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# Posttraumatic Stress Disorder and Somatization among Nigerian Soldiers on Combat Operations

**Ogbole Aboh James***

## Abstract

The purpose of this study was to investigate the relationship between PTSD and somatization among Nigerian soldiers on combat operations in North-East Nigeria. Participants were 301 Nigerian soldiers deployed in the region. A survey design was used while measures for data collection included Posttraumatic Stress Disorder Checklist 5 (PCL-5) by Weathers et. al, and Patient Health Questionnaire 15 (PHQ 15), by Kroenke, et. al, to assess PTSD and somatization respectively. The relationship between PTSD and Somatization was assessed using Pearson correlation while the moderating role of multiple deployments on the relationship between PTSD and somatization was determined using linear regression. The result showed that there was a weak, significant and positive association between Somatization and PTSD among Nigerian soldiers on combat operations. The results also showed that the multiple deployments do not act as a moderating variable between PTSD and Somatization. Also, it was identified that soldiers have an increased PTSD prevalence of 32.2% and a somatization prevalence of 11.0%. Therefore, military authorities should make it a priority in all operations across the country to provide readily and timely mental health access and support for timely management of combat-related mental health problems among soldiers.

**Keywords**

PTSD, Somatization, Nigerian Soldiers, Combat operations

## Introduction

Military deployment is accompanied with a host of psychological challenges. Although many military personnel demonstrate resilience and growth during this period, a sizeable proportion experiences a range of mental health and adjustment difficulties during and after deployment. This is due to prolonged exposure to deployment related events which are profoundly stressful and can precipitate a spectrum of health problems [1-3]. Health problems that may occur includes; acute stress, posttraumatic stress disorder (PTSD), depression, anxiety, dissociation and substance use related problems [4-6]. Numerous studies have identified stronger association between deployment and PTSD, which is one of the most explored areas in military mental health [7,8].

Defines PTSD as a chronic and often debilitating mental health disorder that occurs after a traumatic event such as military combat, natural disaster, sexual assault or an unexpected loss of a loved one [9]. Available statistics reveal an astronomical increase in the rate of combat related PTSD among Nigerian soldiers over the past 15 years. For example, [4,5,10,11] found PTSD prevalence of 22%, 12%, 24% and 26.5% respectively among troops exposed to combat operations with [4] reporting that three out of ten (3/10) combat military personnel are vulnerable to PTSD. The increasing rate of PTSD by the Nigerian soldiers cannot be overemphasized. This may be in line with the continues security challenges in the country where troops continue to encounter multiple deployments. Evidence also showed that the problem of PTSD attracts significant cost on the society and military operations. For instance, report has indicated that PTSD among Nigerian soldiers is associated with more severe addiction, delinquency, family and psychological, behavioural and physical problems [4,12], all affecting operational effectiveness.

Increasing body of literature suggests that the effects of traumatic stress need to be considered as a major environmental challenge that places individual's physical and psychological health equally at risk [13] Somatic symptom disorder is a condition in which an individual has physical symptoms, often in more than one area of the body, with no identifiable physical cause [14,15] added that these somatic symptom complaints imitate somatic diseases, without a sufficient organic reason present and can affect any organ system. It has been suggested that neurobiological changes, increased physiological arousal, and poorer health behaviour in the aftermath of trauma paves the way for somatization [16,17].

In meta-analysis on the relationship between PTSD and physical health found a strong effect sizes for samples of military personnel who were regularly exposed to trauma, with greater somatic complaints found to be relative among soldiers with combat experience, [18]. In fact, [19] reported that, of all the psychiatric disorders, PTSD is the one with the strongest relationship with somatization Similarly, in a study conducted among Vietnam veterans, [20] found Somatization to be significant for all measures of self- reported health in the PTSD patients. Found that Compared to soldiers without PTSD, soldiers with PTSD were presented with poor physical health. Combat-related PTSD has been associated with higher rates of somatic symptoms [21], lower general health, and functional impairment in studies with soldiers, demonstrating lower self-ratings of general health and more physical symptoms including high ratings of somatic symptom disorder severity, [22-24] with [22] adding that the association of somatic related diseases with posttraumatic stress disorder is often present in persons who were exposed to multiple war traumatic experiences.

In line with the understanding that productivity and combat efficiency are vital to successful operations in any army, it is worthy to note that, in light of the growing dynamism of militaries the world over several factors asides the kinetic elements have proven critical in the attainment of a favorable outcome in any military operation, one of these elements is the mental health of troops. This paper will explore the relationship between PTSD and somatization as well as moderating roles of multiple deployment. The fact that physical symptoms are a common first presentation in psychological disorder

***Corresponding author:** Ogbole Aboh James, Department of Behavioural Medicine, 44 Nigerian Army Reference Hospital, Kaduna, Nigeria; Tel: 08068654846, Email: abohogbole@gmail.com

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highlights the need for exploring whether the strength of association between physical symptoms and PTSD can improve diagnostic rates [25]. Findings from this study shall be a significant contribution to the body of knowledge in military mental health among Nigerian soldiers. Additionally, it is hoped that understanding the role of somatization in the symptom-presentation of military personnel with PTSD may provide additional ways for its management.

## Methods

### Participants and procedure

Three hundred and one (301) soldiers were purposively selected. Participants represented a sample of the active-duty military personnel deployed in the north-east Nigeria. Demographic information revealed that for the military rank structure, the non-commissioned officers (65.1%) were higher compared to senior non-commissioned officers (28.1%) and officers (6.8%). Age distribution revealed a higher proportion of ages ranging from 20–30 (54.8%) followed by those ranging from 31–40 (29.9%) and 41 and above (15.3%) respectively. Concerning participants' religious affiliation, 50.3% were Christians, while 49.7% were Muslims. Regarding marital status, 61.4% were married, 36.8% were single, 1.0% were divorced while 0.7 were widowed. Gender distribution showed a higher proportion of male soldiers (99.0%) compared to female soldiers (1.0%). The study participants consisted of 301 military personnel on combat operations in northeast Nigeria. Participants were purposively selected for the survey. Relevant authorization and clearance were sorted and approved from participants respective unit commanders. They were administered the survey at their duty posts after granting their consent to participate in the survey under anonymity upon adequately being briefed on the purpose and nature of the survey.

## Instruments

### Posttraumatic stress disorder

PTSD was assessed using the Posttraumatic Stress Disorder Checklist-5, [1] will be used to assess for PTSD among the soldiers. It was recently revised to reflect the changed diagnostic criteria for PTSD in the Diagnostic and Statistical Manual of Mental Disorders, fifth edition [26]. Score is derived by adding the responses to all scale items, summing all 20 items ranging from 0 to 80 and using cut-point score of 50 appears to be a reasonable based upon the the idea that more stringent the inclusion criteria, the more potential for false-negatives [27]. The PCL-M is a psychometrically sound measure of DSM-5 PTSD symptoms that is useful for identifying provisional PTSD diagnostic, quantifying symptom severity, and detecting clinical change over time in PTSD symptoms among military personnel seeking treatment. The instrument was validated among soldiers in Nigeria by [12] and the internal consistency using Cron Bach Alpha was arrived at 75 which shows a strong reliability.

### Somatization

Somatic symptom severity was determined using the Patient Health Questionnaire–15 (PHQ–15), a section of the PHQ that measures for the presence of somatoform disorders. Respondents were asked how bothered they were by 15 symptoms over the past 4 weeks on a scale ranging from 0 (not bothered) to 2 (bothered a lot). Scores are obtained by summing overall somatic symptom severity scores ranging from 0–30, with higher scores indicating greater symptom severity [2]. The instrument was validated in the study and the internal consistency using Cron Bach Alpha was arrived at .84 which shows a strong reliability.

### Design and statistics

The study adopted a cross-sectional survey, utilizing Pearson correlation to identify the relationship between the study variables while linear regression analysis was used to determine the moderating role of multiple deployments on the study variables. Descriptive statistics was used to present participant sociodemographic characteristics.

## Results

This section presents the results obtained from analyzing data collected. Both the descriptive and inferential aspects of the analysis were done using statistical package for social sciences (SPSS 23). Results are presented below.

The Table 1 presents the demographic characteristics of the respondents in this study. The table indicates 190(63.1%) respondents are corporal below, 82(27.2%) are senior NCO and 20(6.6%) are commissioned officers. 9 (3.0%) of the 301 participants failed to indicate their ranks. The age distribution of the respondents in the study shows that a majority 161(53.5%) of the respondents are of ages 20 to 30, followed by 31 to 40 years with a total of 88(29.2%). A lesser percentage 45(15.0%) of the respondents are of ages 41 and above. Seven respondents failed to identify their ages which validates only 294 responses from the entire respondents in this study. A total of 295 (98%) of the respondents are male while only 3(1%) are females. Also, 3(1.0%) of the respondents didn't specify their gender. The result showed that 148(49.2%) of the respondents belong to the Christian faith while 146(48.5%) were Muslims. Seven of the respondents failed to indicate their religion. A majority of the respondents in this study are married, 183(60.0%), followed by 110 (36.5%) single, then 3 (1.0%) divorced while 2(7%) are widowed. Three respondents did not state their marital status. Majority 194(64.5%) of respondents have been in the military service within 0 to 10 years, 63(20.9%) have spent within 11 to 20 years, 35(11.6%) have been in service for 21 to 35 years while 9(3.0%) didn't specify their number of years spent in service. Lastly, a total of 100(33.2%) of the respondents have attended one operation, while 201(66.8%) of them have attended two and more operations.

The (Table 2) somatic scores for the respondents were obtained from summing up their scores on the PHQ-15 questionnaire. PHQ-15 scores of 1-10, 11-20, 21-30, represented cutoff points for low, medium, and high somatic symptom severity respectively. From the table 2 above, 171(56.8%) respondents indicated a low somatic symptom severity, while 97(32.2%) of the respondents indicated medium somatic symptom severity and lastly, 33(11.0%) respondents indicated high somatic symptom severity.

Table 3 presents the PTSD checklist result of the participants using the PCL-5 questionnaire (checklist). A cut-point of 50 was utilized with PTSD severity determined adding scores of each item together to determine a total score. With a range of 0-80. A total score of 50 or higher was used as a cut off PTSD score to check for false positives. The result reveals that 204(67.8%) respondents have a PTSD severity score between 0 to 49. On the other hand, 97(32.2%) respondents have a PTSD severity score from 50 and above. Therefore, a majority of the respondents has subthreshold symptoms of PTSD or does not meet criteria for PTSD.

The Pearson correlation was utilized in determining the correlation between Somatization and

**Table 1:** Demographic Characteristics of the respondents.

| **Military rank distribution** | | | | |
|---|---|---|---|---|
| | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| Corporal below | 190 | 63.1 | 65.1 | 65.1 |
| Senior NCO | 82 | 27.2 | 28.1 | 93.2 |
| Officers | 20 | 6.6 | 6.8 | 100.0 |
| Total | 292 | 97.0 | 100.0 | |
| Missing System | 9 | 3.0 | | |
| Total | 301 | 100.0 | | |
| **Age distribution** | | | | |
| 20-30 years | 161 | 53.5 | 54.8 | 54.8 |
| 31-40 years | 88 | 29.2 | 29.9 | 84.7 |
| 41 years and above | 45 | 15.0 | 15.3 | 100.0 |
| Total | 294 | 97.7 | 100.0 | |
| Missing System | 7 | 2.3 | | |
| Total | 301 | 100.0 | | |
| **Gender distribution** | | | | |
| Male | 295 | 98.0 | 99.0 | 99.0 |
| Female | 3 | 1.0 | 1.0 | 100.0 |
| Total | 298 | 99.0 | 100.0 | |
| Missing System | 3 | 1.0 | | |
| Total | 301 | 100.0 | | |
| **Religious denomination** | | | | |
| Christianity | 148 | 49.2 | 50.3 | 50.3 |
| Islam | 146 | 48.5 | 49.7 | 100 |
| Total | 294 | 97.7 | 100.0 | |
| Missing System | 7 | 2.3 | | |
| Total | 301 | 100.0 | | |
| **Marital status** | | | | |
| Married | 183 | 60.8 | 61.4 | 61.4 |
| Divorced | 3 | 1.0 | 1.0 | 62.4 |
| Widowed | 2 | .7 | .7 | 63.1 |
| Single | 110 | 36.5 | 36.9 | 100.0 |
| Total | 298 | 99.0 | 100.0 | |
| Missing System | 3 | 1.0 | | |
| Total | 301 | 100.0 | | |
| **Years in service** | | | | |
| 0-10 years | 194 | 64.5 | 66.4 | 66.4 |
| 11-20 years | 63 | 20.9 | 21.6 | 88.0 |
| 21-35 years | 35 | 11.6 | 12.0 | 100.0 |
| Total | 292 | 97.0 | 100.0 | |
| Missing System | 9 | 3.0 | | |
| Total | 301 | 100.0 | | |
| **Number of operations attended** | | | | |
| 0-1 operations | 100 | 33.2 | 33.2 | 33.2 |
| 2 operations & above | 201 | 66.8 | 66.8 | 100.0 |
| Total | 301 | 100.0 | 100.0 | |

Source: Authors computation using SPSS

Post-Traumatic Stress Disorder among Nigerian soldiers in combat operations. The result indicates that the nature of relationship between the Somatization and PTSD is positive, however, the strength of the relationship is weak because the value of the correlation (0.130) lies below 0.3 (0.130<0.3). Also, the relationship between Somatization and PTSD is also significant because the Pearson correlation Sig value or the probability value (0.024) in table 4 above is below the 0.05 level of significance. Therefore, the association between Somatization and PTSD among Nigerian soldiers in combat operations is weak, positive and significant.

The moderation analyses of multiple deployments in the relationship between PTSD and Somatization shows that PTSD has a weak positive effect on somatization as the beta (β) value is positive (β=0.007), also, PTSD has an insignificant effect on somatization (Sig=0.863>0.05). The number of operations attended on the other hand has a negative effect on somatization (β=-1.759),

**Table 2:** PHQ-15 somatic symptom severity of the respondents.

| PHQ | | | | |
|---|---|---|---|---|
| | Frequency | Percent | Valid Percent | Cumulative percent |
| Low somatic symptom severity | 171 | 56.8 | 56.8 | 56.8 |
| Medium somatic symptom severity | 97 | 32.2 | 32.2 | 89.0 |
| High somatic symptom severity | 33 | 11.0 | 11.0 | 100.0 |
| Total | 301 | 100.0 | 100.0 | |

Source: Authors computation using SPSS

**Table 3:** PTSD severity checklist result of the respondents.

| PCL | | | | |
|---|---|---|---|---|
| | Frequency | Percent | Valid Percent | Cumulative Percent |
| 0-49 PTSD severity score | 204 | 67.8 | 67.8 | 67.8 |
| 50 and above PTSD severity score | 97 | 32.2 | 32.2 | 100.0 |
| Total | 301 | 100.0 | 100.0 | |

Source: Authors computation using SPSS

**Table 4:** Pearson correlation between Somatization and PTSD.

| Correlations | | | |
|---|---|---|---|
| | | PCL | PHQ |
| PCL | Pearson Correlation | 1 | .130* |
| | Sig. (2-tailed) | | .024* |
| | N | 301 | 301 |
| PHQ | Pearson Correlation | .130* | 1 |
| | Sig. (2-tailed) | .024 | |
| | N | 301 | 301 |

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Authors computation using SPSS

**Table 5:** Moderation Analyses of multiple deployment in the relationship between PTSD and Somatization.

| Coefficients[a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 11.38 | 1.875 | | 6.070 | .000 |
| | PHQ | .007 | .042 | .021 | .173 | .863 |
| | Number of operations attended | -1.759 | .743 | -.239 | -2.366 | .019 |
| | Interaction Term | .036 | .016 | .320 | 2.156 | .032 |

a. Dependent Variable: SOMATIZATION

Source: Authors computation using SPSS

also, the number of operations attended has a significant effect on PTSD (Sig=0.19<0.05). Lastly, the effect of the interaction term is positive (β=0.036) and significant (Sig=0.032<0.05). This shows that the number of operations attended (multiple deployments) acts as a moderating variable between PTSD and Somatization. This is because the interaction term shows that there is a significant effect of interaction. The number of operations attended (multiple deployments) is therefore considered to be a moderating variable (Table 5).

## Discussion

The purpose of this study was to investigate the relationship between PTSD and somatization among Nigerian soldiers on combat deployment and to determine if multiple deployments would moderate the relationship between PTSD and somatization. Results obtained indicated the association between Somatization and PTSD among Nigerian soldiers in combat operations to be weak, positive, and significant. In summary, the diagnosis of PTSD is associated with higher somatization scores. These findings appear to support prior research demonstrating a relationship between a diagnosis of PTSD with increased reports of physical symptom, [17,18,24]. The cause of the relationship between PTSD and somatization remains ambiguous, however, it has been postulated that soldiers may overstate their symptoms [20, 24]. Similarly hypothesized that as part of their PTSD, PTSD patients have difficulty determining the salience of information and that this deficit in information processing may contribute to a patient's focus on and misinterpretation of somatic sensations. This stresses the importance of screening for both physical and psychological symptoms in patients with a history of military combat deployment.

In addition, finding from the study indicated that the number of operations attended (multiple deployments) did not act as a moderating variable between PTSD and Somatization. This is because the interaction term shows that there is an insignificant effect of interaction showing that the number of operations attended (multiple deployments) is not considered to be a moderating variable. This result is in line with the findings of [22] who identified that the association of somatic-related diseases with posttraumatic stress

disorder is often present in persons who were exposed to multiple war traumatic experiences.

The prevalence rate for PTSD in this study was 32.2%, which fell higher than rates found by other authors such as [4,10,11,12] found PTSD prevalence of 22%, 12%, 24%, and 26.5% respectively among troops exposed to combat operations as earlier reported. This indicates an increase in the rise of PTSD prevalence among Nigerian soldiers on combat operations a possible backdrop on troops' robustness and operational effectiveness as mental health is a very important force multiplier in military operations.

The study is however not without its limitations. The results of this study may be confounded by the presence of comorbid disorders. For instance, somatization may be related to other psychological consequences of trauma such as depression, anxiety, dissociation, [28], which were not explored in this study. The study findings however have broad implications for the military authorities and mental health professionals in the military. The study indicates that soldiers who have served in combat and are seen with PTSD and somatization should be evaluated for significant physical symptoms and vice versa. Early detection and treatment may help to reduce the mental health burden on troops on military operations.

In relation to the above, it becomes necessary to routinely screen military personnel on combat operations following trauma exposure for effective and timely psychological interventions. For instance, there has been no prior research about the prevalence of somatization among Nigerian soldiers in combat operations, with results in this study indicating a prevalence of 11.0% high somatic symptom severity. As a result, further research is required to determine evidence-based service delivery strategies for the management of combat-related mental health problems among soldiers. Therefore, military authorities should make it a priority in all operations across the country to provide readily and timely mental health support for troops particularly in relation to the gradually increasing prevalence of PTSD.

## Conclusion

In relation to the above, it becomes necessary to routinely screen military personnel on combat operations following trauma exposure for effective and timely psychological interventions. As a result, further research is required to determine evidence-based service delivery strategies for management of combat related mental health problems among soldiers. Therefore, military authorities should make it as a priority in all operations across the country to provide readily and timely mental health support for troops particularly in relation to with the gradually increasing prevalence of PTSD.

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## Author Affiliations

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*Department of Behavioural Medicine, 44 Nigerian Army Reference Hospital, Kaduna, Nigeria*