ORIGINAL ARTICLE

Prevalence and Predictors of Depression among the Elderly in selected Rural Communities in Delta State, Nigeria

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ABSTRACT

Background: Geriatric depression is sometimes unrecognized by clinicians and often, depressive symptoms are attributed to the ageing process. The objective of this study was to determine the prevalence and predictors of depression in the elderly in selected rural communities in Delta State, Nigeria.

Methods: This descriptive, cross sectional study was carried out in three rural communities in Ukwuani LGA, in Delta State Nigeria. The study population comprised 600 elderly, 60 years and above, selected using a multi stage sampling technique living within households in the communities. Data was collected by a structured interviewer-administered questionnaire which included the Geriatric Depression Scale (GDS). Data was analysed using the IBM SPSS version 21 and statistical association was considered significant at p<0.05.

Results: The mean (SD) age of respondents was 68.3 (7.1) years [median age= 67.0 years]. Data showed a prevalence of depression of 268 (44.7%). Being older than 70 years (p=0.006) and having a little or no formal education (p<0.001) was associated with depression in the elderly. However, logistic regression showed that educational status was the only significant predictor of depression in the elderly in this survey OR (95% CI) = 0.633 (0.516-0.776), p<0.001.

Conclusion: The prevalence of depression in the study population was significantly associated with a lack of formal education among respondents. Improving universal basic education coverage and providing employment opportunities will thus reduce the burden of depression among the elderly in the upcoming generation.

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INTRODUCTION

Depression is a mental health disorder that is characterized by extreme sadness and or loss of interest in activities that were once pleasurable. Depression is among the health problems which many people experience at least once in their life time.[1] It is the leading cause of disability worldwide in terms of total years lost due to disability and it is predicted

to be the leading cause of disease burden by 2030.[1] Depressive disorders are common in all parts of the world. There is a bidirectional relationship between depression and chronic morbidities. Depressive disorders tend to be common in old age and can affect the outcome of common chronic conditions such as arthritis, cardiovascular disease, cancer and diabetes.[1, 2] Despite the fact that it has been predicted to be the second leading cause of global disease burden by 2030, majority of those affected are not aware of their health condition, and only a few are seen in our primary and secondary health facilities where few research has been done.[1, 2] Low and middle income countries such as Nigeria, experience double epidemic from upsurge of both communicable and non-communicable disease of which depression contributes significantly to.[3] Paradoxically, disproportionately low percentage of gross domestic product is allocated to the health sector in such nations.[3] This raises the needs to study non-communicable disease such as depression in such low income countries such as Nigeria with a view of providing prevention strategies following the outcome of the study. Many undiagnosed cases are in the community, hence the need for community screening to detect this seemingly underserved group.[4, 5] Geriatric depression is mostly not recognized by clinicians and often depressive symptoms are attributed to the ageing process.[1, 3 ,6, 7] Also, elderly persons emphasize somatic symptoms and under report depressive mood.[1, 3, 8, 9]

Many epidemiological studies on prevalence and risk factors of depression have focused on population in urban areas.[4-6, 9] Few studies have examined elderly in rural setting.[7, 8] More epidemiological studies are needed in rural areas, which would provide baseline information for future reference, as well as for depression prevention and control in Nigeria. A review of studies done locally shows that some work has been done in health facilities as well as in urban areas.[10-12] There is paucity of research carried out in the elderly in rural areas. A study to estimate the occurrence and effect of major depressive disorders among the elderly was carried out in a community in Ibadan, Nigeria.[7] The result showed that lifetime and 12 month prevalence of major depressive disorders were 26.2% and 7.1%, respectively. Female sex (OR 1.9) and increasing levels of urbanization of residence (OR 1.4) were associated with this disorder. Only about 37% of lifetime cases had received any treatment. A study was carried out among the elderly aged 60 to 90 years attending the General Out-patient Clinics of University of Uyo Teaching Hospital for medical conditions.[9] This study was aimed at determining the proportion of depression among the study subjects. From the study, 45.2% were depressed, and the proportion of depression was observed to be higher in females (59.3%).

In the international scene, a descriptive cross-sectional study was done among elderly community residents in Kerala, India.[14] That study aimed to estimate the prevalence of depression disorders as well as to identify factors associated with later-life depression. The result elicited a depression prevalence rate of 39.1%. Mild and moderate depression had a combined prevalence of 30.9% while severe depressive disorder affected 8.2% of the older people. The depression rate was twice as high for women compared to men. The subjects with significant adverse event in the past were at higher risk for depression. It was noted that the cases of depression diagnosed in the community were not on any form of care even though they have visited the primary care centres on account of ill health. It was then suggested that primary care physicians should be trained on ability to recognize depression when they appear in the health facility because such facilities serve as first point of contact

with the health system.[14] Assessment for depression was done among 300 elderly Sudanese age 60 years and above using a cross-sectional household survey design.[15] This study showed that depression rate was 47.5% and that, depression was significantly associated with age (p=0.002), level of education (p=0.015), occupation (p<0.001), the problems of everyday living (p= 0.025), and social problems (p<0.001).

Community-based cross-sectional study was conducted in Harar, Ethiopia in 2012, among the elderly.[16] The aim of the study was to determine the prevalence and associated factors of depression among old age population. The result showed prevalence rate of 28.5%. Being female, not married, those with no formal education, living alone, those who had chronic illness and elderly with cognitive impairments, as well as substance abuse were factors associated with depression.[16] The objective of this study was to determine the prevalence and predictors of depression in the elderly in selected rural communities in Delta State, Nigeria.

METHODOLOGY

This study was carried out in three rural communities (Obiaruku, Ebedei and Umuaja) in Ukwuani Local Government Area (LGA), which is one of the 21 LGAs in Delta State Nigeria and located in the Delta North Senatorial district. The main economic activities in these communities are subsistence farming, fishing, trading, mining of sharp sand and stones from the River Ethiope. Each community has at least a primary health centre. In addition, Obiaruku has a general hospital however patent medicine stores can be seen in the respective communities. Christianity is the predominant religion in these communities however there are also practitioners of the African Traditional Religion. The study population comprised the elderly, 60 years and above, living within households in the community. It was a descriptive cross-sectional study with a total of 600 respondents participating in the survey. Sample size was determined using the Cochran Formula for sample size i.e n= z^2pq/d^2. A prevalence of 49.8% for depression in the elderly as cited in the Kano study by Salihu and Udofia[11] was entered into the formula to give a minimum sample size of 384 [z=1.96, d=0.05]. However, 600 respondents were recruited for the study.

A multistage sampling technique was used to select participants for the survey. Three communities were randomly selected from the 15 communities in the LGA, out of which 3 quarters were selected from each community (i.e. clusters from Obiaruku, Ebedei and Umuaja communities) and all elderly respondents that met the inclusion criteria (i.e. 60 years and above, not presenting with an acute illness or acute exacerbation of a chronic illness, no bereavement to kith and kin in the last two months; and living within households in the community) in the selected quarters were subsequently recruited and interviewed at the household level. Data was collected over the course of four weeks (February- March, 2017).

A structured interviewer administered questionnaire with two sections was used. Section A elicited information on demographic characteristics of respondents while section B profiled the depression pattern of the individual using the Geriatric Depression Scale (short form). [17] This scale comprised of 15 questions of the "YES or NO" type screening for depression in respondents. Answers indicating depression were in **bold** and ***italicized*** type, e.g. *are you basically satisfied with your life?* YES**/ NO. (NO** *as a response* in this question signified depression and was given a score of 1)**.** Therefore a score of one (1) point was given for each response selected that

signified depression, a point of zero (0) was given for each response selected that did not signify depression. A total score of 0-5 was considered non-depressed while a total score above 5 suggested depression. Research assistants were given a one day training on the purpose and manner of administration of the geriatric depression scale (short form) questionnaire as a survey tool. Thirty two questionnaires were pre-tested among elderly in Abraka town, Ethiope East L.GA of Delta State to assess ease of comprehension by respondents and average time required to fill the questionnaire by researchers and assistants.

During the survey, filled questionnaires were checked for completeness, sorted, entered and analysed using the Statistical Package for Scientific Solutions (IBM SPSS) version 21 statistical software. Test of association was carried out using the chi square test, statistical significance was set at p<0.05. Logistic regression analysis was done to determine independent predictors of depression in the elderly. The possible predictors of depression (such as age, gender, marital status, educational status, occupation and retirement status) were inputted into a binary logistic regression model, subsequently, possible predictors of depression in the elderly and their respective measures of effect and confidence intervals [OR (95%CI)] were recorded. Data was presented in prose, tables and figures. Ethical approval was obtained from the Health Research and Ethics Committee (HREC) of the Delta State University Teaching Hospital. Permission was obtained from the Local Government Authority and community leaders. Individual informed consent was obtained from respondents after explaining to them the purpose of the survey and assuring them of voluntariness, anonymity and confidentiality.

After the individual interview session (using interpreters as required) "depression" was briefly explained to respondents outlining what it was, its clinical features, treatment options and preventive strategies. The survey was the initial part of a broader community outreach, thus health educational interventions were subsequently carried out in the market, places of worship and community square by health professionals and medical students. Referrals were made to the nearby General Hospital and Primary Health Centres for further management of respondents screened as depressed.

RESULTS

Table 1 shows the socio-demographic characteristics of respondents. Six hundred respondents who were 60 years and above, participated in this survey, Four hundred and seventeen (69.5%) of the respondents were aged between 60-70years. The mean (±SD) age of respondents was 68.3 (±7.1) years [median age= 67.0 years]. A higher proportion of the respondents 313 (52.2%) were female, 521 (86.8%) were married, 439 (73.2%) were Christians and 539 (89.8%) were of Ukwuani ethnic group. The highest proportion of respondents 205 (34.2%), had at least primary level of education, 363 (60.5%) of the respondents were farmers and 398 (66.3%) were not retired from frequent business/ work activity.

Table 2 is a contingency table showing possible association of socio-demographic characteristics of respondents and presence of depression. The data showed that respondents who were screened as depressed were 268 (44.7%). Age (p=0.006) and educational status (p<0.001) had a significant association with depression. Proportionally more respondents who were 70 years and above were depressed 97 (53.0%), however data showed that the proportion of respondents categorized as

depressed reduced with increasing educational attainment primary (45.6%), secondary (39.1%) and tertiary (17.4%).

Table 1: Sociodemographic characteristics of respondents

Characteristic	Frequency (n=600)	Percent
Age (years)		
60-70	417	69.5
>70	183	30.5
Mean (SD)	*68.3 (7.1)*	
Gender		
Male	287	47.8
Female	313	52.2
Marital status		
Married	521	86.8
Unmarried	79	13.2
Religion		
Christianity	439	73.2
Islam	3	0.5
ATR	151	25.2
Others	7	1.2
Ethnic group		
Ukwuani	539	89.8
Urhobo	14	2.3
Others	47	7.8
Educational status		
None	180	30.0
Primary	205	34.2
Secondary	169	28.2
Tertiary	46	7.7
Occupation		
None	23	3.8
Farming	363	60.5
Business/ trading	105	17.5
Teaching	35	5.8
Others	74	12.3
Retired (from frequent business/ work activity)		
Yes	202	33.7
No	398	66.3

Table 3 is showing the output of a logistic regression analysis of possible predictors of depression among respondents. Following the regression analysis, educational status was found to be the only significant predictor of depression in respondents among the various factors entered into the regression model OR (95%CI) = 0.633 (0.516-0.776), p<0.001. However, age OR (95%CI) = 1.011 (0.986-1.037), p=0.407, gender OR (95%CI) = 0.869 (0.616-0.516), p=0.423, marital status OR (95%CI) = 0.797 (0.486-1.307), p=0.368, occupation OR (95%CI) = 1.037 (0.880=1.223), p=0.665 and retirement status OR (95%CI) = 0.886 (0.612-1.284), p=0.523 were not significant predictors of depression.

DISCUSSION

The high prevalence of depression in this study (44.7%) is indicative of high burden due to depression among older people in the community. This high prevalence supports the prediction given by the World Health Organisation which stated that by 2020 depression would account for 5.7% of the total global burden of disease. [1, 2] This prevalence of 44.7% is comparable to that obtained from a community based study in Khartoum State,[15] Sudan (47.5%), but higher than that of a research carried out Ethiopia[16] (28.5%) and Kerala, India (39.1%).[14] The depression rate in this study was also higher than that reported in Port Harcourt (28.0%).[18] These differences may partly be attributed to the study setting.

Whereas the Port-Harcourt study was hospital-based, those of Ethiopia and Sudan were community-based studies. This high prevalence rate seen in this study may be explained by the increased morbidity usually seen in advanced age, though this study did not seek for morbidity history from the subjects. Increased morbidity is associated with high rates of depression.[5, 7] As one ages, degenerative changes also increases, which in turn leads to increase morbidity.[3, 9] There is a reciprocal relationship between chronic morbidity and depression.[1, 12]

Table 2: Sociodemographic characteristics and depression in respondents

Characteristic	Freq. (%)		χ²/ df	p-value
	Non-depressed (n=332)	Depressed (n=268)		
Age (years)				
60-70	246 (59.0)	171 (41.0)	7.408/1	0.006
>70	86 (47.1)	97 (53.0)		
Gender				
Male	158 (55.1)	129 (44.9)		
Female	174 (55.6)	139 (44.4)	0.018/1	0.895
Marital status				
Married	287 (55.1)	234 (44.9)		
Unmarried	45 (57.0)	34 (43.0)	0.098/1	0.755
Educational status				
None	80 (44.4)	100 (55.6)		
Primary	111 (54.1)	94 (45.6)		
Secondary	103 (60.9)	66 (39.1)		
Tertiary	38 (82.6)	8 (17.4)	24.753/3	*<0.001
Occupation				
None	6 (26.1)	17 (73.9)		
Farming	202 (55.6)	161 (44.4)		
Business/ trading	62 (59.0)	43 (41.0)		
Teaching	21 (60.0)	14 (40.0)		
Others	41 (55.4)	33 (44.6)	8.869/4	0.064
Retired (from frequent business/ work activity)				
Yes	109 (54.0)	93 (46.0)		
No	223 (56.0)	173 (44.0)	0.232/1	0.630

*Significant at p<0.05

Table 3: Regression analysis of possible predictors of depression among respondents

Factor	OR	95% (Confidence Interval)		p-value
		Min.	Max.	
Age	1.011	0.986	1.037	0.407
Gender	0.869	0.616	1.225	0.423
Education status	0.633	0.516	0.776	<0.001
Marital status	0.797	0.486	1.307	0.368
Occupation	1.037	0.880	1.223	0.665
Retirement status	0.886	0.612	1.284	0.523
Constant	1.192			0.881

It was surprising to note that about two-thirds of the subjects were not retired, whereas in another study the converse was the case. In a similar work done in Kerala, 83.6% were unemployed.[14] The seemingly high proportion of subjects that were not retired in our study could be as a result of their involvement in farming activity. In this study setting, many people retire from the urban setting and move to the rural areas where they remain actively involved in agricultural activities. Retirement in this study context was viewed as non-involvement in productive or economic activity. We however recognize that the retirement age in the civil service system in Nigeria is 60 years which is the lower limit for recruitment of participants in this survey. We found the risk of depression to be almost similar between the male and female population, even though there was a slight

preponderance of the males. The small increase in males is however different from other studies that reported significantly greater risk of depression in females than males. Higher rates of depression in males than females are attributed to a number of factors. Males cannot adapt well to aging-related physical and social power loss which comes with old age.[19] Another factor is the higher work-related stress experienced by males when compared to their female counterparts.[19] A lot of jobs undertaken by men are relatively high risk jobs.[20] Moreover, females have greater psychological well-being than the males which in turn predisposes the males to higher rate of depression.[19]

Though not statistically significant, the likelihood of depression was higher in the married than the unmarried. A contrary finding was noted in the Ethiopia study where the elderly unmarried subjects (single, widow and widower) showed a higher tendency to develop depression.[16] A possible reason for this finding is as a result of commitment and family responsibility on the part of the married.[8] This study highlighted that the prevalence of depression decreased with improvement in educational status. Respondents who had no formal education had the highest prevalence of depression. This finding was comparable to the Port-Harcourt study where respondents with lowest socioeconomic class had the highest prevalence of depression.[18] A possible explanation for this is that education affords people the opportunity to understand their situation in the right perspective against their socio-cultural and economic environment. Education also improves one's likelihood of being employed which in turn could lead to improvement in income, socioeconomic status and thus reduction of depressive illnesses.[2, 8, 20]

A limitation to this study was the fact that the geriatric depression scale (short form) is a screening tool, thus no attempt was made at further categorizing depression based on severity and subsequently exploring factors influencing severity. In conclusion, the prevalence of depression in the study population was high and was associated with increasing age and a lack of formal education among respondents. However, educational status of respondents was the only significant predictor of depression in the elderly. Improving universal basic education coverage and providing employment opportunities will reduce the burden of depression among the elderly in the upcoming generation.

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