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Mental health literacy, prevalence of depression and PTSD among internally displaced persons in Northern Nigeria

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Abstract

Background: To investigate the level of mental health literacy (MHL) along with the prevalence, severity, and determinants of post-traumatic stress disorder (PTSD) and depression among Internally Displaced Persons (IDPs) in IDP camps in Northern Nigeria.
Methods: A cross-sectional research with a well-structured questionnaire translated into the Hausa Language was used to assess mental health literacy, depression, and post-traumatic stress disorder among young (10-24 years). IDPs in the New Kuchingoro and Durumi IDP camps using the Mental Health Literacy Questionnaire (MHLQ), the Patient Health Questionnaire (PHQ-9), and the Short Post-Traumatic Stress Disorder Rating Interview (SPRINT), respectively. Data were analysed using descriptive statistics, Chi-square test, and regression analysis at a significance level of $p<0.05$. The Statistical Package for Social Sciences (SPSS) Version 25.0 was used for analysis.
Results: Of the 637 respondents, 46.5% were between 20-24 years of age, 54.8% were males. 72.4% had poor, whilst 27.6% had good mental health literacy. Respondents between 15-19 years were 1.6 times more likely to have good mental health literacy as compared to those between the ages of 10-14 years (OR=1.625, p=0.044, CI=1.013-2.609). Slightly above half (54.6%) of the respondents met the diagnostic criteria for current depression, 19.9% had current PTSD symptoms and 16% reported co-morbidity of depression and PTSD symptoms. This study also revealed that respondents with good mental health literacy were 95.3% less likely to have PTSD and depression respectively (OR= 0.047, p<0.001, CI=0.015-0.150; OR= 0.079, p<0.001, CI=0.050-0.125). Depressed IDPs were 4.4 times more likely to have PTSD (OR= 4.379, p<0.001, CI=2.735-7.010).
Conclusions: Due to the positive impact of good MHL on mental health outcomes, mental health literacy should be encouraged for IDPs, to create and execute measures to reduce the consequences of relocation on IDPs` mental health.

Keywords

Mental health, Depression, PTSD, IDP, Psychological distress, Mental illness, Insurgency, Nigeria

INTRODUCTION

Mental health problems among internally displaced persons

Globally, there are approximately 48 million IDPs who have fled conflict and violence (UNHCR, 2021) while Africa has the world's second-highest number of displaced people (Ibrahim *et al.*, 2021). Nigeria has been ravaged by numerous security threats and insurgencies from armed groups over the years, resulting in the loss of lives and property, the displacement of vulnerable people, a high rate of depression, suicidal ideation, post-traumatic stress disorder, and other mental illnesses among IDP camp occupants (Faronbi *et al.*, 2020). A study by Ahmed (2022a) among Yazidi people revealed that forced migration has a significant impact on mental health. Other studies revealed a high prevalence of PTSD and depression among children and adolescents who were survivors of war, trauma, and displacement (Aaltonen et al., 2018; Ahmed, 2022b). This follows findings from a study conducted by Aluh *et al.,* (2019) who investigated the prevalence of post-traumatic stress disorder and depression among IDPs in Nigeria where as many as 78.0% were

symptomatic for PTSD and the majority, 96.1%, were depressed.

The majority of psychiatric findings are limited to African nations such as Nigeria or Uganda where studies have demonstrated that IDPs who have been exposed to psycho-trauma develop PTSD (Sheikh *et al.*, 2015). In Kaduna, a study by Sheikh et al. (2015) found that 42% of the 258 adult IDPs had been diagnosed with post-traumatic stress disorder (PTSD), with more than half reporting 11–15 traumatic experiences. About a quarter of them suffered mild depression, while about one-tenth of them had severe depression. Unemployed IDPs were three times more likely to have a definite diagnosis of depression (Sheikh *et al.*, 2015). These statistics suggest that mental health in Nigeria has been a largely neglected area of concern, particularly amongst occupants of IDP camps who are at high risk of developing mental health disorders yet less likely to receive much needed mental health care and support (Onyemelukwe, 2021).

IDPs are a particularly vulnerable group because they are subjected to traumatic situations and frequently encounter extreme adversity, including violence, torture, forced confinement, separation from family members, and the death of relatives (Sabhlok, 2020). As a result, exposure to traumatic situations and conditions, such as forced displacement and relocation from their homes, have long-term negative consequences for their mental health and psychological well-being (Burns, 2018). Mental disorders are illnesses that generate problems with cognition feeling, mood, and behaviour. Individuals who were internally displaced face higher rates of mental health problems than people who were not displaced. Depression, anxiety, PTSD, and other emotional problems are particularly common among IDPs (Debbarma *et al.,* 2021).

Mental health literacy

Mental health literacy (MHL), coined by Jorm et al (1997) refers to knowledge and beliefs about mental health disorders which aid their recognition, management, or prevention. Mental health literacy includes the ability to recognize specific disorders; knowing how to seek mental health information; knowledge of risk factors and causes, of self-treatments, and available professional help; and attitudes that promote recognition and appropriate health-seeking.

MHL is a strong predictor of positive attitudes about mental health problems and adequately seeking help for oneself and others (Jung *et al.,* 2017). For mental health, MHL is an important factor with the potential to improve individual and population mental health (Kutcher *et al.,* 2015). One of the most common mental health issues among IDPs has been identified as PTSD symptoms (De Jong *et al.,* 2003).

This study aims to investigate the level of MHL along with the prevalence, severity, and determinants of PTSD and depression (major depressive disorder) among IDPs in camps in Northern Nigeria. This study also examines the association between selected socio-demographic characteristics and double-burden disease (Depression and PTSD) among participants. In addition, this study assesses the association between MHL and PTSD, and depression.

METHODS

Participants and study design

This is a cross-sectional study conducted in two IDP camps in Abuja. Participants for this study were selected using a purposive sampling technique.

Inclusion criteria

1. Young persons aged 10-24 years,

2. Persons residing in the New Kuchingoro and Durumi IDP camps for at least 6 months.

Study Location

This study was conducted in New Kuchingoro IDP camp and the Durumi IDP camp. The residents in these camps are majorly Hausas and commonly speak Hausa, English, and Pidgin English. The Durumi Camp is located in the Durumi District, Area 1, Abuja Municipal Area Council, and has a total of 4,500 IDPs. On the other hand, the New Kuchingoro IDP camp is located at the New Kuchingoro, Lugbe Division, Abuja, and has a total of 2,700 IDPs. Half of the population of IDPs in these camps are young persons aged 0-24 years.

Ethical Approval and Informed consent

Prior to the start of the study, ethical approval was obtained from the Federal Capital Territory Health Research and Ethics Committee, Abuja with code no (FHREC/2021/01/04/18-01-21). In addition, we also

met and sensitized the community stakeholders of both Durumi and New Kuchingoro IDP camps on the purpose of our study/intervention and received approval from the community leaders. Potential participants who met our eligibility criteria were identified and we explained our study aims and objectives for them to make an informed decision about participating in the study. Participants were assured of the utmost confidentiality and both written and verbal informed consent was obtained from all participants before data collection. For participants under 18 years of age, informed consent was obtained from their parents and/or guardians.

Data collection procedure

Data for this study was collected using structured questionnaires imputed on the Kobo Toolbox and mobile tablets provided for this purpose. Questionnaires were researcher-administered, and characteristics of participants were collected on a socio-demographic form. The questionnaires were also translated into the Hausa language by professional translators ensuring forward and backward translation. A Hausa version of the questionnaires was made available for those who were literate in Hausa only.

The first section was used to obtain data on the socio-demographic characteristics of the respondents, such as, age, gender, occupation, level of education, marital status, religion, family income and family type (monogamous or polygamous).

Three validated psychological measures were utilized in the study: the Mental Health Literacy Questionnaires (MHLQ), Patient Health Questionnaires (PHQ-9), and the Short Post-Traumatic Stress Disorder Rating Interview (SPRINT).

The MHLQ, 35-item questionnaire, was used to assess participants' knowledge and understanding of mental health (O'Connor & Cassey 2015). The MHLQ has an internal consistency with Cronbach alpha value at 0.873 and a reliability of 0.797.

In the MHLQ, the first 15 items on the questionnaire are scored on a 1-4 scale, with items 10, 12, and 15 being reversed scored. On the other hand, items 16-35 are scored on a 1-5 scale with items 20-28 being reverse scored. The total score is obtained by summing up all the scores of the participant. The maximum obtainable score is 160, while the minimum obtainable score is 35 and higher scores are indicative of higher MHL (O' Connor & Cassey, 2015). A score up to 95 was scored as poor MHL, while 96 and above was measured as good MHL.

The Patient Health Questionnaire (PHQ-9) is a 9-item questionnaire developed by Kroenke et al (2001) and is used to assess the prevalence of and monitor the severity of depression among persons. The PHQ-9 has an internal consistency with Cronbach alpha's value of 0.89.

The PHQ-9 contains the DSM-IV criteria for diagnosing depression and scores each item on a scale of 0 (not at all) to 3 (nearly every day). The PHQ-9 total score for the nine items ranges from 0 to 27.

Participants with scores ranging from 0-4 were said to have no depression, 5-9 have mild depression, 10-14 were said to have moderate depression, and 15 and above were said to be moderately severe.

The Short Post-Traumatic Stress Disorder Rating Interview (SPRINT), developed by Connor & Davidson (2001) contains 8-items that assesses the core symptoms of PTSD.

The SPRINT is on a 5-point scale ranging from 0-4 with 0 indicating not at all, and a score of 4 indicating very much. The PTSD score of 14 and above will be scored presence of PTSD (Tae-Suk Kim et al, 2008).

Statistical Methods and data analysis

The data was extracted from the Kobo collect database and imported into the SPSS version 25 for further analysis.

Chi-square analysis was conducted to determine the significant association and the strength of association between variables with a level of significance set at $p< 0.05$. Logistic regression was done to examine the association and predict the dependent variable using the independent variables with its magnitude. The confidence interval provided an estimate of the precision of the odd ratio. Multinomial logistic regression was used to predict categorical placement in or the probability of category membership on a dependent variable based on multiple independent variables.

RESULTS

Recruitment and Socio-Demographic Characteristics

This study assessed mental health literacy, depression, and PTSD among 700 internally displaced persons in Abuja, northern Nigeria between April and May 2021 with a 91% response rate: 637 completed the questionnaire (Figure 1).

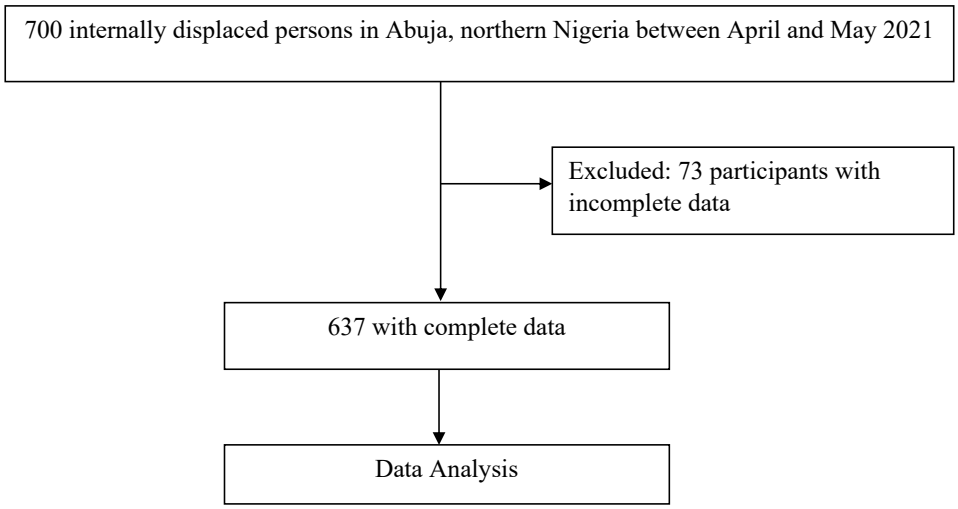

Figure 1. Flow chart of participant recruitment

Socio-Demographic Characteristics of Respondents

Table 1 indicates the socio-demographic characteristics of the sample. 637 respondents participated in this study. Almost half (46.5%) were between 20 -24 years of age. There were slightly more males than females and 47.1% were students and 32.8% had secondary school education. The majority (79.4%) were single, 58.2% were Christians, and 79.6% had a family income of less than ₦10,000 Nigerian Naira (less than $21.70) monthly. Most (90.4%) were from monogamous families (Table 1).

Mental Health Literacy categorization

Table 2 indicates the categorization of mental health literacy among the respondents. As many as 72.4% of the respondents had a poor knowledge of mental health.

Categorization of mental health literacy by age group

Table 3 indicates the categories of MHL (poor and good) by age group. Many of the respondents (71.4%) between 10-14 years of age had poor MHL while 39.5% between 15-19 years had good MHL. 77.7% between the age of 20-24 years had fair MHL.

Socio-demographic factors affecting mental health literacy

Table 4 indicates the socio-demographic factors (independent variable) affecting MHL categories (dependent variable) using binary logistic regression (inclusion regression model). The result revealed that respondents between ages 15-19 years are 1.6 times more likely to have good MHL compared to those between ages of 10-14 years (OR=1.625, p=0.044, CI=1.013-2.609). Respondents that are from polygamous families are 96.2% less likely to have good MHL as compared to those who are from monogamous families (OR= 0.038, p<0.001, CI=0.005-0.278).

Rate and severity of depression symptoms among respondents

Table 5 indicates the frequency and percentage of depression symptoms among the respondents. Out of the 637 respondents in this study, more than half (54.6%) were depressed. Of these, various degress of depression were reported, namely, 28.2% reported mild symptoms, 17.7% moderate, 7.8% moderately severe and 0.9% severe depression.

Table 1. Socio-Demographic characteristics of respondents

Variables	Frequency	Percentage (%)
Age (years)		
10 – 14	227	35.6
15 – 19	114	17.9
20 – 24	296	46.5
Gender		
Male	349	54.8
Female	288	45.2
Occupation		
Employed	20	3.1
Unemployed	274	43.0
Own business	43	6.8
Student	300	47.1
Level of Education		
No formal education	122	19.2
Primary schooling	306	48.0
Secondary school	209	32.8
Marital Status		
Single	506	79.4
Married	131	20.6
Religious Status		
Christianity	371	58.2
Islam	260	40.8
Traditional	6	0.9
Family Income		
Less than ₦10,000 (less than $21.70)	507	79.6
₦10,000 - ₦50,000 ($21.70-$108.51)	130	20.4
Family type		
Monogamous	576	90.4
Polygamous	61	9.6

Table 2. Categorization of mental health literacy

Mental health literacy	Frequency	Percentage (%)
Poor	461	72.4
Good	176	27.6

Table 3. Categorization of mental health literacy by age group

MHL category	Poor	Good
Age (years)	**Frequency (%)**	**Frequency (%)**
10-14	162 (71.4%)	65 (28.6%)
15-19	69 (60.5%)	45 (39.5%)
20-24	230 (77.7%)	66 (22.3%)

Table 4. Socio-demographic factors affecting Mental Health Literacy

Variables	Sig.	OR	95% Confidence Interval	
			Lower Bound	Upper Bound
Age				
10 -14 (Ref)	-	-	-	-
15-19	0.044**	1.625	1.013	2.609
20-24	0.098	0.715	0.481	1.064
Occupation				
Employed (Ref)	-	-	-	-
Unemployed	0.818	1.131	0.397	3.219
Business	0.059	0.225	0.048	1.060
Student	0.574	1.348	0.476	3.818
Family Type				
Monogamous (Ref)	-	-	-	-
Polygamous	<0.001**	0.038	0.005	0.278

** Statistically significant (p<0.05), OR - Odds Ratio

Table 5. Rate and severity of depression symptoms among respondents

Depression symptoms	Frequency	Percentage (%)
Presence of Depression symptoms		
No depression	289	45.4
Presence of depression	348	54.6
Severity of Depression symptoms		
None	289	45.4
Mild	179	28.1
Moderate	113	17.7
Moderately severe	50	7.8
Severe	6	0.9

Rates and severity of post-traumatic stress disorder symptoms among respondents

Table 6 indicates the frequency and percentage of PTSD symptoms among the respondents. Out of the 637 respondents in this study 63% had symptoms of PTSD. Of these, 26.7% had mild symptoms, 25.6% had moderate and 10.7% had severe PTSD.

Influence of mental health literacy on presence of depression symptoms

Table 7 indicates the influence of MHL on the presence of depression symptoms using binary logistic regression. The binary logistic regression analysis revealed that respondents who have a good MHL are 92.1% less likely to have depression symptoms than respondents who have poor MHL (OR=0.079, CI=0.050-0.125).

Influence of mental health literacy on PTSD symptoms

Table 8 indicates the influence of MHL on PTSD symptoms among the respondents. The binary logistic regression analysis revealed that respondents who have good MHL are 96.3% less likely to have PTSD symptoms than respondents who have poor MHL (OR=0.037, CI=0.023-0.061).

Table 6. Rates and severity of Post-Traumatic Stress Disorder symptoms among respondents

PTSD symptoms	Frequency	Percentage (%)
Presence of PTSD symptoms		
No PTSD	236	37
Presence of PTSD	401	63
Severity of PTSD symptoms		
None	236	37.0
Mild	170	26.7
Moderate	163	25.6
Severe	68	10.7

Table 7. The influence of mental health literacy on the presence of depression symptoms

Mental Health literacy	p-value	OR	CI Lower- Upper
Poor (ref)			
Good	0.000	0.079	0.050-0.125

Table 8. The influence of mental health literacy on PTSD symptoms

Mental Health literacy	p-value	OR	CI Lower- Upper
Poor (ref)			
Good	0.000	0.037	0.023-0.061

Predictors of depression symptoms

Table 9 revealed the socio-demographic factors (independent variable) influencing the presence of depression symptoms (dependent variable) using the binary logistic regression. The binary logistic regression revealed that respondents between the ages of 15-19 years are 38.5% less likely to have the symptoms of depression compared to respondents between the age of 10-14 years (OR=0.615, CI=0.385-0.981). Respondents who earn less ₦10,000 - ₦50,000 ($21.70-$108.51) per month are 34.8% less likely to have symptoms of depression compared to respondents who earn less than ₦10,000 (less than $21.70) (OR=0.652, CI=0.443-0.960).

Predictors of PTSD symptoms

Table 10 shows the influence of age and family type (independent variable) on the presence of PTSD symptoms (dependent variable) using the binary logistic regression. The result revealed that respondents from polygamous families are 2.66 times more likely to have PTSD symptoms than respondents from monogamous families (OR=2.658, CI=1.377-5.128).

Table 9. Predictors of Depression symptoms

Variables	Sig	OR	95% CI
Age			
10-14 (ref)			
15-19	0.041	0.615	0.385-0.981
20-24	0.098	1.581	0.918-2.723
Occupation			
Employed (ref)			
Unemployed	0.780	1.144	0.446-2.932
Business	0.104	2.568	0.824-8.005
Student	0.809	1.128	0.424-3.001
Family monthly income			
Less than ₦10,000 (less than $21.70) (ref)			
₦10,000 - ₦50,000 ($21.70-$108.51)	0.030	0.652	0.443-0.960

Table 10. Predictors of PTSD symptoms

Variables	Sig	OR	CI
Age			
10-14 (ref)			
15-19	0.097	0.678	0.429-1.073
20-24	0.138	1.317	0.915-1.897
Family type			
Monogamous (ref)			
Polygamous	0.004	2.658	1.377-5.128

Factors influencing depression among young IDP

Table 11 indicates multinomial regression analysis in which socio-demographic characteristics are the independent variable and severity of depression is the dependent variable found that respondents between the ages 15-19 years were 66.6% less likely to have mild depression as compared to those between 20-24 years (OR=0.334, p=<0.001, CI=0.187-0.597). Respondents between 10-14 years were 43.7% less likely to have moderate depression as compared to those between 20-24 years (OR= 0.563, p=0.022, CI=0.343-0.921). Also, those between 15-19 years were 83.1% less likely to have moderately severe depression as compared to those between ages 20-24 years (OR=0.169, p=<0.001, CI=0.058-0.496).

Respondents who were males are 72.1% less likely to have moderately severe depression compared to females (OR=0.279, p=<0.001, CI=0.142-0.548). Respondents who owned a business were 6.2 times more likely to have moderate depression as compared to students (OR=6.163, p=<0.001, CI=2.730-13.915). Unemployed respondents were 2.6 times more likely to have moderately severe depression as compared to students (OR= 2.564, p=0.005, CI=1.329-4.945).

Also, those who owned a business were 14.3 times more likely to have severe depression as compared to students (OR=14.273, p=0.011, CI=1.832-111.211). Respondents who had primary education were 72.6% less likely to have moderately severe depression as compared to those who had secondary education (OR=0.274, p=<0.001, CI=0.130-0.576). Respondents who earned less than ₦10,000 were 3.0 times more likely to have moderate depression as compared to those who earned between ₦10,000-50,000 (OR=2.964, p=<0.002, CI=1.505-5.837). Respondents who earned less than ₦10,000 were 5.0 times more likely to have moderately severe depression as compared to those who earned between ₦10,000-50,000 (OR= 0.008, p=5.008, CI=1.512-16.589). Also, those who earned less than ₦10,000 were 96.3% less likely to have severe depression as compared to those who earned between ₦10,000-50,000 (OR=0.037, p=0.160, CI=0.029-0.891) as shown in Table 11.

Table 11. Factors influencing depression among young IDP

Variables	Mild			Moderate			Moderately Severe			Severe		
	Sig	OR	95% CI	Sig	OR	95% CI	Sig	OR	95% CI	Sig	OR	95% CI
Age												
10 -14	0.209	0.769	0.511 - 1.158	0.022 **	0.563	0.343 - 0.921	0.000**	0.235	0.108 - 0.509	0.709	2.08E-09	2.08E-09 - 2.08E-09
15 – 19	.000 **	0.334	0.187 - 0.597	0.015 **	0.47	0.256 - 0.862	0.001**	0.169	0.058 - 0.496	0.195	3.13	0.558 - 17.553
20 – 24 (Ref)	.	.	-	.	.	-	.	.	-	.	.	-
Gender												
Male	0.18	1.298	0.887 - 1.899	0.754	0.933	0.603 - 1.443	0.000**	0.279	0.142 - 0.548	0.781	0.795	0.158 - 4.006
Female (Ref)	.	.	. .	.	.	-	.	.	-	.	.	-
Occupation												
Employed	0.246	1.744	0.682 - 4.464	0.995	4.43 E-08	0 - 4.745.	0.986	0.981	0.118 - 8.167	0.934	5.17E-08	5.17E-08 - 5.17E-08
Unemployed	0.072	1.432	0.968 - 2.118	0.049	1.607	1.002 - 2.578	0.005**	2.564	1.329 - 4.945	0.731	1.414	0.196 - 10.193
Business	0.676	1.233	0.461 - 3.302	.000**	6.163	2.73 - 13.915	0.047**	3.568	1.018 - 12.512	.011**	14.273	1.832 - 111.211
Student (Ref)	.	.	. .	.	.	-	.	.	-	.	.	-
Level of Education												
None	0.098	1.604	0.916 - 2.809	0.219	1.473	0.794 - 2.734	0.596	0.81	0.372 - 1.764	0.224	3.094	0.5 - 19.134
Primary	0.054	1.534	0.992 - 2.372	0.831	1.056	0.642 - 1.737	0.001**	0.274	0.13 - 0.576	0.392	0.349	0.031 - 3.897
Secondary (Ref)	.	.	. .	.	.	. .	.	.	-	.	.	-
Monthly Earnings												
Less than ₦10,000	0.852	1.043	0.673 - 1.616	0.002 **	2.964	1.505 - 5.837	0.008**	5.008	1.512 - 16.589	.037**	0.16	0.029 - 0.891
₦10,000-50,000 (Ref)	.	.	-	.	.	-	.	.	-	.	.	-

Ref: Reference group, ** Statistically significant (p<0.05)

Double Burden of depression and PTSD

Table 12 shows that out of the 637 respondents, 41.1% had both depression and post-traumatic stress disorder (double burden) while many (58.9%) did not have both depression and post-traumatic stress disorder.

Association between socio-demographic variables and double burden disease (depression and PTSD)

Logistic regression analysis, as shown in Table 13, revealed that respondents between 20-24 years of age are 32% less likely to have both depression and PTSD (double burden) compared to those between 10–14 years of age (OR= 0.680, p=0.032, CI= 0.478-0.966).

Table 12. Double Burden of depression and PTSD

Double Burden illness	Frequency	Percentage (%)
Yes	262	41.1
No	375	58.9

Table 13. Association between socio-demographic variables and double burden disease (depression and PTSD)

	Double Burden (Depression and PTSD)		
Variable	**Sig.**	**OR**	**95% Confidence Interval**
Age			
10 -14 (Ref)			
15 – 19	0.252	1.322	0.820-2.130
20 – 24	0.032	0.680	0.478-0.966

** Statistically significant ($p<0.05$)

DISCUSSION

MHL includes knowledge of mental health disorders as well as opinions about the effectiveness of treatments. Only 27.6% of IDPs had good MHL in contrast to another study where only 14.2% of those surveyed in an Iraqi refugee study used the right clinical classification of PTSD, which could be a result of geographical difference (Slewa-Younan *et al.*, 2015). The positive impact of high MHL on a series of health outcomes including physical, mental and social health, has been reported in other studies with higher MHL resulting in better physical and social health (Yu *et al.,* 2015). The mechanism underlying this link could be related to those with greater MHL having better help-seeking behaviour, which has been well documented (Mendenhall, 2012). Increased MHL is associated with increased general health, which is a motivation to improve population MHL through a number of educational programs. Multivariate linear regression indicated that age, occupation and family size were the most robust factors associated with higher MHL. Interestingly, being younger, rather than being older, is associated with higher MHL. IDPs between ages 15-19 years were 1.6 times more likely to have good MHL as compared to other age groups. This was also observed in other studies (Yu *et al.,* 2015). According to the authors, the reason may be related to the different social and environmental factors and experiences of different age groups which could cut across different areas.

In the current study, results revealed that lower MHL was associated with elevated depressive symptoms. Depressed IDPs were 21% less likely to have good MHL score. These findings are consistent with prior research suggesting that individuals with lower MHL are more likely to experience symptoms of depression (Stewart *et al.,* 2014). A significant association between MHL and the occurrence of PTSD among the IDPs was established in this study. Depression is observed to be the second most common mental disorder among youths living in IDP camps (Verdeli *et al.,* 2008). An important factor in the development of common mental disorders including depressive illness is the exposure to trauma, type and number of traumas (Ahmed *et al.,* 2019). This study found that 45.4% of the young IDPs met the diagnostic assessment of depression. Sheikh *et al.* (2015) found a 60% probable depression among internally displaced persons in Kaduna, Nigeria. The result of this study was lower than the prevalence of depression among IDPs in Southern Sudan and amongst internally displaced persons (Roberts *et al.,* 2008). However, the lower prevalence reported in this study could be because of young people´s resilience and coping mechanisms after displacement. Also, culture may have a role in determining mental health disorders because it influences how people interpret traumatic events; some situations that are traumatic in one culture may not be perceived as traumatic in other cultures (Herbert and Forman, 2006).

The study found several significant associations of independent variables on outcomes of depression. Younger people between 15- 19 were 67% less likely to be mildly depressed compared to young people between 20 -24 years of age. A similar study among IDPs in Ethiopia identified that individuals between 19–30 years of age were associated with high risk of mental disorders compared to those above 45 years of age. According to the National Institute of Mental Health (National Institute of Mental Health, 2015), young people aged 12 to 17 are more likely to suffer from depressive episodes as a result of a variety of life stressors. Because of its relationship with major personality changes, identity separation from parents, gender appearance, sexuality, and early decision making, depression in the adolescent period has distinct characteristics (Ahmed *et al.,* 2019). As a result, it's critical to provide mental health interventions tailored to this group in order to prevent and alleviate the effects of displacement on their mental health and other ailments.

Consistent with other studies, this study found that male IDPs were 72% less likely than females to develop moderately severe depression. Other studies found that women are at particularly high risk of poor mental health. The male gender however is a protective factor against probable depression (Sheik et al., 2015; Roberts *et al.*, 2008). Vonnahme *et al.,* (2015) found higher prevalence of depression among female IDPs. This is because women are more inclined than males to internalize stress, putting them at a higher risk of developing depression (Vonnahme *et al.,* 2015). Furthermore, the psychological consequences of rape, the violent loss of a partner and children, and being a single parent or widow may put women at a higher risk of mental distress (Hassan *et al.,* 2015). In contrast to the current study, Vonnahme *et al.*, (2015) discovered that males who self-reported poor health had a 39% increased risk of depression. A combination of prior trauma and current stressors related to forced migration, in particular cultural isolation, financial stressors and disruption of family life led to increased risk of depression and suicidal ideation among IDPs (Vonnahme *et al.,* 2015). Occupation was found to be significantly associated with depression in this study. Young people in business were 6.2 times and 24.3 times more likely to develop moderate and severe depression respectively. This could be due to the stress and other challenges associated with running a trade in a displaced person camp.

Also, young IDPs who were unemployed were 2.5 times more likely to develop moderately severe depression respectively. Unemployed IDPs were three times more likely to have a definite diagnosis of depression in the study by Sheikh *et al.* (2015), among IDPs in North Central Nigeria. This association was attributed to the fact that unemployed people do not have the five latent functions of employment: structured time, social contact, collective purpose, status and activity at their disposal (Paul and Moser, 2009a). Unemployed persons are at a higher risk of social and psychological problems, as unemployment can result in social isolation and a lack of social support, as individuals may withdraw from social activities due to shame or a sense of exclusion (Paul and Moser, 2009b). Unemployed persons tend to also experience feelings of hopelessness, worthlessness and stress as a result of the social pressures and financial instabilities (Paul and Moser, 2009a). A long-term unemployment can lead to low self-esteem, and low self-confidence (McKee-Ryan et al., 2005). Income was found be significantly associated with depression. IDPs with income less than #10, 000 were five times more likely to develop moderately severe depression. Therefore, priority should be placed on the successful integration of IDPs into the community through a variety of social connections. Providing opportunities for education and employment may boost community integration and may also reduce the burden of depression. This could bring about a sense of financial security thereby protecting their mental health and reducing the risk of developing depression.

Also, this study established a significant association between education and depression. Those with primary education were 73% less likely to develop moderately severe depression than those without education.

Similarly, Hassan *et al.,* (2015) found that the majority of those who reported depressive symptoms among surveyed IDPs were of a higher level of education. This was attributed to the fact that this group was targeted for error and experienced more losing events. The inability to read and write was found to increase the risk of depressive symptoms by four times in a group of Nepali refugees (Vonnahme *et al.,* 2015). Depressive disorders can occur independently after exposure to psycho-trauma and a previous depressive disorder is a risk factor for developing PTSD (Brady et al., 2000). There

was significant association between depression and PTSD. The dose-response relationship between exposure to traumatic events and PTSD and depression is also consistent with other studies of displaced populations (Charlson et al., 2016; Lee et al., 2016; Momartin et al., 2004; Park et al., 2019).

The current study found a 19.9% prevalence of PTSD among the young IDPs. This is lower than that found among victims of ethnoreligious violence (84%) in Jos Nigeria (Obilom and Thacher, 2008). Higher prevalence was also found among IDPs in other parts of Nigeria (Sheikh *et al.,* 2015). Other African countries have also recorded high rates of PTSD among internally displaced victims of war with a level of PTSD as high as 80.2% in Ethiopia and 48% in South Sudan (Roberts *et al.,* 2008; Karunakara *et al.,* 2004). The possible explanation for the observed differences could be the difference in the tools used to assess PTSD, variations in type of exposure to trauma, sampling techniques and socio-cultural factors. Another reason might be duration of displacement: increased duration of displacement was found to increase the occurrence of PTSD and more likely to reduce the magnitude due to recall bias. Also, there could be an underestimation of the real situation regarding PTSD among IDPs in the current study.

The occurrence of PTSD symptoms was statistically associated with family type in the current study. IDPs from monogamous families were 3.2 times more likely to have PTSD. Despite the high degree of unemployment among the IDPs, no significant association was found between occupation and PTSD. This is similar to the study conducted among the IDPs in Kaduna, North-West Nigeria (Sheikh *et al.,* 2015). Previous studies have a found significant association between socio-demographic factors such as marital status and gender, with women experiencing twice as many severe symptoms of PTSD as compared to the males (Roberts *et al.,* 2008). Additionally, the current study found that 16.0% of the respondents had a double burden of mental health disorders (depression and PTSD). Another study, on similar populations, found that 45% of refugees with psychiatric diagnoses of depression and/or PTSD exhibited the disorders in the follow-up after 3 years (Mollica *et al.,* 2001). Makhashvili *et al.,* (2014) reported almost the same levels of comorbidity, with over 40% of respondents presumed to have more than one mental health disorder. However, comorbidity rates among those suffering with depression and anxiety was significantly higher than for those with PTSD (Makhashvili *et al.,* 2014). Consequently, an individual experiencing both depression and PTSD may have a heightened risk of suicide.

LIMITATIONS

First, the analyses in the current study were based on a cross-sectional design so do not confirm causality. Hence, the study could not specifically determine whether poor mental health precedes the displacement or vice versa. Furthermore, this study was conducted several years post-conflict displacement. Therefore, recall bias was possible, but the nature of the psycho-trauma made it viable that the IDPs recollected their experience easily. We studied only IDPs living in the camps and excluded those that were staying with relatives or had moved out of the camps for other reasons. Also, we did not screen the respondents for any intellectual disabilities, so we could not access whether they had intellectual disabilities that could have influenced their level of MHL.

IMPLICATIONS

While conducting research on IDPs, an oppressed population, the current research provides an insight into their psychological problems, which are generally ignore. The persistence of mental disorders and their comorbidity suggests that the treatment gap for mental disorders among IDPs in Nigeria may be large and leads to chronic disability. The present research findings may help in outlining several types of psychological counselling for IDPs. Moreover, it would also help in the pursuits of planning rehabilitation of internally displaced persons. Therefore:

- A structured psycho-social intervention for the IDPs targeted at dealing with the consequences of psycho-trauma should be put in place and a weekly mental health clinic should be set up in the camp to help those IDPs with mental distress.

- The government of Nigeria should seek to provide more durable long-term solutions to alleviate the psychological and traumatic experiences of the IDPs, including strengthening socioeconomic conditions. Providing economic opportunities may not only improve the living standards of IDPs but will lead to better mental health outcomes among this population.

- The findings of this study highlight the need for comprehensive evidence-based approaches that recognize and treat multiple disorders.
- Further research is required on the persistence of mental disorders in long-term displaced populations and returnees, and the effectiveness of interventions to address them.

CONCLUSION

Mental disorders such as Depression and PTSD are common among young IDPs, yet these persons exhibit poor literacy of mental health. Various socioeconomic factors are responsible for these, as these young IDPs also lack access to mental health information and services, which exacerbates the poor mental health condition of young IDPs. In order to curb this menace, it is therefore important that long-lasting efforts be made to improve the mental health of young persons living in IDP camps. This would necessitate concerted efforts from community stakeholders, health professionals, researchers, and other stakeholders to co-create community and evidence-based mental health interventions for young people living in IDP camps. Also, local and national policies aimed at improving mental health of young IDPs should be adopted.

KEY MESSAGES

The Known

- Internally displaced persons experience many mental health disorders including generalized anxiety disorder, depression, post-traumatic stress disorders among others due to several factors such as traumatic experiences and forced displacement.

The New

- Mental health literacy and the double burden of mental health disorders among internally displaced persons.
- The association between family type and the occurrence of mental health disorders.
- The persistence of mental disorders and their comorbidity suggests that the treatment gap for mental disorders among IDPs in Nigeria may be large and leads to chronic disability.
- The government of Nigeria should seek to provide more durable long-term solutions to alleviate the psychological and traumatic experiences of IDPs, including strengthening socioeconomic conditions.

DECLARATIONS

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Authors´ contributions

IIO, MAA, and RIO were involved in the study conceptualization and design. RIO and TAO were involved in the literature review and data collection. IIO and MAA were involved in the data analysis. IIO, RIO, MAA, and TAO wrote the first draft of the manuscript. RIO and MAA wrote the second and third draft of the manuscript. All authors contributed and agreed to the final draft of the manuscript.

Conflict of Interest

The authors declare that there is no conflict of interests.

Disclaimer: Funding bodies had no role in the research activity. All authors were independent of the funders and had access to the study data.

Ethical Approval

Ethical approval was obtained from the Federal Capital Territory Health Research and Ethics Committee, Abuja with code no (FHREC/2021/01/04/18-01-21).

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Informed consent

Informed consent was obtained from each participant prior to data collection. For participants aged 13 -17 years, assent was additionally obtained from their parents and/or guardians.

Study registration

Not Applicable

Patient consent for publication: Not required.

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