

Prevalence and correlates of posttraumatic stress disorder among medical students in the University of Jos, Nigeria

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Abstract

Context: Posttraumatic stress disorder (PTSD) is the most common consequence of traumatic experiences. The North Central Nigeria to which Plateau State belongs has witnessed many ethno-religious crises. While previous studies suggested a high prevalence of PTSD among students, to the best of our knowledge, no such study has been reported in Nigeria.

Aims: The study aimed to determine the prevalence and correlates of PTSD among medical students in a university.

Materials and Methods: Cross-sectional systematic random sampling was used to select 200 medical students. A two staged interview with questionnaire on sociodemographic variables, PTSD Checklist-Civilian Version, Impact of Event Scale, and Composite International Diagnostic Interview was carried out.

Statistical Analysis Used: SPSS Inc. Released 2007. SPSS for Windows, version 16.0. Chicago, SPSS Inc. was used for statistical analysis.

Results: Prevalence of PTSD among the students was 23.5%. Previous childhood trauma and personal experiences during the crisis were significantly associated with having PTSD.

Conclusions: High prevalence rate of PTSD among medical students in Jos is an indicator of psychological consequences of the recurring crises on the inhabitants. There is a need for follow-up and counseling/trauma healing for those identified.

Key words: Correlates, Jos, medical students, posttraumatic stress disorder, prevalence

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Introduction

The North Central Region of Nigeria has witnessed several ethno-religious crises and Jos located in Plateau State is the

worst hit. Posttraumatic stress disorder (PTSD) has been found to be the most common psychiatric complication of traumatic experiences.^[1] High prevalence rates were reported among students with 12% in the United States, 11% in Yugoslavia, and 11.6% in Haiti.^[2,3]

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History of trauma, severity of trauma, female gender, and poor social support are factors associated with developing

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PTSD while repeated exposure to trauma is said to be protective.^[3]

Symptoms of PTSD clinically cause significant distress, functional impairment, and reduce educational prospects.^[4] In January 2010 fighting between Muslims and Christians erupted in Jos and lots of students were caught up in the crises.

This study aimed at determining the prevalence and correlates of PTSD among medical students who have been victims or have witnessed the recurring crises in Jos.

Materials and Methods

Ethics

Permission for the study was granted by the Dean, Faculty of Medical Sciences of the University. Ethical approval was obtained from the Ethical Committee of Jos University Teaching Hospital, Jos, Plateau State before the onset of the study. Participants gave informed consent before inclusion in the study. No financial inducement was given to any of the respondents. We provided medical advice if needed, at the end of the interview and those discovered to have significant distress were referred to Jos University Teaching Hospital for further management.

Study design

Selection and description of participants

The study was carried out between March and May 2013. The University is a federal institution which admits students from its catchment states including Plateau, Nasarawa, Benue, Taraba, Bauchi, and Gombe. However, students from other parts of the country may also be admitted.

We conducted a cross-sectional study among the medical students from the 2nd to 6th year. First year students were excluded because they were still together with other biological science students.

Sample size determination

A minimum sample size of 150 was calculated using the Leslie and Kish formula for estimating sample size for the cross-sectional study.^[5]

$$n = \frac{(Z\alpha^2 pq)}{d^2}$$

Where n = minimum sample size; $Z\alpha$ set at 5% significant level = 1.96; p = estimate of prevalence of PTSD among medical students in similar study in Yugoslavia = 11% = 0.11;^[3] d = level of precision (5%); $q = 1 - p$.

$$n = \frac{(1.96^2 \times 0.11 \times 0.89)}{0.05^2}$$

$$n = 150$$

Adjusting for nonresponse rate of 10%

$$= \frac{nr}{(r - 1)}$$

Where n = calculated sample size and $r = 10$

$$n = \frac{150 \times 10}{10 - 1}$$

$$n = 166$$

Minimum sample size = 166

For the study, we sampled 200 medical students.

Sampling technique

Multi-stage systematic sampling technique was used to select the respondents for the study. The study population comprised medical students from years 2 to 6, totaling 836 students. Each of the five class lists was stratified into male and female. The number of students studied per class was obtained by dividing the class size by the total population and multiplying by the minimum sample size. From each class, the relativity of males to females was calculated by multiplying each of the number of males and females in a class by the calculated class sample size and dividing by the total class size. We divided each class sampling frame by the class sample size to determine the sampling interval while maintaining the relativity of males to females. During selection, the males and females were separated on two sides using the class lists. The first participant was selected from the sampling frame using a table of random numbers, and then using the sampling interval, subsequent participants were selected proportionally until the required sample size was achieved.

Study instruments

Questionnaire relating to sociodemographic variables was designed by the authors to include age, gender, marital status, religion, and previous history of exposure to childhood traumatic events. Impact of Event Scale (IES) was used as a self-measure of the impact of repeated Jos crises on the students.^[6] The IES is a 15 item questionnaire evaluating experiences of avoidance and intrusion which attempts to "reflect the intensity of the posttraumatic phenomena." PTSD Checklist-Civilian (PCL-C) Version was used to screen the participants, and a low cutoff of 21 was used to maximize detection of possible cases from the screen.^[7] The Composite International Diagnostic Interview (CIDI) was used to generate a definite diagnosis of PTSD based on Diagnostic and Statistical Manual of Mental Disorders Fourth Edition criteria. CIDI is a highly structured instrument derived from the present state examination and the Diagnostic Interview Scale. All questionnaires were administered in English language.

Data collection and procedure

Data collection lasted for 3 months. Each class was screened on the 1st day. The PCL-C was analyzed by the researchers and those with scores suggestive of PTSD were contacted and convenient date and venue arranged for CIDI interview lasting an average of 40 min.

Statistics

Frequency tables were generated, and relevant cross tabulations made. Proportions were compared using Chi-square test while a value of $P < 0.05$ was considered statistically significant.

Results

Majority of the participants (66.5%) were aged between 21 and 25 years with a mean age of 23.64 (standard deviation ± 2.59). Sixty-one percent of the study population was males, 96% were Christians of various denominations, and only 2% of the study population was married. Less than a quarter (16.5%) of the participants was living within the students hostels while the rest live in the community inside Jos and its environs [Table 1]. Childhood trauma was exceptionally high (72%) among the participants while a simple majority (88.5%) reported good social support at the time of the study.

Self-report of the psychological impact of the Jos crises on the participants showed that they had serious physical and psychological symptoms in response to the ethno-religious crises. The more severe the self-reported impact of event score, the higher the likelihood of having PTSD. Forty-one percent of the participants scored between moderate and severe range [Table 2].

Out of the 200 students screened with PCL-C Version, 155 (77.5%) scored 21 and above, and 144 (92%) of them were those with a history of childhood trauma. These were subjected to clinical interview using PTSD module of CIDI. The prevalence of PTSD was 23.5%. This comprised 44 (30.6%) of subjects with history of childhood trauma. The odd of having PTSD was higher for those with history of childhood trauma [Table 3]. Certain situational experiences during the crises were mostly responsible for both the physical and psychological responses of the subjects toward the trauma [Table 4]. Loss of personal possession with associated threat to life and witnessing death of relative or loved ones were significantly associated with having a diagnosis of PTSD. Having a diagnosis of PTSD was significantly associated with IES scores on the moderate and severe ranges [Table 5]. Age, gender, religion, and marital status were not significantly associated with having a diagnosis of PTSD [Table 6]. The

Table 1: Sociodemographic characteristics of respondents

| Demographic characteristics | Number (n=200) | Percentage |
|-----------------------------|----------------|------------|
| Age | | |
| ≤20 | 23 | 11.5 |
| 21-25 | 133 | 66.5 |
| ≥26 | 44 | 22.0 |
| Gender | | |
| Male | 122 | 61.0 |
| Female | 78 | 39.0 |
| Religion | | |
| Catholic | 53 | 26.5 |
| Protestant | 76 | 38.0 |
| Pentecostal | 63 | 31.5 |
| Islam | 7 | 3.5 |
| Atheist | 1 | 0.5 |
| Marital status | | |
| Single | 196 | 98.0 |
| Married | 4 | 2.0 |
| Accommodation | | |
| Hostel | 33 | 16.5 |
| Jos community | 101 | 50.5 |
| Others | 66 | 33.0 |
| Childhood trauma | | |
| At least one | 144 | 72.0 |
| None | 56 | 28.0 |
| Social support | | |
| Good | 177 | 88.5 |
| Poor | 23 | 11.5 |

Table 2: Distribution of the Impact of Event Scale scores

| Variables | Number (n=200) | Percentage |
|-----------------------|----------------|------------|
| Subclinical IES score | 47 | 23.5 |
| Mild IES score | 71 | 35.5 |
| Moderate IES score | 70 | 35.0 |
| Severe IES score | 12 | 6.0 |

IES=Impact of Event Scale

Table 3: Risk of having posttraumatic stress disorder in those with and without history of childhood trauma (n=155)

| Diagnosed as having PTSD | History of childhood trauma | | P | OR (95%CI) |
|--------------------------|-----------------------------|-----------|-------|-------------------|
| | Yes (n=144) | No (n=11) | | |
| Yes | 44 (30.6) | 3 (27.3) | 0.005 | 5.13 (1.48-17.85) |
| No | 100 (69.4) | 8 (72.7) | | |

PTSD=Posttraumatic stress disorder; OR=Odds ratio; CI=Confidence interval

mean age for those with PTSD was 23.40 \pm 3.23 and did not differ significantly with those without PTSD in the study. Furthermore, no significant association was found between social support status and having a diagnosis of PTSD.

Table 4: Association between posttraumatic stress disorder and situational trauma experience of the subjects

| Type of trauma | PTSD | | | χ^2 | df | P |
|--|-----------|------------|-------------|----------|----|-------|
| | Yes n (%) | No n (%) | Total | | | |
| Victim of personal attack | 10 (58.8) | 7 (41.2) | 17 (100.0) | 0.529 | 1 | 0.467 |
| Loss of possessions with associated threat to life | 3 (11.5) | 23 (88.5) | 26 (100.0) | 15.385 | 1 | 0.001 |
| Homes burnt | 10 (55.6) | 8 (44.4) | 18 (100.0) | 0.222 | 1 | 0.637 |
| Witness relative death or loved ones | 4 (21.1) | 15 (78.9) | 19 (100.0) | 6.368 | 1 | 0.012 |
| Robbed during the crisis | 2 (22.2) | 7 (77.8) | 9 (100.0) | 2.778 | 1 | 0.096 |
| Sexually assaulted or molested | 2 (50.0) | 2 (50.0) | 4 (100.0) | 0.000 | 1 | 1.000 |
| Saw atrocities or carnage such as mutilated bodies or mass killing | 16 (57.1) | 12 (42.9) | 28 (100.0) | 0.571 | 1 | 0.450 |
| None | 0 (0.0) | 34 (100.0) | 34 (100.0) | 31.114 | 1 | 0.001 |
| Total | 47 (30.3) | 108 (69.7) | 155 (100.0) | | | |

PTSD=Posttraumatic stress disorder

Table 5: Association between impact of traumatic events and posttraumatic stress disorder

| Impact of traumatic events | PTSD (n=200) | | χ^2 | df | P |
|----------------------------|--------------|------------|----------|----|-------|
| | Yes (n) | No (n) | | | |
| Subclinical (n=47) | 0 (0.0) | 47 (100.0) | 84.677 | 3 | 0.001 |
| Mild (n=71) | 0 (0.0) | 71 (100.0) | | | |
| Moderate (n=70) | 37 (52.9) | 33 (47.1) | | | |
| Severe (n=12) | 8 (66.7) | 4 (33.3) | | | |

PTSD=Posttraumatic stress disorder

Table 6: Association between posttraumatic stress disorder and sociodemographic variables (n=200)

| Sociodemographic correlates | PTSD | | χ^2 | df | P |
|-----------------------------|-----------|------------|----------|----|-------|
| | Yes (n) | No (n) | | | |
| Age | | | | | |
| ≤20 | 10 (43.5) | 13 (56.5) | 4.833 | 2 | 0.078 |
| 21-25 | 28 (21.1) | 105 (78.9) | | | |
| ≥26 | 9 (20.5) | 35 (79.5) | | | |
| Gender | | | | | |
| Male | 28 (23.0) | 94 (77.0) | 1.633 | 1 | 0.971 |
| Female | 19 (24.4) | 59 (75.6) | | | |
| Religion | | | | | |
| Catholic | 11 (20.8) | 42 (79.2) | 1.913 | 3 | 0.858 |
| Protestant | 20 (26.3) | 56 (73.7) | | | |
| Pentecostal | 14 (22.2) | 49 (77.8) | | | |
| Islam | 2 (28.6) | 5 (71.49) | | | |
| Atheist | 0 (0.0) | 1 (100.0) | | | |
| Marital status | | | | | |
| Single | 47 (24.0) | 149 (76.0) | 0.689 | 1 | 0.181 |
| Married | 0 (0.0) | 4 (100.0) | | | |

PTSD=Posttraumatic stress disorder

Discussion

This cross-sectional survey assessed the prevalence and sociodemographic correlates of PTSD among medical students in the University. The study was prone to bias in recalling former exposure to risk variables, difficulty in assessing the temporal relationship, and an inability

to control the exposure and outcome variables. The multi-staged selection of participants makes the findings relevant for discussion. This is because multistage sampling increases the precision of estimates and power of study by reducing variance. It leads to individuals being selected with probability to size, and it is self-weighting, so weighted analysis was not required.

Majority of the participants were young with age range 21–25 years constituting more than half of the study population. The mean age of subjects with PTSD did not differ significantly with those without the diagnosis making generalization of the effect of age on the diagnosis valid. The finding that age was not significantly associated with having PTSD in the study is similar to many such studies among students.^[3,8,9] Although more females had PTSD in the study, female gender did not significantly predict the development of the disorder. This agrees with the findings of Ramsay *et al.*, Lauterbach *et al.*, Abu-Saba, but not in conformity with that of Gavrilovic *et al.* and Read *et al.* which reported increased risk of developing PTSD among female gender.^[3,8,10-12] On the contrary, Fu *et al.* found an increased risk for males having PTSD in their study of college students.^[9] The general notion held widely is that males have more traumatic experiences while females report their symptoms more easily and could explain why more females had PTSD in this study.

High prevalence rate of PTSD was found in the study. This is probably due to the fact that these crises are complex, recurrent, incessant, and present with a general feeling of helplessness and hopelessness as the authorities did not seem to have control over the situation. The crises of 2010 in Jos were severe to a point that the federal government of Nigeria instituted a military task force charged with restoring peace and order. Furthermore, terrorist attack started in Jos after the last ethno-religious crises of 2010 and was still on-going at the time of the study, necessitating the continuous presence of the military on the streets of Jos. The high prevalence is in conformity with studies in other

populations that have experienced mass violence.^[13,14] This high rate is understandable due to the fact that multiple exposures to the same or different type of traumatic event is associated with high levels of PTSD symptoms.^[14,15] Ethno-religious crises have been reoccurring in Jos since 2001 and majority of the participants witnessed more than one episode of such events.

Inverse relationship between symptoms of PTSD and social support is one of the consistent relationships observed in trauma research.^[16,17] This study did not find any such relationship and is in conformity with recent studies that showed that after controlling for confounders, poor social support is not a risk factor for PTSD.^[18,19]

Exposure to childhood trauma was common among the study subjects with a lifetime prevalence of 72%. Resnick *et al.* reviewed studies investigating civilian-related trauma and PTSD and reported that lifetime exposure to a variety of traumatic events was common and ranges between 40% and 70%.^[20] The wide variability is due to the broad definition of what constitute a traumatic event in such literature. The odd of having PTSD in this study was 5 times higher among students who were previously traumatized. Previous trauma, chronic adversity, and familial stressors have been known to increase the risk of PTSD following traumatic event in adulthood.^[21]

Limitations of this study include that being a cross-sectional study, the relative effect of acute versus chronic trauma exposure on the development of PTSD were not examined. Second, stressful experiences and previous traumatic events were assessed in retrospect and could have been prone to recall bias, but the nature of the trauma made it possible that the students could recall their experiences easily.

Conclusions

A high prevalence rate of PTSD among medical students in Jos, North Central Nigeria, is an indicator of high psychological consequences of the recurring crises on the inhabitants and the ability to modify the response to subsequent trauma. The odd of having PTSD was higher for those with a history of childhood trauma. Loss of personal possession with associated threat to life and witnessing death of relative or loved ones were significantly associated with having the diagnosis. There is a need for urgent intervention after crisis to identify and treat those with PTSD as such approach can reduce the risk of psychological impairment and its effect on the domains of functioning. Furthermore, the school will benefit from setting up counseling units and mental health clinic in the university clinic to help individuals with mental distress.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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