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Deployment Expereinces and Psychological Determinants of Moral Injury in Nigerian Military Veterans

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ABSTRACT

Although there is research consensus that military deployment increases exposure to morally injurious events, little is known about factors that predict moral injury (MI) in veterans, especially in Nigeria. This study examined deployment experiences (combat experiences, number of deployments, duration of deployments) and psychological factors (attribution, early childhood experiences) as determinants of moral injury in Nigerian military veterans. The research was a cross-sectional survey that purposively sampled 148 veterans in three randomly selected military barracks across North-East, Nigeria. To ascertain whether military deployment experiences and psychological factors predict MI in veterans, a series of hierarchical multiple regression were carried out at .01 and .05 level. Findings indicated that, when the demographic and military characteristics were considered, only age (β = -.19, SE = .16, p =.05) and marital status (β = .250, SE = 3.19, p <.01) made significant independent contribution to MI. Also, combat exposure significantly predicted MI in model 2. (β = .296, SE = .23, p< .05). When five early childhood experiences were considered, only physical abuse (β = .60, SE = .53, p <.001) and emotional abuse (β = -.30, SE = .35, p <.01) emerged as significant predictors of MI. These results illustrates the significant influence of early traumatic events, including experiencing physical and emotional abuse and subsequent combat experiences with MI in Nigerian military veterans. The findings underscore the need for policies that mitigate early traumatic experiences as well as pre-deployment psychological training to prepare military veterans against developing moral injury.

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Introduction

Over the past twelve years, Moral Injury (MI) has globally been recognised as a common problem among military veterans and active-duty personnel experiencing traumatic symptoms from war [1-3]. Research among United Kingdom (UK), Canada and the United States (US) veterans have shown considerable increase in MI, with prevalence ranging between 25%-47% [4-6]. These findings hold in Nigerian context, where higher prevalence of moral injury is observed in military personnel deployed to combat zones, but which research to identity risk factors for possible intervention is still lacking.

The On-going insurgency operation in North Eastern Nigeria has exposed military personnel to potentially morally injurious events, which essentially manifest through perpetrating, failing to prevent, or bearing witness to acts that transgress deeply held moral beliefs and values. This situation, though not considered a mental disorder, can result to feelings of remorse, shame, grief and meaninglessness upon homecoming, thereby significantly increasing the possibility of psychiatric problems. Accordingly, previous research has consistently linked MI as a potential risk factor for posttraumatic stress disorder (PTSD), depression, alcohol use and suicidal ideation [6,7], with potential challenges for psychosocial, occupational and spiritual functioning [6,8]. Therefore, considering increasing rates of morally injurious events in Nigerian military personnel, its imminent consequences and lack of documented empirical research on the possible risk factors, the need for this study became expedient.

Moral injury (MI) can be defined as the behavioural, social, psychological and spiritual distress resulting from situations or events in which individuals have committed, witnessed or failed to prevent that transgresses personal beliefs and moral values [1]. These feelings of distress may include shame, guilt, anger, and disgust, which may be associated with acts perpetrated by the oneself (killed combatants or innocents, dismembered

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bodies, maltreated others, or deserted comrades during battle); what one has failed to do (protected innocents or prevented the death of fellow soldiers), or what one has observed others do or fail to do. MI may also involve intense feelings of betrayal by those in authority, either in or outside of the military and may for some, include religious or spiritual struggles and even complete loss of religious faith [2,9]. For instance, morally injurious act such as betrayal from colleagues may prompt a variety of psychological, social, and behavioural consequences, including relational strain, fundamental shifts in core beliefs (e.g., beliefs about the world), spiritual/existential challenges, alterations in perceptions of the self, as well as feelings of guilt, shame or anger [2].

Military deployment brings imminent exposure to morally injurious events. These events revolve around perpetration or witnessing perpetration of immoral acts (e.g., killing, destroying properties, being unable to save a comrade or other vulnerable population such as children and the elderly) or perceived betrayal of what is right by someone who holds legitimate authority in high stakes situation [3]. A representative survey of United States (U.S.) military combat veterans found that approximately 25% of respondents reported witnessing transgressions of others, 25% reported experiencing betrayal during their careers, and 10% reported that they transgressed their personal morals [10]. Among Canadian veterans deployed to Afghanistan, Nazarov et al., [2] reported that more than 50% indicated experiencing a potentially morally injurious event, and this was associated with high psychological problems.

Evidently, these findings provide support that combat deployment expose personnel to morally injurious events, increasing possibility for moral injury and psychiatric morbidity. However, there are specific limitations to the current body of research examining moral injury. For example, in the study by Okulate et al., MI was not assessed using standardised measure; rather, qualitative analysis of patients' cases was utilised, posing validity problems. Similarly, Nazarov et al. [2] research did not utilise a standardised instrument to assess MI; rather, mental health outcomes were assessed in relation to proxy deployment experiences used to indicate exposure to PMIEs. Another research [10] utilised a standardised measure (Moral Injury Events Scale (MIES) to assess MI, but because this study was conducted in a U.S. military sample, the result may not be generalized to the Nigerian context due to cultural and structural differences between the two-Armed Forces. Most importantly, these studies have ignored associated risk factors that predict MI in military personnel, and without this, it will become difficult for military authorities to identify and design interventions to prevent MI in combat veterans.

Although, deployment experiences may increase vulnerability to morally injurious distress among veterans, they are not the only risk factor. The attribution that veterans make about these experiences could equally increase the possibility of moral suffering. Research has since established that how people conceptualise a traumatic event is pertinent to adaptation; when appraisals are discrepant from global meaning, feelings of distress may result. In addition, empirical findings have shown that the ways in which people make sense of a stressful experience might associate with the degree to which the experience is characterized as moral in nature. Among undergraduates for example, it has been revealed that moral struggle is predicted by attributing responsibility for the struggle to oneself, suggesting that self-attributions for struggles might reflect weakness in the general orientation system of the veterans as it pertains to moral injury. This may be understood from the perspective that assigning responsibility to oneself (self-blame) is seen as morally deficient, a meaning that is potentially discrepant from previously held global meanings about the self. Therefore, attribution regarding the cause of moral struggle may constitute a significant risk factor and lead to continues moral injury in military veterans.

In addition, predisposing factors such as adverse childhood experiences (ACEs) have been found to predict moral injury-related distress [4]. These experiences include acts such as childhood physical abuse, sexual abuse, emotional neglect, emotional abuse and experience of intimate partner violence. Generally, adverse childhood experiences may create moral consciousness and develop early feelings of shame, guilt and maladaptive coping and low self-worth in children [1]. It is possible therefore that, when they become adults, these experiences may render them more vulnerable to moral injury especially when they encounter similar traumatic situations like war. This assertion has been supported by a Canadian research of military personnel where emotional abuse in childhood was significantly associated with expressions of moral injury [11]. However, in spite of studies endorsing high level of exposure to childhood adversity among military personnel, the influence of these experiences on moral injury have not been well investigated. Furthermore, certain military and demographic characteristics have been linked to moral injury, including military rank [2] and number of years in the military [12]. It is also possible that certain deployment locations and continuous prolonged stay during deployment will increasingly expose military personnel to high amount of potentially morally injurious events. This imply that location and duration in theatre should be considered as possible risk factors to moral injury. Surprisingly, little is known about the role that these variables play in MI among veterans.

The aim of this study was to identify military deployment experiences (combat experiences, number of deployments, duration of deployments, rank, age, marital status education) and psychological determinants (attribution style, early childhood experiences) of moral injury in Nigerian military personnel who were exposed to insurgency in North-east, Nigeria.

Materials and Method

Participants and Procedure

The participants for the current study comprised one hundred and forty-eight (148) military veterans purposively selected in three military barracks across three northeastern states of Borno, Adamawa and Taraba states. The three states were selected randomly from six that make-up the zone/ division. From the states, three military barracks with sizeable number of veterans who are returnees from the insurgency operation were

recruited into the survey. Of the total number, 58(39.2%) were from Yola barracks, 65(43.9%) were from Biu, while 25(16.9%) were from Serti, Taraba state. Veterans who participated in the study comprised enlisted soldiers 456(78.3%) and officers 126(21.7%); Christians 413(71%) and Muslims 169(29%); single 224 (38.49%) and married 358(61.51%). They were deployed to Galumbagana 60(10.3%), Dalwa 86(14.6%), Monguno 108(18.6%), Baga 112(19.2%), Kangarwa 116(19.9%), Damboa 23(4.3%), Alargano 42(7.2%) and Damasak 35(6.0%). A total of 343 (58.9%) were deployed once, 183(31.3%) were deployed twice while 57 (9.8%) had multiple deployments. The overall prevalence of suicidal attempts was among both enlisted and officers was 23.9.

Before embarking on data gathering, we sought and obtained permission from relevant military authorities. We ensured strict adherence to ethical principles, guaranteeing confidentiality, voluntary participation and providing informed consent form for participants to fill. Following consent, participants who met research criteria were contacted at their various quarters, informed about the nature of the research and given a preliminary screening instrument that sought to determine their experience of moral injury. An example item is "At this time, are you experiencing personal conflict regarding your involvement or experiences of the insurgency operation? Out of the initial 155 veterans selected and screened, 6 did not meet inclusion criteria, while 1 declined participation. With the assistance of personnel, we administered a large battery of questionnaires including measures of moral injury, attribution, deployment experiences and adverse childhood experiences beginning from July through September, 2022.

Measures

Deployment Experiences

Military deployment experiences were assessed using the 15-item Combat Experience subscale extracted from the Deployment Risk and Resilience Inventory. The subscale measures combat experiences among veterans and has items such as: "I killed or think I killed the enemy in combat" "I personally witnessed civilians e.g. children, women being seriously wounded or killed." The combat experiences sub scale is widely used among veterans and reported to have acceptable psychometric properties, including reliability and criterion validity [13]. Veterans rated their combat experiences on a 6-point Likert response format: 1= never to 6= daily or almost daily. Possible scores ranged from 15 to 90, with higher scores indicating greater exposure to combat. The instrument has also been used in Nigerian context, among military personnel and found to have acceptable reliability (Cronbach's alpha = 0.73).

Attributions of Responsibility for Moral Injury

This was measured by presenting veterans with a list of possible causes and asking them to rate the extent to which they held these various parties/entities/forces "responsible for the potentially morally injurious events they encountered at combat. The events and resulting feelings were attributed to self (coded as 1) and others: military God, Karma (coded as = 2).

Adverse Childhood Events

Experiences of adverse childhood events were assessed using 25-item revalidated Childhood Trauma Questionnaire [14], originally extracted from the 28-item Childhood Trauma Questionnaire [15]. This is a standardised measure of early childhood experiences relating to physical abuse, physical neglect, parental neglect, emotional abuse and sexual abuse that has been widely used in many vulnerable population, with acceptable validity and reliability scores [14]. Veterans responded to each childhood experience on a 5-point Likert scale ranging from 'never true' (0) to 'very often true' (4). Higher scores are indicative of more severe experiences of these events. In this study, we obtained good internal reliability Cronbach alpha 0.76.

Moral Injury

Moral injury was assessed using the Expressions of Moral Injury Scale [7]. This is a 17-item self-report measure assessing prominent feelings, beliefs and behaviours for moral injury directed at self (nine items, i.e. "I am ashamed of myself because of things that I did/saw during my military service") and others (eight items, i.e. "No matter how much time passes, I resent people who betrayed my trust during my military service"). Although the scale has been established to have two factors- perceived transgression and perceived betrayal, in the current study, we combined this scale by summing each participant's responses to the item, with higher scores reflecting higher MI levels. Items are rated on a 5-point Likert scale ranging from 1 ('strongly disagree') to 5 ('strongly agree'). The scale has high reported internal reliability (Cronbach's alpha = 0.90), concurrent validity, and discriminant validity [7]. There is no clinical cut-off for the EMIS, although higher scores are taken to indicate worse outcomes reflective of maladaptive responses associated with moral challenges.

Military Variables

Due to the results of previous studies, which implicated some military variables to moral injury, we included and assessed variables such as military rank (junior vs. senior), duration of deployment (0-2yrs, 3yrs above) and location of deployment to determine their influence on moral injury in Nigerian context. The study also assessed demographic factors such as age, marital status and educational level of the veterans as control factors.

Statistical Methods

We used Statistical Package for Social Sciences (SPSS-Version-22) to analyse both descriptive data provide answers to research objectives. First, we evaluated descriptive statistics for the study samples as well as hierarchical multiple regressions with MIES score as the outcome variable. We began by entering all the demographic and military variables in the model (Model I), to evaluate their role in moral injury. In the second model, combat experiences were added to the model, while attribution and early traumatic experiences were added sequentially in model 3 and 4 respectively, to examine their independent and joint influences on personnel's experience of

moral injury. We coded attribution as 1= self and 2= others. In addition, all the military and demographic characteristics were converted into dummy variables to warrant their inclusion in the regression model.

Results

A multiple hierarchical regression analysis was used to build a model for predicting moral injury. At step one, military and demographic characteristics were entered and there was no significant contribution to the regression model, *F* (6; 117) = 2.107, *p*>.05. This notwithstanding, age, marital status, education, rank, location of deployment and duration of deployment explained 10% ($R^2\Delta$ = .098) of the changes in moral injury indicating that military and demographic characteristics have a strong association with moral injury (*R* = .31). However, the standardized regression coefficients showed that age (β = -.19, *SE* = .16, *p* =.05) and marital status (β = .250, *SE* = 3.19, *p* <.01) were negative and positive predictors of moral injury respectively. While, education (β = .16, *SE* = 2.85, *p*>.05), rank (β = .038, *SE* = 4.22, p>.05), location (β = .008, *SE* = .876, *p*>.05) and duration of deployment (β = .025, *SE* = 2.15, *p*>.05) made no significant contributions to moral injury. This means that only two of the military characteristics; age and marital stratus are relevant in explaining level of moral injury among soldiers. The results imply that the older a soldier, the lesser the chances of suffering moral injury and on the contrary being single is vulnerability factor to moral injury.

In step 2, the regression model was significant *F* (7, 116) = 2.641, *p*<.01. The introduction of combat experience explained an additional 4% ($R^2\Delta$ = .040) of the changes in moral injury and this change in *FΔ* was significant, *FΔ* (1, 116) = 5.374, *p*<.01. Also, the association between combat experience and moral injury was strong (*R* = .37) and combat experience was found to be a strong positive predictor of moral injury (β = .296, *SE* = .23, *p*< .05).

Table 1: Hierarchical Regression Analysis showing factors predicting moral injury among military personnel fighting terrorism in the North-East Nigeria.

Models		B	Std. Error	Beta	F	FΔ	R	R^2	$R^2\Delta$
	(Constant)				**2.107**	**2.107**	**.312**	**.098**	**.098**
	Age	-.319	.159	-.189*					
	Rank	1.542	4.220	.038					
Step 1	Marital Status	8.302	3.192	.250**					
	Education	4.421	2.852	.159					
	Duration of Deployment	.577	2.151	.025					
	Location of Deployment	.075	.876	.008					
	(Constant)				**2.641****	**5.374***	**.371***	**.137***	**.040***
	Age	-.596	.196	-.353**					
	Rank	4.136	4.292	.103					
	Marital Status	14.439	4.103	.435**					
Step 2	Education	2.451	2.927	.088					
	Duration of Deployment	.083	2.123	.004					
	Location of Deployment	.425	.873	.044					
	Combat Experiences	.532	.229	.296**					
	(Constant)				**2.291**	**.001**	**.371**	**.137**	**.000**
	Age	-.596	.197	-.353**					
	Rank	4.156	4.378	.103					
	Marital Status	14.435	4.124	.434**					
Step 3	Education	2.430	3.051	.087					
	Duration of Deployment	.078	2.140	.003					
	Location of Deployment	.428	.883	.044					
	Combat Experiences	.531	.231	.296**					
	Attribution	.027	1.062	.002					
	(Constant)				**2.949****	**3.588****	**.508****	**.258****	**.121****
	Age	-.691	.219	-.409***					
	Rank	-5.370	5.288	-.133					
	Marital Status	7.838	5.837	.236**					
	Education	-4.101	4.014	-.147					
	Duration of Deployment	5.079	2.486	.217**					
	Location of Deployment	2.028	1.020	.210**					
Step 4	Combat Experiences	.496	.270	.276**					
	Attribution	.161	1.040	.014					
	Physical Abuse	1.811	.533	.600***					
	Emotional Neglect	-.048	.335	-.017					
	Emotional Abuse	-.883	.351	-.304**					
	Parental Neglect	-.120	.567	-.030					
	Sexual Abuse	.479	.381	.170					

Note: * p< .05; ** = p< .01; *** = p< .001.

This means that combat experience is likely to determine the level of moral injury among military personnel. This further implies that the higher the level of combat experiences, the higher the chances of suffering moral injuries in veterans.

In step 3, the general regression model was significant F (8, 115) = 2.91, p<.05. Attribution was entered and this addition explained no extra ($R^2\Delta$ = .000) change in moral injury. Similarly, the $F\Delta$ change was not significant, $F\Delta$ (1,115) = .001, p>.05. The standardized regression coefficient showed that attribution is less likely to predict moral injury (β = .002, SE = 1.06, p>.05). This implies that attribution is not a key factor when explaining moral injury.

In the fourth step, the general regression model was significant F (13,110) = 2.949, p<.001. At this stage, five early childhood traumatic events have been entered which further explained an additional 12% ($R^2\Delta$ = .121) of the changes in moral injury and the F change was also found to be significant, $F\Delta$ (5, 110) = 3.588, p<.01. Also, the association between early childhood traumatic events and moral injury was very strong (R = .51). However, the standardized regression coefficients showed that physical abuse (β = .60, SE = .53, p <.001) and emotional abuse (β = -.30, SE = .35, p <.01) were positive and negative predictors of moral injury respectively. While, emotional neglect (β = -.02, SE = .34, p>.05), parental neglect (β = -.030, SE = .57, p>.05) and sexual abuse (β = .17, SE = .38, p>.05) made no significant contributions to moral injury. This means that only two of the early childhood traumatic events (physical and emotional abuse) are independent predictors of moral injury among soldiers. The results imply that the higher the level of early childhood physical abuse, the higher chances of suffering moral injuries. On the other hand, higher levels of early childhood emotional abuse leads to lower chances of moral injuries among soldiers.

Discussion

In response to obvious research gaps on determinants of moral injury in Nigerian military veterans, we conducted a cross-sectional survey comprising 148 veterans who are returnee combatants from insurgency operation in north-east, Nigeria. This study had five major findings: First, we found that veterans' age and marital status are significant determinants of moral injury in Nigerian military veterans. Second, we found that exposure to potentially traumatic events during deployment can bring moral injury in military veterans even years after homecoming. Third, we did not find any influence of attribution either to self or others as a determinant of moral injury. Fourth, we identified a significant association between self-reported adverse childhood physical and emotional abuse and expression of moral injury in sample of Nigeria military veterans. Fifth, we discovered that, location and duration of stay in combat could increase moral pains in military veterans.

Overall, the reported prevalence of moral injury in the present study was high (44.5%). This is unsurprising considering the atrocities and inhumane activities that characterised the operation and the possible moral pain they may have inflicted on returnee combatants. Empirically, the prevalence is somewhat in line with a US study in which prevalence rate of 33.4 was reported 7]. Our finding that exposure to combat experiences could result to moral injury aligns with Williamson, Greenberg and Murphy [4], Okulate, Akinsanmi, Oguntuase and Majebi, and Easterbrook, Plouffe, Houle, Liu, McKinnon and Ashbaugh [5], implying that exposing veterans to potentially morally events, such as seeing ill or injured children and being unable to help, killing civilians, may lead to violation of moral values, a precursor to moral injury. In addition, extrapolating from our first finding, these moral pains are more damaging for the young and unmarried veterans, probably due to lack of close person to provide warmth and support needed for resilience building.

Although our study revealed that continuous exposure to combat experiences could make veterans develop moral injury, psychological factors relating to adverse childhood experiences, particularly physical and emotional abuse could crease more moral pains in military veterans. Just like traumatic events do not always bring about distress [16], the mere exposure to adverse event during military service may not always result in moral injury. Previous experiences relating to physical abuse particular may increase vulnerability to moral injury in veterans. This may be that such early adverse childhood experiences may predispose personnel to negative responses of shame worthlessness and guilt typical of a moral injury. Our finding that adverse events experienced during childhood, including physical and emotional abuse were associated with higher expressions of moral injury is consistent with previous work showing that moral injury may follow incidents emotional abuse in childhood was significantly associated with expression of moral injury in Canadian veterans [11]. However, our study surprisingly showed a negative association between emotional abuse and moral injury, implying that experiencing greater emotional abuse in childhood is associated with less experience of moral injury following combat deployment. This may be that veterans who have experienced continuous emotional abuse from families or friends while growing up may have developed a coping style or build strong hardened personality to overcome the effects of potentially morally injurious events. As such, they are less likely to experience distressing moral conflict or pain when exposed to combat situations.

One striking finding in this study is that, experience of moral injury is determined by the location and duration of deployment. In the final regression model, we obtained positive influence of location and duration on moral injury, which in line with the analysis showed that, deployment to Borno and protracted stay at a particular location were significant risk factors to moral injury. This finding is not surprising because Borno state was the worst hit throughout the insurgency and as such, personnel who were deployed to formations within the state were also more likely to experience potentially traumatic events that can create moral injury. Similarly, prolonged deployment to these experiences also imply more perpetration, omission or commission that could exacerbate moral post-deployment moral conflict.

While this study design prevents suggestion of causation, our findings provide preliminary evidence that adverse

experiences in childhood could be a potential risk factor for personnel exposed to PMIEs to develop moral injury during their military service. These findings suggest that clinicians providing treatment following moral injury may also want to include an assessment of ACEs during the course of treatment. On a lighter note, our research findings clearly indicate that, for military authorities and other stakeholders to fully understand how moral injury develop, and ensure its effective screening and management, they must take very seriously, certain predisposing adverse childhood events, including personnel history of emotional and physical abuse as well as their marital status and age. In addition, they must pay attention to where and how long a veteran was deployed to fully understand how best to manage the situation.

This present study's strengths include sampling from a crises-endemic area where cases of moral injury are imminent and utilising standardised instruments to gather data. Nonetheless, one major limitation is the sample size, which may have affected the external validity of its result. The retrospective nature of reporting ACEs is also a potential limitation and it is possible that experiences of childhood adversity may be under (or less likely, over) reported. Despite these limitations, the present study is the first empirical research to highlight association between psychological factors and moral injury in Nigerian military veterans, with more striking finding linking childhood adversity and expression of moral injury. This finding illustrates the need for comprehensive trauma history taking in clinical settings to include consideration for adverse childhood experiences on veterans who may develop moral injury after combat experiences.

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