



Original article

Armed-Conflict and Posttraumatic Stress Disorder among Heads of Households in Dogonahawa, North-Central Nigeria

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ABSTRACT

Background: Research has shown that 30-70% of people who have lived in war zones suffer from symptoms of posttraumatic stress disorder, with exceptionally high rates documented among heads of households. This study aims to evaluate the prevalence of Posttraumatic stress disorder among heads of households in comparison to dependants following exposure to armed-conflict. **Methods:** A cross sectional household survey that was carried out to determine the prevalence and correlates of posttraumatic stress disorder among conflict victims in Dogonahawa, North-Central Nigeria. A multistage sampling of households was employed to select 270 respondents aged ≥ 18 years. A face-to-face interview was conducted using Mini International Neuropsychiatric Interview to collect data on posttraumatic stress disorder. **Results:** The prevalence of posttraumatic stress disorders was 55.5% in all respondents, 63.6% and 48.5% among heads of households and dependants respectively. Among heads of households, low income was predictive of PTSD (OR=2.032, P=0.288) while being a male and employed as a professional were protective of Posttraumatic stress disorder; (OR=0.264, P=0.032) and (OR=, P=0.024). **Conclusion:** The results point to the importance of screening and treatment for victims of conflict, with particular attention to heads of households who are females, non professionals and low income earners.

KEYWORDS: Armed-conflict, Dogonahawa, Heads of households, Posttraumatic stress disorder.

INTRODUCTION

Nigeria has witnessed a variety of unresolved political, ethnic and religious conflicts since the exit of the military rule in 1999, with the North Central region which Plateau State belongs, being one of the areas worst hit [1]. The high point of the crisis seems to have been the September, 7-9th 2001 bloody ethno-religious war in Jos, the Plateau State capital, causing the death and displacement of thousands of people including Muslims and Christians [2]. Over the ensuing years, the conflict spread to other parts of the State that in March 2010 resulted in violent attack on Dogonahawa, a specific community in Plateau state, North-Central Nigeria, with a population of over 6000 people [3, 4].

Close to 500 people mostly women and children were butchered with machetes, clubs, axes and some shot with guns in a surprised midnight raid; left several others injured, with houses and property destroyed and some survivors

rendered homeless [3]. Exposure to trauma dramatically increases vulnerability to a variety of psychiatric disorders, most commonly Posttraumatic Stress Disorder (PTSD) and Major Depressive Disorder (MDD) [5]. Posttraumatic stress disorder is characterized by symptoms of re-experiencing, avoidance and increased arousal following exposure to a stressful event that threatens life or physical integrity to self or others [6].

Apart from the direct effect that conflict exposure is believed to have on mental health status, many households may continue to be re-traumatized due to absence of basic physical needs like proper shelter, food and security as well as face daily stressors like financial difficulties, infectious diseases and increase mortality among other vulnerabilities. Miller and Rasmussen [7] cited several studies that have examined the role of daily stressors in helping to explain the high rates of psychological distress often found among survivors of armed conflict. Thus far, the data have

consistently shown that daily stressors also have powerful effects on the development of PTSD.

The head of household often bears the brunt of these hardships more than other household members, because of their traditional role in meeting the households' demand.

A household was defined as a person or a group of persons, related or unrelated, who live together and share common cooking and eating arrangements for at least six months within 12 months period, while a member of the household who oversees and pays more than half of the costs involved in running the household is referred to as the head of household [8].

The lifetime prevalence of PTSD ranged between 0% in Switzerland [9] and 7.8% in United States of America [10], while about 30-70% of people who have lived in war zones are believed to suffer from symptoms of PTSD [11], with incredibly high rate of 80.2% noted among internally displaced heads of households in Kenya [12], using the Structured Clinical Interview for the Diagnostic and Statistical Manual IV (SCID). The significant factors associated with PTSD among heads of households in the Kenyan study include female gender, loss of a relative during clashes, occupation and post-primary level of education.

Few studies have examined the occurrence of psychiatric disorders in different post-conflict settings in Nigeria [13, 14], and even fewer studies have been carried out in the North-Central region [15]. However, we are not aware of any Nigerian study that focuses on the prevalence of mental disorders among heads of households. This study aims to determine the prevalence of PTSD among heads of households in comparison to dependants, and to identify the socio-demographic correlates of PTSD among heads of households in Dogonahawa, north-central Nigeria, at four years after exposure to armed conflict.

MATERIALS AND METHODS

This is part of a larger community based study that was designed to evaluate the prevalence and correlates of PTSD, depression and alcohol use disorders among adult population exposed to armed conflict in Dogonahawa (exposed) in comparison to Zawan(not exposed), as control.

The research was conducted between December 2013 and June 2014 at 4years after the 7th march 2010 communal violence in Dogonahawa, a specific community in Jos-South and part of BarkinLadi Local Government Areas (LGAs) of Plateau State, North-Central Nigeria. This community has an estimated projected population of over 6200 people [4] who are predominantly farmers, of the Berom ethnic group. The population projection was done based on 1991 census figure because as at 2014/2015 when data were collected, the 2006 census figure (most recent) though gazzeted, was not disaggregated into localities.

Ethical approval was obtained from the Ethical Committee of the Jos University Teaching Hospital, while Permission was granted by the village head of Dogonahawa. Individuals willing to participate in the study were first informed of their confidentiality before consent was obtained.

Adults aged 18 years and above, resident in Dogonahawa prior to and during the communal attack were eligible for

inclusion. Eligible subjects considered too ill to participate in the study were excluded.

The sample size for this study was calculated using Kish formula [16] for estimating sample size for cross-sectional studies as: $n = z^2 pq/d^2$ where, n =calculated sample size, Z = Standard score variance = 1.96 which corresponds to 95% confidence level, p =prior estimate of 42% in a study close to our study location [15].

Minimum required sample size (exposed and not exposed groups) adjusted for non-response, withdrawal and attrition with expected response rate of 80% = $nf/0.8 = 500$

A proportional sampling was used to determine the number of subjects interviewed in each group.

Thus, the proportion of subjects interviewed in the exposed group (Dogonahawa) = $6204/11566 \times 500 = 268 \approx 270$.

A multistage sampling of households was employed to select respondents aged 18 years and above as follows: In the first stage, Dogonahawa which is a geographic sub unit with defined political structure in Jos south and part of BarkinLadi LGAs of Plateau state was identified.

In the second stage, four enumeration areas were systematically selected from Dogonahawa. In the third stage, 270 households were randomly selected from all the selected Enumeration areas. In the final stage, a full listing of all residents in each of the selected households was obtained from an informant. Those who fulfilled the criteria for the study were identified.

A household member was then randomly selected for the interview by drawing a card from a deck of cards with corresponding numbers assigned to these adults. Only one of such persons was selected per house hold until the desired sample size was obtained. After two failed attempts to reach an eligible respondent in a household, the next household was selected instead and household members that declined consent to participate in the study were replaced by the next eligible household members.

Data were collected by trained researchers and research assistants who are fluent in both English and Hausa languages, in the participants' respective homes via a face-to-face interview, ensuring that they had enough privacy. Individuals identified with the disorder under survey were counseled and or referred to mental health services provider.

Demographic variables were assessed using a Sociodemographic Questionnaire. This sought information on socio-demographic data (age, gender, level of education, marital status, occupation, individual monthly income, religion, ethnicity, sense of safety living in the community, household status and household size per head.

Posttraumatic stress disorder is the Dependant variable of interest in this study, which was assessed by using the Mini International Neuropsychiatric Interview (M.I.N.I) [17]. This is a brief structured interview for major axis-1 psychiatric disorders in DSM-IV and ICD-10. Validation and reliability studies have been done comparing the M.I.N.I to the Structured Clinical Interview for DSM-IV (SCID) and the Composite International Diagnostic interview (CIDI). The results of the study showed that the M.I.N.I has a similar reliability and Validity properties, and can be administered in a much shorter period of time (mean 18.7 ± 11.6 minutes; median of 15minutes) than SCID and

CIDI. It uses simple language that eases the process of translation and administration on a participant with low level of education. It has been validated and used in Nigeria [18].

Data analysis

The statistical package for social sciences version 20 (SPSS-20) Software package was used to analyze the data. The results were presented using simple descriptive analysis. T-test was used to compare mean values of numerical variables and chi-square test was used to investigate the difference between categorical variables and their associations. Values of $P < 0.05$ were considered statistically significant. To predict the risk for PTSD among the heads of households, the significant independent variables were then entered into a logistic regression analysis.

RESULTS

Socio-demographic Characteristics of respondents at the time of the study

A total of 270 respondents were interviewed. For the purpose of this research paper, the respondents were divided into two groups comprising 129 heads of households and 141 dependants, but the questionnaires for 118(91.5%) heads of household and 136(96.5%) dependants were used

in the analyses. The remaining interviews were excluded because of incomplete data.

The heads of households were older, with a mean age of 40.8 ± 13.5 years as against 38.8 ± 12.8 years for dependants. The mean age of the two groups did not differ significantly ($P = 0.303$). While the heads of households comprised of more males (93:72.7%) than females, the proportion of female dependants rather than males was considerably higher (101:80.2%). The two groups differ significantly, with the female dependants being more likely to be recruited than males ($P < 0.001$).

More than 58% of the respondents in each group were married, the rest 42% were never married, previously married or widowed, with a higher proportion of the widowed among the heads of households (23:19.5%) compared to the dependants (6:4.4%). The two groups differed significantly with respect to marital statuses ($P < 0.001$). While all the heads of households were employed, close to 14% of the dependants were unemployed. Though a high proportion of the respondents in both groups were engaged in non-professional jobs, 70% of those engaged in profession jobs were heads of households. Similarly, the dependants were more likely to have lower income compared to the heads of households ($P < 0.001$)(Table 1:)

Table 1: Sociodemographic Characteristics and Prevalence of PTSD in all Respondents

Status of household					
Variable	Response	Head n=118 n(%)	Dependant n=136 n(%)	Total N=254 Freq: n(%)	Statistics
Age (years)	<20	0(0.0)	17(12.5)	17(6.7)	t=1.033
	20-29	27(22.9)	80(58.8)	107(42.1)	P=0.303
	30-39	45(38.1)	23(58.8)	68(26.8)	
	40-49	18(15.3)	6(4.4)	24(9.4)	
	50-59	14(11.9)	2(1.5)	16(6.3)	
	>60	14(11.9)	8(5.9)	22(8.7)	
	Mean age± SD		40.8±13.5	38.8±12.8	39.52±13.1
Gender	Male	93(72.7)	35(27.3)	128(100.0)	$X^2=71.205$
	Female	25(19.8)	101(80.2)	126(100.0)	P=<0.001
Level of Education	No formal	21(17.8)	14(10.3)	35(13.8)	
	Primary	40(33.9)	47(34.6)	87(34.3)	$X^2=5.371$
	Secondary	40(33.9)	61(44.9)	101(39.8)	P=0.147
	Tertiary	17(14.4)	14(10.3)	31(12.2)	
Marital Status	Never married	14(11.9%)	48(35.3)	62(24.4)	
	Married	69(58.5)	80(58.8)	149(58.7)	$X^2=35.468$
	Separated	6(5.1)	1(0.7)	7(28.8)	P=<0.001
	Divorce	6(5.1)	1(0.7)	7(28.8)	
	Widowed	23(19.5)	6(4.4)	29(11.4)	
Occupation	Professionals	21(17.8)	9(6.6)	30(11.8)	$X^2=23.231$
	Non-professionals	97(82.2)	108(79.4)	205(80.7)	P=<0.001
	Unemployed	0(0.0)	19(14.00)	19(7.5)	
Individual monthly Income	no income	0(0.0)	48(35.3)	48(18.9)	$X^2=56.306$
	<N20,000.00	71(60.2)	63(46.3)	134(52.8)	P<0.001
	N20-50,000.00	34(28.8)	22(16.2)	56(22.0)	
	≥N50,000.00	13(11.0)	3(2.2)	16(6.3)	
Ethnicity	Berom	108(44.8)	133(55.2)	241(100.0)	$X^2=5.113$
	Others	10(76.9)	3(23.1)	13(100.0)	P=0.024
Religion	Christianity	117(46.4)	135(53.6)	252(100.0)	$X^2=0.010$
	Muslim	1(50.0)	1(50.0)	2(100.0)	P=0.920

Household size (n=118)	<3	20(16.9)	NA	20(16.9)	
	3-5	41(34.7)	NA	41(34.7)	
	>5	57(48.3)	NA	57(48.3)	
Sense of safety	Yes	45(38.1)	73(61.9)	118(100.0)	$X^2=0.530$
	No	58(42.6)	78(32.9)	136(100.0)	$P=0.465$
PTSD	Yes	75(63.6)	66(48.5)	141(55.5)	$X^2=5.779$
	No	43(36.4)	70(51.5)	113(44.5)	P=0.016

In terms of ethnic distribution, the two groups were predominantly Berom. Other ethnic minorities were significantly more in numbers among heads of households compared to the dependants ($P=0.024$). Similarly 99.2% of respondents in both groups were Christians. The two groups did not differ significantly with respect to level of education and sense of security living in the community.

Prevalence and sociodemographic factors associated with PTSD

The results also showed that 75(63.6%) of the 118 heads of households and 66(48.5%) of the 136 dependants were diagnosed as having current PTSD. The difference was statistically significant, with the heads of households being more likely to have PTSD than the dependants ($P<0.016$).

Among the heads of households, having a diagnosis of PTSD was significantly associated with female gender ($P=0.017$), being in a non-professional occupational group ($P=0.030$) and having individual monthly income below N20, 000.0 ($P=0.026$) respectively (Table 2:).

Table 2: Sociodemographic factors associated with PTSD among Heads of Households

PTSD					
Variables	Response	Yes n=75 n (%)	No n=43 n (%)	Total N=118 N (%)	Statistics
Age group (years)	20-29	17(22.7)	10(23.3)	27(22.9)	$X^2=1.381$
	30-39	30(40.0)	15(34.9)	45(38.1)	$P=0.847$
	40-49	12(16.0)	6(14.0)	18(15.3)	
	50-59	7(9.3)	7(14.0)	14(11.9)	
	>60	9(12.0)	5(11.6)	14(11.9)	
Gender	Male	54(58.1)	39(41.9)	93(100.0)	$X^2=5.722$
	Female	21(84.0)	4(16.0)	25(100.0)	P=0.017
Level of Education	No formal educ.	14(18.7)	7(16.3)	21(17.8)	$X^2=1.603$
	Primary	28(37.3)	12(27.9)	40(33.9)	$P=0.659$
	Secondary	23(30.7)	17(39.5)	40(33.9)	
	Tertiary	10(13.3)	7(16.3)	17(14.4)	
Marital Status	Never married	10(13.3)	4(9.3)	14(11.9)	$X^2=0.917$
	Married	44(58.7)	25(58.1)	69(58.7)	$P=0.922$
	Separated	4(5.3)	2(4.7)	6(5.1)	
	Divorce	4(5.3)	2(4.7)	6(5.1)	
	Widowed	13(17.3)	10(23.3)	23(19.5)	
Occupational Group	Professional	9(42.9)	12(57.1)	21(100.0)	$X^2=4.727$
	Non-professional	66(68.0)	31(32.0)	97(100.0)	P=0.030
	Individual	<N20,000.00	52(69.3)	19(44.2)	71(60.2)
Income Level	N20-50,000.00	17(22.7)	17(39.5)	34(28.8)	$X^2=7.272$
	>N50,000.00	6(8.0)	7(16.3)	13(11.0)	P=0.026
Religion	Christianity	74(63.2)	43(36.8)	117(100.0)	-
	Islam	1(100.0)	0(0.0)	1(100.0)	
Ethnicity	Berom	65(60.2)	43(39.8)	108(100.0)	-
	Others	10(100.0)	0(0.0)	10(100.0)	
Household Size	<3	11(14.7)	9(20.9)	20(16.9)	$X^2=0.871$
	3-5	26(34.7)	15(34.9)	41(34.7)	$P=0.647$
	>5	38(50.6)	19(44.2)	57(48.3)	
Sense of Safety	Yes	26(57.8)	19(42.2)	45(100.0)	$X^2=1.050$
	No	49(67.1)	24(32.9)	73(100.0)	$P=0.306$

Predictors of PTSD among heads of households

The variables that were statistically significant during chi-square analysis when subjected to logistic regression

analysis, showed that being a male head of household and a professional compared to female head of household and a non professional reduced the odds of developing PTSD by 0.264 and 0.415 respectively ($p=0.032$ and $P=0.097$).

Though having individual monthly income below N20,000.00 doubled the odds of having PTSD compared to

having individual monthly income above N50,000.00, but was not statistically significant (P=0.288)(Table3).

Table3: Predictors of PTSD among Heads of Households

Variable	OR	95% C.I		P
Gender				
Male	0.264	0.079-	0.890	0.032
Female	1.000			
Occupation				
Professionals	0.415	0.417-	1.171	0.097
Non-professionals	1.000			
Individual Income monthly				
<N20,000.00	2.032	0.549-	7.520	0.288
N20-50,000.00	0.838	0.215-	3.265	0.798
>N50,000.00	1.000			

DISCUSSION

The study sample consisted of 254 respondents, with majority of them being female Dependants. This is expected because households in Nigeria are predominantly headed by men [19] and the fact that data were collected between the hours of 8am and 6pm where many household heads might have left home for their farms and other business, could limit the chances of men being recruited into the study. Furthermore, the heads of households and Dependants were socio-economically unequal as indicated by significant difference in marital statuses, occupation and income levels. This is expected, because majority of the Dependants were younger, perhaps still schooling or unemployed graduates and therefore unmarried.

All the respondents were screened positive for traumatic experiences related to the 7th march armed attack on Dogonahawa, North-Central Nigeria.

We found a PTSD prevalence of 63.6% among heads of households and 48.5% among the Dependants. The rate among heads of households was reasonably high, but lower than the 80.2% recorded among internally displaced heads of households in Kenya [12]

However, there are sparse data to make any assertion on differential effects of household status (heads and Dependants) on the development of PTSD; nevertheless, we presumed that the elements of post conflict hardships and indeed, the worsened level of poverty can limit the capacity of the household heads to meet the basic needs of their families. This situation is extremely stressful, and underscores the role of contextual factors in the persistence/development of PTSD [7]. This scenario is typical of our environment where more than 67% of the population lived below poverty line [20].

Notably, we found that 55.5% of our total sample met criteria for PTSD, which is considerably higher than the 10.6% and less than 1% recorded among heads of households who did not experience ethnic clashes in Kenya [12] and the general peaceful population in Switzerland,[9] Nigeria[21] and Iran[22]. On the other hand, this rate (55.5%) was similar to the 15-60% prevalence of PTSD reported in post-conflict areas of high [23], middle [24] and low [14-15, 25] income countries. Thus, our findings, as well as previous findings [14-15, 24, 25] suggest that exposure to conflict traumatic events are associated with increased

prevalence of PTSD, with even higher rates among heads of households compared to other members of the family.

However, the difficulty in comparing studies of different populations exposed to armed-conflict has to be emphasized because of variability in factors such as, methodological, economic, demographic and environmental factors that have been found to play a major in precipitating and maintaining symptoms of PTSD [7]. For instance, a plausible explanation for the disparity in prevalence of PTSD among heads of households in our study and the Kenyan study [12] could be linked to the difference in groups of population studied. While we assessed prevalence of PTSD among trauma survivors inside their own homeland with their social structure and cultural institutions preserved, the study in Kenya was conducted among internally displaced heads of households, a population with peculiar characteristics such as adaptation to the host environment, overcrowding, unemployment, physical and sexual abuses among other vulnerabilities [26].

We found a significant association between PTSD and females' heads of households, with the odds of PTSD decreased among males' heads of households, a finding that is consistent with most previous studies, where women rather than men were generally found to be more at risk of developing PTSD [10, 12, 27]. This has been attributed to the fact that females' subjective experience of trauma is usually more threatening than that of men [28], coupled with the role of post conflict contextual factors such as sense of insecurity, fear of widowhood, becoming a single parent and financial difficulties in maintaining symptoms of PTSD. To add to this, Women heads of households play a dual role in both societal phase and home affairs. As a result of that, they are very much involved in life outside their houses and therefore, more exposed to traumatic events that may increase the risk of PTSD among them. Moreover, in most African tradition including Nigeria, women are not just given less preference in terms of education, but access to good farmland is another pervasive problem faced by female farmers [19, 29]. These combined factors make women more socioeconomically disadvantaged, which itself has been found to be associated with increased risk of PTSD [30-31].

Consistent with previous findings among internally displaced heads of household in Kenya [12] and other trauma survivors in Northern Ireland [24] Liberia [26] and

south-Sudan[30] where respondents of lower socio-economic status were disproportionately affected by PTSD, our study also shows that being engaged in non-professional jobs and having low income were significantly associated with PTSD. This finding is anticipated given that the conflict left several people with various degrees of injuries with consequent challenges, such as lack of basic livelihood skills and the resultant poverty, which has been found to be significantly associated with PTSD in previous studies elsewhere [24, 30-31]. In support of this, we found that the odd of developing PTSD was doubled among heads of households with low income and decreased by 0.4 among professionals compared to those with income of N50, 000.00 and above and those engaged in non-professional jobs.

Our study showed no significant association between PTSD and other sociodemographic variables such as age, level of education, household size and sense of safety living in the community. This may be due to methodological factors or such relationships were not really statistically significant.

The strength of this study lies on the fact that it is the first community-based survey to examine psychopathology among heads of households following exposure to armed-attack in Dogonahawa, North-Central Nigeria, and the fact that our findings were consistent with previous findings elsewhere, supports the validity of the findings.

The study however had limitations that also need to be acknowledged. First, this study cannot be generalized across the population in Nigeria; rather, it is limited to adults exposed to armed conflict in Dogonahawa, until further studies have replicated similar findings in other traumatized communities in Nigeria. Secondly, we focused only on PTSD, while depression, anxiety disorders such as panic disorders and generalized anxiety disorders may be part of the response to trauma in some respondents. Furthermore, this study assumed that the findings were related to the 7th March 2010 armed attack on Dogonahawa, rather than other past traumatic exposures. It is possible that PTSD diagnosed with some respondents may have occurred as a result of traumatic events experienced prior to or after the 2010 armed attack on this community.

CONCLUSION

Posttraumatic stress disorder is highly prevalent among trauma victims with even higher rate among heads of households in Dogonahawa North-Central Nigeria at four years after the armed attack. It also highlights the socio-demographic factors such as gender, occupational and income levels that were significantly associated with PTSD, and points at categories of heads of households such as females' heads who are non professionals at particular risk for PTSD.

It is recommended that an effective model for the prediction of the development of PTSD as well as immediate and long-term mental health support for trauma victims needs to be developed. In addition, there is a dire need for sensitization campaigns on the needs of traumatized victims so as to prevent the development of PTSD and to treat those who have already come down with the disorder.

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