	Country	Study design	Sample	Sample demographics	Measurement scale (MI)	Measurement scale (Suicidality)	Main reported findings	Main reported limitations
(Maguen et al., 2022)	US	Cross-sectional study	140,57 post-9/11 veterans	Age, 30 to 39 years; 44% male	MIES (Nash et al., 2013)	C-SSRS (Katz et al., 2020)	Male PMIE-Self had a 50% higher suicide attempt likelihood during service. PMIE-Betrayal increased attempts in men during service. Women reporting betrayal had over 50% higher suicide risk during and after service, while PMIE-Self had no significant effect on suicide attempts	Cross-sectional data, non-generalizable sample, low response rate, and duration of mental health diagnoses was not made
(Cameron et al., 2021)	US	Cross-sectional study	40 veterans with an active SUD	Age, 48,23 years; 91.7% male	MIES (Nash et al., 2013)	BSI (Beck et al., 1979)	Exposure to moral injury events plays a significant role in contributing to suicidality	Cross-sectional data, non-generalizable, and unable to verify diagnoses

Table 2 (continued)

Study	Country	Study design	Sample	Sample demographics	Measurement scale (MI)	Measurement scale (Suicidality)	Main reported findings	Main reported limitations
(Nichter et al., 2021)	US	Cross-sectional study	1321 veterans who reported a war zone exposure	Age, 59.1 years; 93.7% male	MIES (Nash et al., 2013)	PHQ-9 (Kroenke & Spitzer, 2002)	US combat veterans frequently report morally injurious experiences, which increase the SB	Cross-sectional data, non-generalizable sample, relied on retrospective self-report measures, and a short-term screening measure of SB
(Hamrick et al., 2020)	US	Cross-sectional study	285 OEF/OIF	Age, 32.01 years; 61.1% male	13-item Atrocities of War subscale of the modified version (Braitman et al., 2018)	IDAS (Watson et al., 2007)	Higher levels of potential moral injury events exposure were associated with increased moral injury, which in turn was linked to higher levels of suicidality	Cross-sectional data, non-generalizable sample, and measurement of current SB only

Table 2 (continued)

Study	Country	Study design	Sample	Sample demographics	Measurement scale (MI)	Measurement scale (Suicidality)	Main reported findings	Main reported limitations
(Corona et al., 2019)	US	Cross-sectional study	564 US military veterans	Age, 62 years; 93% male	MIES (Nash et al., 2013)	PHQ-9 (Kroenke & Spitzer, 2002)	Stronger global meaning (i.e., general beliefs, goals, and sense of purpose in life) was linked to lower SI when facing higher MI-Others and MI-Betrayals	Cross-sectional data and didn't investigate if the moderation effect found was unique to SI or if purpose in life similarly affects the association with MI experiences
(Kelley et al., 2019)	US	Cross-sectional study	189 combat wounded veterans	Age, 43.14 years; 96.8% male	17-item Expression of Moral Injury Scale—Military Version (Currier et al., 2018)	IDAS (Watson et al., 2007)	High over-identification strengthened the association between MI-Self and suicidality. Conversely, high mindfulness and social connectedness weakened the link between MI-Others and suicidality	Cross-sectional data, non-generalizable sample, mental health symptoms were not examined, and the data was dependent on subjects ability and willingness to remember

Table 2 (continued)

Study	Country	Study design	Sample	Sample demographics	Measurement scale (MI)	Measurement scale (Suicidality)	Main reported findings	Main reported limitations
(Zerach and Levi-Belz, 2018)	Israel	Cross-sectional study	191 Israeli combat veterans	Age, 25.4 years; 85.4% male	19-item MIQ-M (Currier et al., 2015) and MIES (Nash et al., 2013)	SBQ-R (Osman et al., 2001)	Moral injury events as measured by MIES-Self, MIES-Others, and MIQ-Causes, were positively associated with higher levels of self-injurious thoughts and behaviors	Cross-sectional, retrospective data, and suicide variable was only indexed to lifespan events without considering the specific timing
(Ames et al., 2019)	US	Cross-sectional study	570 veterans and active-duty military	Age 51.3 years	MISS-M (Koenig et al., 2018)	The suicide risk index (SRI)	Moral injury is strongly linked to suicide risk factors among Veterans/Active-Duty Military personnel, with no mediating or moderating effect of religiosity	Cross-sectional data, non-generalizable sample, data were collected by using self-report methodology, and measure of suicide risk has not been validated against established measures

Table 2 (continued)

Study	Country	Study design	Sample	Sample demographics	Measurement scale (MI)	Measurement scale (Suicidality)	Main reported findings	Main reported limitations
(Visco et al., 2017)	US	Cross-sectional study	564 combat US veterans	Age, 60 plus (58.5%); 93% male	MIES (Nash et al., 2013)	PHQ-9 (Kroenke & Spitzer, 2002)	MI-Self were associated with current mental disorders, and suicide ideation. MI-Betrayal was associated with post-deployment suicide attempts	Cross-sectional data, subjective appraisals of PMIEs, and data were collected by using self-report methodology
(Bryan et al., 2014)	US	Cross-sectional study	151 air force and army personnel	Age, 34, 12 years; 63.8% male	MIES (Nash et al., 2013)	Self-Injurious Thoughts and Behaviors Interview (Nock et al., 2007) and BSI (Beck et al., 1979)	Suicide attempt history was associated with higher MI-Others and MI-Self as compared to suicide ideation and no suicidal-ity	Cross-sectional data, non-generalizable and small sample, and data were collected by using self-report methodology

MI Moral injury; PMIE Potentially morally injurious event; SUD Substance use disorder; OEF/OIF operation enduring freedom and operation Iraqi freedom veterans; MIES moral injury events scale, MIQ-M moral injury questionnaire-military version; MISS-M moral injury symptoms scale-military version; SBQ-R suicidal behaviors questionnaire-revised, C-SSRS Columbia-suicide severity rating scale; BSI Beck Scale for Suicide Ideation, PHQ-9 patient health questionnaire-9; IDAS inventory of depression and anxiety symptoms; SI suicidal ideation; SB suicidal behavior

that PMIE-Self and suicide attempt exhibited a 50% higher likelihood among men, whereas in case of women, over a 50% higher risk of suicide were associated with betrayal (Maguen et al., 2022).

The term Moral Injury was first mentioned in the literature by Jonathan Shay in the 90's and later in 2009 by Litz and colleagues (Litz et al., 2009); however, it is still commonly associated with PTSD. Various studies have concluded the role of PTSD as a potential factor contributing to Moral Injury (Koenig et al., 2019). Due to this reason, the previous literature has commonly connected military personnel's suicidal behavior with PTSD, and the concept of Moral Injury was subsumed (Pompili et al., 2013). It is important to recognize that these two phenomena are distinct. Unlike PTSD, Moral Injury is not currently classified as a mental disorder. Nevertheless, it is an increasingly recognized complex issue (Koenig & Al Zaben, 2021) that can significantly impact various aspects of emotional, psychological, behavioral, social, and spiritual functioning (Barnes et al., 2019; Jamieson et al., 2020). A study conducted by Bryan et al. (2018) examined the combined influence of Moral Injury and PTSD on suicide behavior. The results demonstrated that the presence of both PTSD and Moral Injury significantly increased the risk of experiencing suicidal thoughts, suggesting that Moral Injury, in addition to PTSD, also plays a role in contributing to suicide behavior (Bryan et al., 2018).

In summary, we did not find studies specifically investigating the impact of Moral Injury on suicide behavior in either military or non-military populations. However, existing research has associated the effects of Moral Injury with various psychological signs and symptoms. These signs and symptoms in turn have been identified as common contributors to suicide behavior (Hall et al., 2022).

Limitations

In addition to our findings, we noted some common limitations present in these studies. Firstly, all of the included studies relied on cross-sectional data, and to obtain more robust results, longitudinal studies are needed. Additionally, the samples used in these studies often lacked generalizability, limiting the applicability of the findings to broader populations. Furthermore, despite the use of the one measurement scale (MIES) to assess Moral Injury in most of the studies, there remains confusion regarding the similarities and distinctions among PMIE, and moral injury, emphasizing the need for further investigation in this area.

While military personnel are particularly susceptible to Moral Injury due to the unique nature of their work (Litz et al., 2009), it is crucial to explore the occurrence and impact of Moral Injury in other populations as well. Conducting research that includes non-military populations is essential to develop a comprehensive understanding of Moral Injury and its effect on psychological well-being. This diversification of research is imperative to broaden our knowledge on Moral Injury beyond the military context. For instance, there has been a significant increase in research on the theoretical aspects of Moral Injury, particularly during and since COVID-19 that saw an increase in Moral Injury and burnout in the health workforce. However,

comprehensive investigations into related risk factors, mechanism, and effective therapeutic methods for Moral Injury are in their infancy (Jamieson et al., 2020). These gaps highlight the necessity for more applied research and evaluation on Moral Injury, particularly within a multidimensional systems-focused framework.

Conclusion

In conclusion, our review yielded important findings concerning the relationship between Moral Injury and suicide behavior, representing a pioneering exploration of this association, and providing fresh insights into these merging mechanisms. Nonetheless, the studies we examined shared common limitations, primarily relying on cross-sectional data, and thus conducting longitudinal studies becomes imperative to enhance the reliability of the results. Furthermore, the limited generalizability of the samples restricts the application of the findings to more diverse populations. To achieve a comprehensive understanding of Moral Injury and its impact, it is highly recommended that future studies expand their research efforts to encompass non-military populations, as well as studies that examine the different Moral Injury and suicide behavior presentations. Similarly, insufficient exploration of risk factors, protective factors, and mechanisms for Moral Injury, including robust evaluation of treatment methods, highlights the need for more applied research.

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