Mental Health of Teachers: Teachers' Stress, Anxiety and Depression among Secondary Schools in Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Authors FTA and VOL designed the study and wrote the protocol. Author VOL preformed the statistical analysis, managed the literature search and wrote the first draft of the manuscript with assistance from author FTA. Both authors read and approved the final manuscript.

Article Information

Original Research Article

ABSTRACT

Aim: This study explored the prevalence of teachers stress (TS), depression (D) and generalized anxiety disorder (GAD) among selected secondary school teachers in Ibadan, Nigeria.
Method: In this descriptive cross sectional study, 471 primary school teachers were selected by a multistage sampling technique. Demographic information was obtained; the Teacher Stress Inventory was used to determine prevalence of teachers' stress and MINI International Neuropsychiatric Interview to determine prevalence of depression and GAD. All analyses were performed with the SPSS, 17.0.
Results: The prevalence of teachers stress was 72.2%, depression, 29.3% and GAD, 29.5%. Multivariate analyses show that female gender, OR 0.51, 95% CI (0.34-0.77), $P = 0.002$ was a protective factors against teachers' stress; being a private school teacher OR = 0.06, 95% CI (0.01-0.47), and being older than 29 years of age OR = 0.10, 95% CI (0.05-0.22), $P = 0.007$ were protective factors against depression; being married OR = 0.28, 95% CI (0.09-0.89), $p = 0.03$ and being older than 29 years of age OR = 0.23, 95% CI (0.11-0.45), $P < 0.001$ were protective factors against GAD.

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Conclusion: Our results are suggestive of incorporating the teachers' mental health program into the school health program.

1. INTRODUCTION

The teaching industry is one of the biggest throughout the whole world and is highly susceptible to physical and psychological health problems. While the physical component of the health of the teacher had received considerable attention in the past, the impact of their occupation on their psychological health had received little attention [1].

Teacher stress can be defined as "the experience by a teacher of unpleasant negative emotions such as anger, frustration, anxiety, depression and nervousness, resulting from some aspect of their work" [2]. Thus, the construct of teachers' health is globally recognized [3-5], although may have a varying contextual interpretation, depending on geography, socioeconomic and cultural factors [6].

Although some researchers have worked on job stress among teachers in South Africa and in Nigeria, there was no study that ever studied the relationship between teachers' stress and psychiatric morbidity. Given the definition of teacher's stress [2], it is expected to be characterized by mood and anxiety symptoms; moreover, the hypothalamo-pituitary adrenal axis (HPA) is central in the neurobiology of stress, anxiety and depression. A substantial body of literature has shown a strong association between stress, anxiety and depression., and depressive and anxiety symptoms have also been reported to commonly result from workplace stress [7,8].

In view of the role of the teachers in the socioeconomic development of a nation, their emotional and mental health requires a lot of attention. This is very relevant in Nigeria, where the standard of education has drastically fallen, and where the issue of mental health had received little attention. This study determined the prevalence and predictors of teachers' stress, anxiety and depression among secondary school teachers in Ibadan.

2. METHODOLOGY

This was a descriptive cross sectional study involving selected secondary schools in Ibadan, Nigeria. The schools were selected from Ibadan North Local Government Area (INLGA) of Oyo State.

2.1 Sampling Population

The study was carried out among teachers from 9 secondary school teachers. We had initially obtained information from the office of the Local Inspector of Education, on the total number of secondary schools in the local government area and were 138 in all. Out of these, 52 were private schools and the rest were government run under the auspices of the Schools Management Board, a subsidiary of the Oyo State Ministry of Education. All the schools were at the time of interview are divided into junior secondary schools and senior secondary schools.

A sample size of 477 was used for the study and was obtained using the sample size formula for descriptive cross sectional study, $n = z^2pq/d^2$ [9], n = desired sample size, z= S.D. at 1.96 ≡ 95% of confidence interval, p =prevalence rate of desired characteristic in the target population (0.5), q = 1-p, q = 1-p, d =degree of accuracy at 95% confidence interval ≡ 0.05 = 384. We anticipated a non-response rate of 80% and therefore, increased our sample to 477.

A multi stage sampling technique was used to select the teachers to be interviewed.

Stage 1: All 138 secondary schools in Ibadan North Local Government were stratified into 86 public and 52 private secondary schools and were listed. The total number of teachers was also obtained and was 4,692.

Stage 2: All 86 public and 52 private secondary schools were further classified based on the 12 local government wards in Ibadan North Local Government.

Stage 3: For both private and public schools, a school was randomly selected from each local government ward.

Stage 4: Based on the ratio of the public to private schools which is about 3;2, since there were only 12 local government wards, 9 public schools wards and 6 private schools were

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randomly selected for the study. The random selection was carried out using a table of random numbers.

Stage 5: Since the number of teachers differs in each school, the number that was interviewed was determined by proportional sampling method.

Stage 6: All selected schools were listed in both groups, and total number of teachers in each of the listed schools obtained from the respective heads of the schools.

The first teacher was randomly selected and others were consecutively interviewed until the sample size in that school was met.

Stage 7: The selected teachers were allocated tallies on which the serial number on their questionnaire was written. The serial number provided a means of maintaining confidentiality and accountability throughout the study period.

2.2 Measures

2.2.1 Socio-demographic teacher specific questionnaire

This is a pre-tested, pre-coded questionnaire developed by the researcher to collect information about the respondents' socio-demographic characteristics such as age, length of job experience, marital status, number of children, salary and other job characteristics etc.

2.2.2 Teacher stress inventory TSI

This is a psychometrically valid and reliable self-administered instrument that assesses teachers [10]. This inventory proposed a means of measuring the complex entity of occupational teacher stress. The questionnaire comprised three sections: one consisted of the biographic variables; the second section involved 49 stress-related questions. It is rated on a five point likert scale ranging from strongly disagree, disagree, neutral, agree, and strongly agree.

During the pilot study (not part of the current study), 50 teachers constituting about 10% of the proposed sample size (not part of the study sample) were selected to determine the psychometric properties of the TSI which is novel in Nigerian studies. This was carried out by comparing the TSI with the Maslach Burnout Inventory (MBI) which has been validated for use

in Nigeria [11]. The reliability coefficients of TSI, when compared with the three subscales of MBI were 0.81, 0.79, and 0.88. Cronbach α was 0.77. A test retest analysis of the TSI was carried out after a time interval of 14 days. No inter-rater reliability was carried out on TSI being self-administered. During the pilot study, an in-depth interview was conducted to source for issues of concern for the teachers. The findings were thereafter used in constructing questions added to the socio-demographic questionnaire that was used for the study.

2.2.3 Hospital anxiety and depressive scale (HADS)

Hospital Anxiety and Depression Scale (HADS) is a 7-item self-administered instrument used to screen for the presence of depression and anxiety. The HADS contains fourteen items on a 4-point likert scale that generates ordinal data. Seven of the items relate to anxiety and seven relate to depression. It has been validated in Nigeria [12]. The anxiety sub-scale has a sensitivity of 85.0% in the medical unit and 92.9% in the obstetric unit. Each item on the questionnaire is scored from 0-3. The implication of this is that each respondent can score between 0 and 21 for either anxiety or depression.

2.2.4 Mini international neuropsychiatric interview (M.I.N.I. Plus)

The Mini-International Neuropsychiatric Interview (M.I.N.I.) was used to establish the diagnosis of anxiety or depression, according to ICD 10 and DSM IV criteria. The MINI Plus 5.0.0 was developed from the MINI [13] as an efficient diagnostic interview, to be used in clinical as well as research settings, and follows *DSM-IV* and ICD-10 criteria. The MINI has cross cultural reliability and validity and has previously been used in Nigeria [14].

2.3 Ethical Considerations

Ethical approval was obtained from the Oyo State Ministry of Health Ethical Board. Permission was also obtained from the Ministry of Education. Written informed consent was obtained from each participant and confidentiality was maintained for information obtained from each of them. All participants detected to have any health condition were also advised to seek medical intervention. A copyright permission was sought from Michael Fimian via his e-mail

address Fimian@InstructionalTech.net. This requirement is stipulated on the website for prospective researchers.

The administration of research instruments was in two stages, the first being the administration of the Teachers' Stress Inventory and the Hospital Anxiety and Depression scale, the second was the administration of the MINI Plus, to respondents who tested positive to the Hospital Anxiety and Depression Scale (HADS) and 10% of those who did not.

The average administration time for the questionnaires was about 30 minutes. Efforts were made to ensure that study was conducted during the break time and shortly after school period. This was to avoid any disruption in the routine activities of the participants.

2.4 Data Analysis

The data were analyzed using the Statistical Package for Social Science (SPSS version 16.0). The results are presented using descriptive and inferential statistical methods. Summary statistics such as means, frequency tables and standard deviations are also produced. Pearson's chi square statistics was used to examine the relationship between the categorical variables. The median ages of the two groups of public school were compared using Mann-Whitney U test. In order to reduce the chances of obtaining false-positive results (type I errors) all significant Chi square statistics were Yates corrected for single pairwise comparison and Bonferroni corrected for multiple pairwise comparisons. The Correlation between stress as determined by the Teachers' Stress Scale depression and anxiety was determined using Spearman Rho Correlation. For multivariate analyses, all variables that had significant association with Teachers stress, depression and anxiety during univariate analyses were entered into the logistic regression equation. All analyses were set at 95% CI, $p < 0.05$.

3. RESULTS

Of the 477 participants interviewed, 112 (23.7%) screened positive for anxiety and depression, these subjects and a further 10% of those who screened negative were administered the MINI Plus to establish diagnoses of depression and anxiety disorder respectively.

Results show that of all respondents, 227 (48.2%) were of the male gender, 299 (63.8%) were ever married, 309 (65.6%) were from public schools and median age was 38 years. Significantly higher proportions of public school teachers were females 172 (55.7%) $P = 0.03$ and were never married 128 (41.4%) $P = 0.002$. Prevalence of stress as determined by the Teachers' Stress Scale was 340 (72.2%), depression was 43 (29.3%), generalized anxiety disorder 44 (29.5%).

Factors associated with the presence of Teachers' stress were male gender, $P = 0.001$; and being married, $P = 0.04$ (Table 1).

Factors associated with the presence of depression were ages 20 and 29 years, $P < 0.001$; and being a public school teacher, $P < 0.001$ (Table 2).

Factors associated with generalized anxiety disorder were being unmarried, $P = 0.02$; age group 20-29 years, $P < 0.001$ and being a public school teacher, $P = 0.01$ (Table 3).

There was a positive correlation between teachers' stress, anxiety disorder and depression, $P < 0.001$ respectively (Table 4).

Multivariate analyses showed that female gender was a protective factor against: Teachers' Stress, OR = 0.51, 95% CI (0.34-0.77), $P = 0.002$; being a public school teacher OR = 0.06, 95% CI (0.01-0.47), and being older than 29 years of age OR = 0.10, 95% CI (0.05-0.22), $P = 0.007$ were protective factors against depression; being married OR = 0.28, 95% CI (0.09-0.89), p = 0.03 and being older than 29 years of age OR = 0.23, 95% CI (0.11-0.45), $p < 0.001$ were protective factors against anxiety disorder (Table 5).

4. DISCUSSION

We assessed the prevalence of teachers' stress, depression and generalized anxiety disorder (GAD) among teachers in both private and public secondary schools in Ibadan, Nigeria in the year 2014 and observed that 7 out every 10 teachers had teachers' stress, about 3 out of every 10 teachers had depression, about 3 out of every 10 also had generalized anxiety disorder. We found that women were less likely to have teachers' stress. In addition, older teachers and those teaching in private schools were less likely to have depression, while older teachers and those who were married were less likely to have GAD.

Table 1. Demographic characteristics of respondents with stress using teachers' stress questionnaire (N = 471)

Variable	Teacher stress		x^2	P
	Yes (%)	No (%)		
Gender				
Male	182 (79.5)	47 (20.5)	11.1[y]	0.001
Female	158 (65.3)	84 (34.7)		
Marital status				
Married	136 (78.2)	38 (21.8)	4.4[y]	0.04
Un married	204 (68.7)	93 (31.3)		
Age group				
20-29	89 (74.2)	31 (25.8)	2.4	0.5
30-39	101 (73.7)	36 (26.3)		
40-49	121 (68.4)	56 (31.6)		
50-59	29 (78.4)	8 (21.6)		
Type of school				
Public	219 (70.6)	91 (29.4)	1.1	0.3
Private	121 (75.2)	40 (24.8)		
Class grade				
Jnr and Snr Only	278 (71.8)	109 (28.2)	0.1	0.71
Jnr and Snr combined	62 (73.8)	22 (26.2)		
Length of service*				
≤9 years	184 (75.7)	59 (24.3)	3.1	0.08
>9 years	156 (68.4)	72 (31.6)		
Subjects taught				
Arts	133 (72.7)	50 (27.3)	0.3	0.85
Science	152 (71.0)	62 (29.0)		
Commercial	55 (74.3)	19 (25.7)		

: Median number of years (9 years), y: Yates corrected

Table 2. Demographic characteristics of respondents with depression (N = 149)

Variable	Depression		x^2	P
	Yes (%) N = 43	No (%) N =106		
Gender				
Male	18 (28.4)	46 (70.6)	0.03	0.86
Female	25 (29.4)	60 (70.6)		
Marital status				
Ever married	-	37 (100)	-	-
Never married	43 (38.4)	69 (61.6)		
Age group				
20-29	37 (44.0)	47 (56.0)	19.1[y]	<.001
30-39	6 (9.5)	57 (90.5)		
40-49	-	2 (100)		
Type of school				
Public	42 (44.7)	52 (55.3)	29.0[y]	<0.001
Private	1 (1.8)	54 (98.2)		
Class grade				
Jnr and Snr only	40 (32.5)	83 (67.5)	3.6[y]	0.06
Jnr and Snr combined	3 (11.5)	23 (88.5)		
Length of service*				
≤9 years	43 (28.9)	106 (71.1)	-	-
>9 years	-	-		
Subjects taught				
Arts	11 (20.8)	42 (79.2)	3.3	0.19
Science	24 (35.8)	43 (64.2)		
Commercial	8 (27.6)	21 (72.4)		

: Median number of years (9 years), y:Yates corrected

Table 3. Demographic characteristics of respondents with anxiety (N = 149)

Variable	Gen anxiety disorder		x^2	*P*
	Yes (%)	No (%)		
Gender				
Male	18 (28.1)	46 (70.6)	0.1	0.74
Female	26 (30.6)	59 (69.4)		
Marital status				
Ever married	5 (13.5)	32 (86.5)	5.1 [y]	0.02
Never married	39 (34.8)	73 (65.2)		
Age group				
20-29	35 (41.7)	49 (58.3)	12.3 [y]	<0.001
30-49	9 (12.7)	56 (87.3)		
Type of school				
Public	35 (37.2)	59 (62.8)	6.3 [y]	0.01
Private	9 (16.4)	46 (83.6)		
Class grade				
Jnr and Snr only	36 (29.3)	87 (70.7)	0.02	0.88
Jnr and Snr combined	8 (30.8)	18 (69.2)		
Length of service*				
≤9 years	44 (29.5)	105 (70.5)	-	-
>9 years	-	-		
Subjects taught				
Arts	13 (24.5)	40 (75.5)	2.3	0.3
Science	24 (35.8)	43 (64.2)		
Commercial	7 (24.1)	22 (75.9)		

* Median number of years (9 years) y: Yates corrected Chi^2

Table 4. Correlation between teachers' stress, anxiety disorder and depression

Measures		TSI [a]	Depression	Anxiety disorder
TSI	r [e]	1.000	0.56	0.71
	sig	-	0.002	0.000
Depression	r [e]	0.03	1.000	0.61
	sig	0.47	-	<0.001
Anxiety disorder	r [e]	0.02	0.61	1.000
	sig	0.66	<0.001	-

Table 5. Logistic regression of predictors of (prediction 71.8%) variables in the equation

Teachers' stress	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% CI for Exp(B)	
						Upper	Lower	Upper
Never married	-.417	.225	3.420	1	.064	.659	.424	1.025
Female gender	**-.675**	**.213**	**10.055**	**1**	**.002**	.509	.336	.773
Constant	2.672	.515	26.908	1	.000	14.470		
Depression								
Private school	**-2.804**	**1.049**	**7.152**	**1**	**.007**	.061	.008	.473
Teach all classes	-.584	.690	.717	1	.397	.557	.144	2.157
Age 20-29 years	**-2.302**	**.399**	**33.317**	**1**	**.000**	.100	.046	.219
Constant	5.310	1.293	16.854	1	.000	20.401		
GAD								
Private school	-.164	.436	.142	1	.706	.849	.361	1.993
Ever married	**-1.273**	**.590**	**4.652**	**1**	**.031**	.280	.088	.890
Age 20-29 years	**-1.486**	**.372**	**15.941**	**1**	**.000**	.226	.109	.469
Constant	2.211	.716	9.542	1	.002	9.123		

The prevalence of stress in this report, is higher than that reported among some earlier studies that were carried in Nigeria among primary school teachers [15], and secondary school teachers [16]. However, higher rates of about 8 of every 10 teachers have been reported in

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Nigeria among secondary school teachers [17] and school principals [18]. Nevertheless, figures reported from studies carried out in South Africa also reveals similar figures [19,20]. The prevalence of teachers' stress that we report herein, being highly comparable to the figures obtained from previous studies that utilized the Maslach Burnout Inventory, reiterates the validity of our result.

The gender variability in teachers stress is in support of some previous reports [21,22]. It is likely that male teachers are less expressive, while their female counterparts engage more in good rapport with the students [23]. It is also likely that the stress in the men was partially accounted for by other responsibilities expected of men in other areas of life.

Our univariate analysis shows that those who were married significantly reported teachers' stress, although our regression analysis did not confirm this, generally, being married would confer additional responsibilities and demands for the teacher, while men are expected to gather additional financial responsibilities, women could carry a disproportionate share of household chores and other domestic commitments in addition to teaching [24].

In support of previous research evidences indicating a high prevalence of psychological distress [1,25], and specifically depression, among teachers [26], we found a high prevalence of depression and GAD in our sample. The prevalence of depression reported in this study, is five folds higher than a recent report among teachers, who were victims of a major disaster in China [26]. This suggests the presence of culture specific contextual factors responsible for the high prevalence of depression and anxiety in our sample or the tendency of the Asians to be less expressive of their emotional problems [27]. The prevalence of depression reported in the current work is almost tenfold higher than what obtains among adult Nigerians in the community [28], while the prevalence of anxiety disorder in this is almost fivefold of the reported prevalence during the Nigerian Survey of Mental Health and Well Being [29].

Our univariate analyses also show that older teachers and private school teachers were less likely to have depression; these categories of teachers and those who are married were also less likely to have generalized anxiety disorder. It is likely that the organizational system of private schools is superior to that of government owned schools. It is also possible that there is high job demand, poor governmental and social support from the government for teachers working in public schools.

Borrelli and colleagues recently found that about half of the teachers scored above the threshold for depression, while about 1 in 10 have symptoms of anxiety disorders, attributable to high job demand and lack of support [30]. Specifically, in Oyo State of Nigeria, certain factors have been identified as determinants of poor academic performance among students. These include "poor and non - conducive environment", poor school location, inconsistent government policies, high student- teacher ratio, lack of monitoring and evaluation machinery [31]. These factors are also potential sources of depression and anxiety among the teachers, most especially the younger ones, who are more likely to have perceived themselves as having invested their career in a poor system. Among respondents who were married, marriage could act as succor for the work related mental health challenges of the teachers.

We found a significant correlation between teachers' stress and depression or anxiety. It has been noted stress has a substantial relationship with the onset of major depression, and that there is a non-causal relationship in only a third of cases of depression [32]. More recently, it was found that excessive workload, job burnout, and depression were significantly correlated with each other [33]. Our findings also fit with the well-recognized anxiety-depression continuum, and further suggest de-emphasizing a nosology that creates boundaries between the two clinical conditions [34].

Our regression analyses bring a number of suggestions; the three constructs that were assessed have differing predictors despite their significant correlation. This may suggest that although, the three are interrelated, they still have distinguishable differences. Our report indicates that the teachers are a hidden clinical population who require psychiatric intervention for their mental health problems. Yet they are less inclined to seek intervention for this for a number of reasons. First is that symptoms of depression and anxiety disorder may be characterized by physical symptoms, making such individuals to visit their primary care physicians for these health concerns. Secondly, is the low detection rate of psychiatric morbidity, most especially depression among primary care physicians [35].

Our findings have implications for school health services. School health services should include mental health services directed not only to the students, but also to the teachers. Furthermore, our results call for improvement in the organizational structure of the teaching industry in Nigeria, most especially, the public schools. Our results may be applicable to other schools in Nigeria, most especially the public schools, given similar organizational structures in all the teaching service commissions in the country.

5. LIMITATIONS OF THE CURRENT STUDY

This study has a number of limitations. These include design of the study and demographic limitations. These limitations are discussed in further details herein.

6. LIMITATIONS IN STUDY DESIGN

The cross-sectional design of the study did not allow the ascertainment of the temporal order in the associations of teacher stress, major depressive disorder and generalized anxiety disorder. In addition, the study design makes it difficult to distinguish between incident and prevalent cases of our outcome variables. Furthermore, the cross sectional nature of the illness makes it difficult to propound alternative explanations for the results of the present study. This study did not explore the coping mechanisms employed by the teachers, as such; recommendations on possible negative coping mechanisms cannot be proffered. The self-administered nature of some of the instruments could be subject to bias.

7. DEMOGRAPHIC LIMITATIONS

There is also the possibility of significant under-reporting due to an erroneous belief, that disclosing their mental health challenges could hamper their work. This is due to the stigma generally associated with mental illnesses. Studies have shown that a large proportion of workers who have mental disorders do not disclose their mental health challenges because of "fear of negative repercussions" [36].

8. CONCLUSIONS AND FUTURE STUDIES

Teachers have a high prevalence rate of stress, depression and anxiety disorders. Yet, they are less likely to seek medical intervention for their mental health concerns. Our findings call for stepping up of the organizational system most especially of the public schools. This is very relevant considering the fact that the socioeconomic level of an average Nigerian family, who may not be able to afford the cost of public schools. Future studies require designing a system of periodic mental health screening and evaluation of teachers and also follow up teachers who have stress, over a period of time to determine the possibility of any conversion into any psychiatric morbidity.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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