Screening for Moral Injury: The Moral Injury Symptom Scale – Military Version Short Form

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ABSTRACT Introduction: To develop a short form (SF) of the 45-item multidimensional Moral Injury Symptom Scale – Military Version (MISS-M) to use when screening for moral injury and monitoring treatment response in veterans and active duty military with PTSD. Methods: A total of 427 veterans and active duty military with PTSD symptoms were recruited from VA Medical Centers in Augusta, GA; Los Angeles, CA; Durham, NC; Houston, TX; and San Antonio, TX; and from Liberty University, Lynchburg, Virginia. The sample was randomly split in two. In the first half (n = 214), exploratory factor analysis identified the highest loading item on each of the 10 MISS scales (guilt, shame, moral concerns, loss of meaning, difficulty forgiving, loss of trust, self-condemnation, religious struggle, and loss of religious faith) to form the 10-item MISS-M-SF; confirmatory factor analysis was then performed to replicate results in the second half of the sample (n = 213). Internal reliability, test–retest reliability, and convergent, discriminant, and concurrent validity were examined in the overall sample. The study was approved by the institutional review boards and the Research & Development (R&D) Committees at Veterans Administration medical centers in Durham, Los Angeles, Augusta, Houston, and San Antonio, and the Liberty University and Duke University Medical Center institutional review boards. Findings: The 10-item MISS-M-SF had a median of 50 and a range of 12–91 (possible range 10–100). Over 70% scored a 9 or 10 (highest possible) on at least one item. Cronbach's alpha was 0.73 (95% CI 0.69–0.76), and test–retest reliability was 0.87 (95% CI 0.79–0.92). Convergent validity with the 45-item MISS-M was r = 0.92. Discriminant validity was demonstrated by relatively weak correlations with social, religious, and physical health constructs (r = 0.21–0.35), and concurrent validity was indicated by strong correlations with PTSD, depression, and anxiety symptoms (r = 0.54–0.58). Discussion: The MISS-M-SF is a reliable and valid measure of MI symptoms that can be used to screen for MI and monitor response to treatment in veterans and active duty military with PTSD.

BACKGROUND

One of the most common psychiatric disorders among veterans and active duty military (V/ADM) is post-traumatic stress disorder (PTSD).[1,2] Moral injury (MI) is a particular type of trauma that results in inner conflict. This phenomenon has been described by some as a "soul injury." The person with moral injury may not necessarily have symptoms of PTSD such as hyperarousal, hypervigilance, re-experiencing, and avoidance/numbing. However, V/ADM with MI may suffer from psychological and religious/spiritual symptoms of internal ethical conflicts that result from "perpetrating, failing to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs."[3] Inner conflicts of this nature may result in negative emotional states, bitterness, and unforgiveness toward self and others. MI has been strongly related to PTSD severity, depression, anxiety, relationship problems, and suicidality in V/ADM.[4–7]

To date, three published scales have assessed the presence of MI in V/ADM. Two of these, the Moral Injury Events Scale (9-item MIES validated in U.S. active duty marines)[4] and Moral Injury Questionnaire (20-item MIQ validated in U.S. veterans)[6] assess both a history of MI events and

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symptoms of MI, and while helpful for identifying the presence of MI, are less suitable for determining the severity of MI and following changes in MI symptoms in response to treatment.

The third scale, the Moral Injury Symptom Scale – Military Version (MISS-M), specifically assesses MI symptoms (not events) and includes spiritual/religious indicators of MI (Fig. 1).[8] The MISS-M measures the construct of MI across 10 dimensions based on the writings and research of trauma experts.[3,4,6,9–11] Although the MISS-M thoroughly and comprehensively assesses MI symptoms and has solid psychometric properties, its length (45 items) makes it somewhat unwieldy to use in busy clinical practice or when assessing MI in research where it is not the primary outcome being studied.

Objective

The purpose of this report was to develop a more user-friendly short form (SF) of the 45-item multidimensional MISS-M as a screen for MI in veterans and active duty military with PTSD symptoms and as a brief way to monitor response to treatments that target MI.

METHODS

The original study in which the MISS-M was developed involved a multi-site sample of veterans ($n = 373$) and active duty Military ($n = 54$) with PTSD symptoms and a history of deployment to a combat theater.[8] This is the sample used in the present report (average age 53.6 yr, 39% Caucasian and 43% African-American, 83% Christian, 69% involved in actual combat, 54% serving in the Middle East). Veterans were recruited from the Department of Veterans Affairs Health Administration facilities in Durham, NC ($n = 72$), Los Angeles, CA ($n = 99$), Augusta, GA ($n = 119$), Houston, TX ($n = 48$), and San Antonio, TX ($n = 35$), and active duty military from Liberty University, Lynchburg, Virginia ($n = 54$). All participants provided written informed consent and were compensated with a $25 gift card. The study was approved by the institutional review boards (IRBs) and the Research & Development (R&D) Committees at these institutions, as well as the Duke University Medical Center IRB. Veterans at the Durham and San Antonio sites were asked to complete the questionnaire a second time 10 d later.

Measures

MISS-M

The 45-item MISS-M is made up of 10 subscales. Each subscale was chosen intentionally to comprehensively assess previous descriptions of MI by trauma experts. The 54 initial items were either taken from existing scales with established reliability/validity or were drafted by study authors based on agreed upon content to cover the dimension.[8] Principle component EFA was then conducted at the subscale level in the first half of the sample (randomly chosen) and items were retained in the subscale if factor loadings exceeded 0.45. This process identified a single factor for 8 of the 10 subscales: betrayal (three items), guilt (four items), shame (two items), moral concerns (three items), religious struggles (six

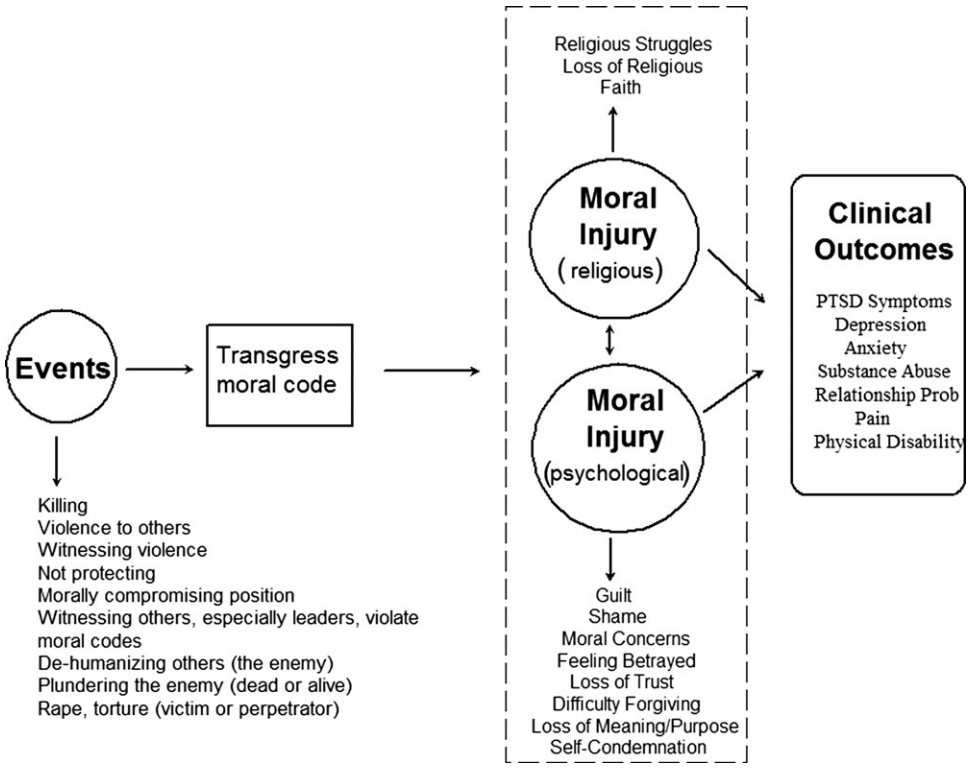

FIGURE 1. Model of dynamics involved in moral injury (adapted from Koenig et al, 2017).[29]

items), loss of religious faith/hope (two items), loss of trust (four items), and loss of meaning/purpose (four items). Two factors emerged for each of the remaining two subscales: difficulty forgiving (factor no. 1 with four items and factor no. 2 with three items) and self-condemnation (factor no. 1 with five items and factor no. 2 with five items); these factors corresponded to negatively vs. positively worded items on those subscales. The items above were then subject to confirmatory factor analysis (CFA) in order to replicate the factor structure in the second half of the sample, which was accomplished.

Statements making up each subscale are rated on a 1–10 scale from agreement (or truth of the statement) to disagreement (or falsehood of the statement); positively worded response options were reverse coded so that higher scores indicate greater moral injury. The reliability (Cronbach's alpha [α]) of the MISS-M in the overall sample was 0.92 (95% CI 0.91–0.93), with subscale alphas ranging from 0.56 to 0.91, and the test–retest reliability (intra-class correlation coefficient, ICC) in a subsample of 64 veterans after an interval of 10 d was 0.91 (95% CI 0.85–0.95), with subscale ICCs ranging from 0.78 to 0.90.

PTSD Symptoms

PTSD symptom severity was assessed with the 20-item PTSD checklist, DSM-5 version (PCL-5).[12] The PCL-5 assesses the symptoms of PTSD as required for a diagnosis of PTSD in DSM-5. Response options range from 0 ("not at all") to 4 ("extremely") for each of the 20 statements producing a total score that ranges from 0 to 80. The PCL-5 has high reliability and strong associations with functional impairment in military personnel.[13,14]

Depressive/Anxiety Symptoms

Affective symptoms were assessed using the Hospital Anxiety and Depression Scale (HADS).[15] This 14-item scale assesses seven symptoms of anxiety and seven symptoms of depression. The HADS has high internal reliability ($\alpha = 0.89$ overall; 0.85 for anxiety subscale, and 0.84 for depression subscale) and has a two-factor solution.[16]

Physical Health

Physical impairment was assessed with the question: "On average, how difficult is it to engage in physical activity?" with response options ranging from no difficulty (0) to great difficulty (10). Pain was assessed by the question: "On average, how much physical pain do you have on a daily basis?" with responses ranging from no pain (0) to severe pain (10).

Alcohol Use

Current alcohol use was assessed by asking participants how much alcohol they consumed per day, with responses ranging from "none" (1) to "a lot (>6 drinks/day)" (4).

Relationship Quality

Participants were asked, "How good are your relationships with your spouse, children, and/or friends, compared to most?" with responses ranging from "not good at all" (1) to "very good" (10).

Community Involvement

Also asked was, "Other than involvement in religious groups, how much are you involved in community activities?" with responses ranging from "not at all" (1) to "a great deal" (10).

Importance of Religion/Spirituality

Importance of religion was assessed by the question: "How important is religion in your life?" Similarly, importance of spirituality was measured by the question: "How important is spirituality in your life?" Response options for both questions were on a 4-point Likert scale from "not at all important" to "very important."

Missing Values

Missing responses to items on scales were handled as follows. If at least 50% of items on a scale or a subscale were answered, the average score for items answered was substituted for the missing item score (8.7% for PCL-5, 7.5% for HADS, and 0.7–8.4% for MISS-M). When combining subscale scores to produce the overall MISS-M score, if an entire subscale score was missing (<50% of items completed), the average of each item on completed subscales was calculated, summed across all completed subscales, divided by the number of completed subscales, multiplied by the number of items in the missing subscale, and inserted as the value for the missing subscale (done in 4.4% of cases).

Developing the MISS-M-SF

Factor Analysis

First, as in the original study, the overall sample ($n = 427$) was randomly split into two groups using PROC SURVEYSELECT in SAS. In the first group ($n = 214$), principle component exploratory factor analysis (EFA; factor eigenvalues limited to 1 or greater) was conducted at the subscale level of the MISS-M in order to identify the highest loading item for each of the 10 subscales. Confirmatory factor analysis was then performed in the second half of the sample ($n = 213$) to determine the extent to which results from the EFA could be replicated in a different sample.

Reliability

The internal consistency of the MISS-M-SF was determined using Cronbach's α in the overall sample ($n = 427$), and the test–retest reliability to establish temporal stability was examined in a subsample of 64 veterans who completed the scale again 7–14 d later by calculating the ICC between the two administrations. An α or ICC > 0.70 is considered acceptable.[17,18]

Criterion Validity

To confirm that the MISS-M-SF is measuring similar content as the 45-item MISS-M, the association between the total score on these two measures was examined using Pearson's correlation.

Discriminant Validity

In order to ensure that the MISS-M-SF is measuring a construct that is different from measures of existing constructs, associations between the MISS-M-SF total score and religious, social, and physical health measures were examined using Pearson's correlation.

Convergent Validity

In order to determine if the MISS-M-SF is correlated with other measures of psychological distress that one might hypothesize it should be, associations between the MISS-M-SF total score and PTSD symptoms, depressive symptoms, anxiety symptoms, and alcohol use were examined using Pearson's correlation.

Other Analyses

Descriptive statistics were performed to describe average and median scores, standard deviations (SD), and ranges on the MISS-M-SF and its individual items. SAS (version 9.3; SAS Institute Inc., Cary, NC, USA) was used for all analyses except when calculating the ICCs and Cronbach's α's with 95% confidence intervals, for which IBM SPSS Statistics, version 22, was used.

RESULTS

Principle component EFA in the first half of the sample identified the highest loading item for each of the 10 original subscales (Table I). For the eight subscales with a single factor, the highest loading item was chosen to represent the subscale. For subscales with two factors (difficulty forgiving and self-condemnation), the highest loading item of the factor with the largest eigenvalue (i.e., factor no. 1) was chosen to represent the overall subscale. The resulting 10 items were then subject to CFA, where results were replicated for all items except the loss of meaning/purpose item (whose loading was 0.86, falling slightly behind the highest loading item at 0.90) and the religious struggles item (whose loading was 0.83, falling behind the highest loading item at 0.87) (Table I). Thus, the results of the EFA in the first half of the sample were largely replicated by the CFA in the second half, supporting the factor structure of the new 10-item MISS-M-SF.

Most of the 10 items on the MISS-M-SF came from existing scales: #1 betrayal (MIES),[4] #2 guilt (MIQ),[6] #3 shame,[19] #4 moral concerns (MIES)[4], #5 loss of trust,[20] #6 loss of meaning,[21] #7 difficulty forgiving (an item developed by the authors), #8 self-condemnation,[22] #9 religious struggle,[23] and #10 loss of religious faith.[24]

Reliability

The internal consistency (Cronbach's α) of the 10-item MISS-M-SF in the overall sample ($n = 427$) was 0.72 (95% CI 0.68–0.76). Test–retest reliability (ICC) after an average interval of 10.2 d was 0.87 (95% CI 0.79–0.92).

Validity

Besides factor analytic validity demonstrated by the CFA above, construct validity was indicated by relatively high correlations between individual items and total MISS-M-SF score, with r's ranging from 0.45 to 0.69 (Table II). Criterion validity was demonstrated by a strong correlation between the MISS-M-SF and the original 45-item MISS-M ($r = 0.92$) (Table III). Divergent or discriminant validity was indicated by small to moderate correlations between the MISS-M-F and religious, social, and physical health constructs such as importance of spirituality ($r = -0.21$), importance of religion ($r = -0.26$), community involvement ($r =$

TABLE I. Items with Highest Factor Loading for Each of the 10 MISS-M Subscales

	EFA (Range) (n = 207–214)	CFA (Range) (n = 208–212)
Highest Loading Item (subscale, no. of items in subscale)		
1. I feel betrayed by leaders who I once trusted (betrayal, #3)	0.91 (0.55–0.91)	0.91 (0.56–0.91)
2. I feel guilt over failing to save the life of someone in war (guilt, #4)	0.69 (0.48–0.69)	0.76 (0.41–0.76)
3. I feel ashamed about what I did or did not do during this time (shame, #2)	0.81 (0.81–0.81)	0.78 (0.78–0.78)
4. I am troubled by having acted in ways that violated my own morals or values (moral concerns, #3)	0.89 (0.60–0.89)	0.89 (0.66–0.89)
5. Most people are trustworthy (R) (loss of trust, #4)	0.90 (0.73–0.90)	0.93 (0.73–0.93)
6. I have a good sense of what makes my life meaningful (R) (loss of meaning, #4)	0.90 (0.79–0.90)	0.86 (0.73–0.90)
7. I have forgiven myself for what happened to me or others during combat (R) (difficulty forgiving, #7)	0.82 (0.39–0.82)	0.78 (0.42–0.78)
8. All in all, I am inclined to feel that I am a failure (#10)	0.85 (0.76–0.85)	0.79 (0.65–0.79)
9. I wondered what I did for God to punish me (religious struggles, #6)	0.85 (0.54–0.85)	0.83 (0.52–0.87)
10. Compared to when you first went into the military has your religious faith since then…weakened…strengthened (R) (loss of religious faith, #2)	0.68 (0.68–0.68)	0.58 (0.58–0.58)

MISS-M, 45-item Moral Injury Symptom Scale – Military Version; EFA, exploratory factor analysis; CFA, confirmatory factor analysis.
Range, range of factor loadings for items on subscale. Response range for all items 1–10 (degree of agreement/truth of statement). R, item is reverse scored.

TABLE II. Average Scores on Overall MISS-M-SF and Individual Items, and Item-Total Scale Correlations

	Mean (SD)	MISS-M-SF (Pearson's *r*)
MISS-M-SF (total score, possible range: 10–100)	49.9 (16.4)	—
Individual scale items		
1. I feel betrayed by leaders…	6.4 (3.0)	0.47
2. I feel guilt over failing to save the life of someone…	5.1 (3.4)	0.51
3. I feel ashamed about what I did or did not do…	5.4 (3.4)	0.69
4. I am troubled by having … violated morals or values	5.8 (3.3)	0.59
5. Most people are trustworthy	6.1 (2.4)	0.35
6. I have a good sense of what makes my life meaningful	4.5 (2.6)	0.50
7. I have forgiven myself…	4.7 (2.9)	0.65
8. All in all, I am inclined to feel that I am a failure	4.3 (2.8)	0.58
9. I wonder what I did for God to punish me	3.8 (3.1)	0.45
10. …. religious faith has weakened [since joining military]	4.3 (3.2)	0.52

MISS-M-SF, Moral Injury Symptom Scale – Military Version Short Form; SD, standard deviation.
N's range from 417 to 427.

TABLE III. Correlation of 10-Item MISS-M-SF with 45-Item MISS-M and Psychological, Social, Religious, and Physical Health States

	MISS-M-SF Pearson's *r* (*n*)
Construct	
45-Item MISS-M	0.92 (427)
PTSD symptoms (PCL-5)	0.54 (426)
Depressive symptoms (HADS)	0.58 (420)
Anxiety symptoms (HADS)	0.54 (420)
Alcohol use	0.09 (423)
Relationship quality	−0.35 (414)
Community involvement	−0.28 (417)
Importance of religion	−0.26 (425)
Importance of spirituality	−0.21 (422)
Difficulty with physical activity	0.27 (425)
Severity of daily pain	0.21 (426)

MISS-M, Moral Injury Symptoms Scale – Military Version; MISS-M-SF, MISS-M-Short Form; PTSD, Post-traumatic stress disorder; PCL-5, PTSD Checklist-5; HADS, Hospital Anxiety and Depression Scale.

−0.28), difficulty with physical functioning ($r = 0.27$), and pain severity ($r = 0.21$). Convergent validity was indicated by strong correlations with severity of PTSD symptoms ($r = 0.54$), depressive symptoms ($r = 0.58$), and anxiety symptoms ($r = 0.54$).

Moral Injury Symptom Scale – M-SF

The average score on the 10-item MISS-M-SF for the overall sample was 49.9 (SD 16–4, median 50, range 12–97) (Table II). MI symptoms detected by the MISS-M-SF were widespread, with 71.4% of participants indicating a rating of 9 or 10 (on a 1–10 severity scale) for at least one symptom and 12.5% indicating this severity for five or more symptoms. Among individual items, the highest average score was for the betrayal item no. 1 (6.4, SD = 3.0), whereas the lowest average score was for the punished by God item no. 9 (3.8, SD = 3.1).

The average MISS-M-SF score was higher in veterans than in active duty military (51.2 vs. 41.0, $p < 0.0001$), in those who were younger ($r=-0.13$, <0.01), those with less education ($r=-0.12$, $p < 0.05$), non-Christians (56.9 vs. 48.6 for Christian, $p < 0.0001$), in those for whom religion or spirituality was not very important (53.5 vs. 46.2 for religion, 53.7 vs. 47.2 for spirituality, both $p < 0.0001$). No significant difference ($p > 0.10$), however, was found based on gender (48.6 for men vs. 50.1 for women), race (49.7 for White vs. 49.9 for non-White), combat theater (51.2 for Middle East vs. 48.7 for other), or combat exposure (50.1 for involved vs. 49.9 for not involved). These associations were very similar to those found using the 45-item MISS-M.[8]

DISCUSSION

Moral injury was common among veterans and active duty military with PTSD symptoms participating in this study. In the original validation report on the MISS-M long form in this population, more than 50% of participants indicated a 9 or 10 in severity (on a 1–10 scale) for more than 5 of the 45 symptoms assessed by that measure.[8] Using the 10-item MISS-M-SF, over 70% indicated this level of severity for at least one symptom and 13% reported this for 5 or more of the 10 symptoms. Furthermore, MI symptom severity on the MISS-M-SF was strongly correlated with PTSD, depression, and anxiety symptoms severity (with *r*'s ranging from 0.54 to 0.58).

The MISS-M-SF fills an important gap in clinical and research fields that require a short measure of MI symptoms that comprehensively assesses this construct. The MISS-M-SF is internally reliable, temporally stable, and has acceptable construct validity, discriminant validity, and strong convergent validity with the original 45-item MISS-M ($r = 0.92$). Correlations with important psychiatric and social outcomes are as robust with the MISS-M-SF as with the MISS-M. Those wishing a thorough all-inclusive measure of MI that includes both psychological and spiritual/religious symptoms for use in research outcome studies that specifically target MI will likely prefer the 45-item MISS-M long form. However, for clinicians

and researchers who have limited time and questionnaire space, the MISS-M-SF may fill this need.

Researchers in mainstream psychology and the pastoral care field have begun to develop and test psychotherapeutic interventions that target MI, and these treatments are beginning to be used by clinicians even before the evidence base has been firmly established.[25–29] One reason for the urgency to treat MI (even before the evidence base has been established) is the poor response of chronic combat-related PTSD to conventional treatments, with only 20–30% ever achieving anything close to full remission,[30,31] and evidence that both the psychological and the spiritual/religious symptoms of MI may at least partially block successful treatment of PTSD.[5,24] Now that psychotherapeutic approaches to PTSD have been recommended over pharmacological treatments by the recent combined Veterans Affairs and Department of Defense Practice Guidelines (p. 43),[32] the time is ripe for determining whether reduction in MI symptoms may speed the response of PTSD to traditional psychological and pharmacological treatments.

Limitations

Several aspects of the present study limit the generalizability of the results reported here and their interpretation. First, the sample used to determine the psychometric properties of the original MISS-M and the MISS-M-SF were the same and consisted of V/ADM volunteers from the southern United States. Second, most of the sample was composed of veterans (87%), requiring caution when generalizing results to active duty military (particularly since ADM in this study were recruited online from Liberty University, a Christian-based institution). Third, factor analysis for both the MISS-M and the MISS-M-SF was conducted within predefined subscales (rather than at the item level to determine the structure of the measure and resulting subscales); this was done to ensure comprehensive coverage of the MI construct and to safeguard against the inclusion within a subscale of items without clear face validity (which we felt could not be compromised).

The study also has numerous strengths that deserve acknowledgment. First, this was a multi-site study with participants from across the United States, helping to increase the diversity of the sample and enhance the generalizability of results. Second, the MISS-M-SF is the most comprehensive measures of MI to date (and second only to the MIES in brevity) that assess both the psychological and the spiritual/religious symptoms of MI repeatedly emphasized in definitions of this construct by trauma experts in the field. Third, the content validity of the individual items of the MISS-M-SF is clear and most items come from existing measures with strong psychometric properties. Fourth, the internal reliability and test–retest reliability of the MISS-M-SF exceeded acceptability thresholds, its correlation with the MISS-M long version was high, and correlations with important psychological and social constructs were robust and similar in strength to those reported with the MISS-M.

CONCLUSIONS AND FUTURE DIRECTIONS

The 10-item MISS-M-SF is a reliable and valid scale for assessing the psychological and spiritual/religious symptoms of moral injury. This measure may be useful to clinicians when screening for MI in veterans and active duty military with PTSD symptoms. Given the relatively high correlation between moral injury and suicide risk,[6,7,33] placing an easy-to-use, short screening tool into the hands of clinicians is an important step to fine tune suicide prevention measures and guide the veteran and ADM to appropriate interventions. A score of 9 or 10 on any of the 10 scale items probably deserves further clinical attention. This scale also allows clinicians to assess the severity of MI symptoms over time in order to monitor response to treatment. Researchers may find the MISS-M-SF useful if they wish to include a brief measure of MI in studies examining other primary outcomes in V/ADM such as PTSD and associated psychiatric comorbidity. Future studies are needed to confirm the psychometric properties of the MISS-M-SF in different samples of V/ADM and to determine clinical thresholds and change scores for significant MI symptoms using this measure.

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