

Richard Ademola Adebayo, Andrew Toyin Olagunju, Michael Olanakanmi Olutoki, Babatunde Fadipe, Taiwo Olamide Oduguwa, Rahman Abolore Lawal. *Ethiop Med J*, 2016, Vol. 54, No. 3

ORIGINAL ARTICLE

A FOUR-YEAR REVIEW OF GERIATRIC MENTAL HEALTH SERVICES IN A LAGOS BASED HOSPITAL, NIGERIA

Richard Ademola Adebayo, MD,¹ Andrew Toyin Olagunju, MD,^{2,3*} Michael Olanakanmi Olutoki, MD,¹
Babatunde Fadipe, MD,³ Taiwo Olamide Oduguwa, MD,¹ Rahman Abolore Lawal, MD¹

ABSTRACT

Background: There is a growing global concern about the public health implications of the increasing population of the elderly. One main issue of concern is centered on how to address their mental health needs using home-grown interventions and services. We expect that important lessons on geriatric mental health issues would be brought to fore in this report.

Methods: This is a four-year (2007-2011) retrospective report on the mental health services rendered to 938 clients aged 60 years and above at a Lagos based mental health treatment facility in Nigeria. Designed questionnaires were filled with socio-demographic and clinical data obtained from patients' case notes based on the objectives of the study.

Results: The mean (standard deviation) age of elders was 69.6 (± 7.93) years, and 65.5% were females. Majority were married, self-employed and belonged to low socio-economic status (73.1%, 63.1% and 63.2%, respectively). Close to two-thirds (62.4%) commute for at least one hour to get treatment. The commonest diagnosis was psychotic disorders (34.8%), while 5.5% had Alzheimer's dementia. Some 96.5% of the elders were solely on medications. About a quarter had past history of mental illness and 48.5% reported co-morbid medical conditions, with cardiovascular problems (53.0%) being the commonest physical comorbidity. The middle old along with very old elders (aged ≥ 70 years), and those with at least tertiary education, were more likely to present with dementia. Elders with dementia were more likely to present with index episode of mental illness and receive outpatient care.

Conclusion: The elders were managed for a wide range of treatable mental illnesses and other comorbidities and commute for hours to access care. Pharmacotherapy was the preponderant sole treatment modality. There is need for sustained development of expertise to enhance multimodal care and scaling up of comprehensive geriatric mental health services. Further research is needed on how to appropriately link and/or integrate geriatric care with services at all-tiers of health care delivery.

Keywords: geriatrics; mental health; Nigeria; policy; service design

INTRODUCTION

The current epidemiological trend indicates a marked growth in the population of the elderly worldwide; and in particular the developing countries have been projected to account for substantial proportion of old people in the coming years (1). For instance, recent estimate in Nigeria shows that up to 5.2% of the population is made up of people aged 60 years and above (2). This proportion of the elderly is expected to grow

exponentially(2,3). Significant gaps exist between geriatric health needs and available resources to address geriatric health issues in Nigeria. This gap is wider when mental health related issues are considered (4). For example, mental health services are not just inequitably distributed, but compounded by stigma, deficit resources and lack of expertise among others (4), despite clear indicators of significant mental health morbidities among the elderly in Nigeria (4-6).

A review of literature on the burden of mental health disorders in old-age among Nigerians showed that

¹ Federal Neuropsychiatric Hospital, Yaba, Lagos, Nigeria

² Department of Psychiatry, College of Medicine, University of Lagos, Nigeria

³ Department of Psychiatry, Lagos University Teaching Hospital, Nigeria.

* Corresponding author: aolagunju@unilag.edu.ng

more than one-quarter of the elders suffers from one form of common mental disorders or the other (5,6). Closely linked is that majority of these mental health disorders are poorly identified, untreated and contributes majorly to disability in the elders (6). The non-existent of organized mental health services in many areas, poor access where available, widespread poverty, low health insurance coverage and virtual lack of social security among others have been linked with the existing mental health gaps among the elderly (4,7). Unfortunately, clinical services, professional training and research on geriatric issues still remain inadequate compared to what is needed across the country.

In order to address the growing concern about the physical, psychosocial and health needs of old people, there is need for comprehensive assessment using evidence from research, and this should be matched with involvement of home-grown psychosocial interventions. It is with this intention that we reviewed geriatric mental health service point in Lagos, which is focused on describing the socio-demographic along with clinical characteristics and treatment modalities and correlates of dementia among the elderly. We expect that this will facilitate the dissemination of important lessons and additional research needed to direct the future of mental health services and policy for old people in resource restricted settings.

MATERIALS AND METHODS

This is a retrospective descriptive study focused on old-age mental health services rendered at a Lagos based mental health hospital, which is one of the oldest tertiary mental health hospitals in Nigeria and receiving referral from peripheral hospitals in Lagos and its neighboring states. The hospital provides a wide range of specialized mental health services for large population of patients including Addiction, Emergency, Geriatrics, General Adult, Forensic, Child and Adolescent Psychiatry among others.

The geriatric unit is run by mental health team consisting of two consultant psychiatrists, resident doctors, nurses, clinical psychologists, social workers and occupational therapists. This study covers the period of 2007- 2011 and the study participants are made up of patients aged 60 years and above. This cut-off age for geriatric population is recognized by World Health Organization, used in previous studies (5,6), and the official age of retirement in Nigeria. The age categories were further described in different portions of the

work using previously defined sub-groups into the young old (60 to 69), the middle old (70 to 79), and the very old (80+) (8).

In total, case notes of 938 clients were reviewed to fill pre-designed form containing the information required to address the study objectives. The extracted information was mainly focused on the available data following routine assessments of clients. Some of the elicited information include socio-demographic characteristics (age, gender, employment, marital status, highest education, level of social support, duration from domicile to hospital, socioeconomic status, and living arrangement), diagnoses and treatment related information (diagnosis, use of psychoactive substance, pathway to care, past psychiatric history, physical comorbidity, type of care, comorbid medical conditions, type of medication, and treatment modality).

In order to ensure reliability, data on diagnosis and other treatment related issues were obtained from the clinical information in the patients' case notes based on the review of the consultant psychiatrists. Diagnoses were made based on the criteria stated in the International Classification of Diseases tenth edition (ICD-10) (9). Data analyses were carried out using the 17th edition of Statistical Package for the Social Sciences (SPSS-17)(10). Descriptive statistics including means, frequencies and percentages were used to summarize the data. Chi square and Fisher's exact test were used to ascertain the association between variables of interest. Regression analysis was carried out to determine independent associations. A p-value <0.05 in two-tail was considered statistically significant.

RESULTS

Socio-demographic characteristics of subjects: The subjects' socio-demographic characteristics are presented in Table 1. The mean [standard deviation (SD)] age of the cases was 69.6 (\pm 7.9) years, and slightly more than a third (34.5%) were males, majority were Christians and married (73.1% and 54.3% respectively). Almost one third (29.2%) of the participants did not have formal education, almost two-thirds (63.2%) of them were self-employed, and a similar proportion (63.1%) were of low socio-economic status. Majority (95.6%) of the cases enjoyed both emotional and financial support from their relatives, while slightly more than half of them (55.8%) commuted for between one and two hours from their place of domicile to the treatment centre.

Table 1: Socio-demographic characteristics of patients, mental health hospital, Lagos, Nigeria, -2007-2011

VARIABLE	FREQUENCY (n =938)	PERCENT
AGE CATEGORIES		
60-69	518	55.2
70-79	293	31.2
80-89	108	11.5
≥90	19	2.0
AGE (years)		
Mean(±SD): 69.55(±7.93)yrs		
Range : 60-102yrs		
GENDER		
Male	324	34.5
Female	614	65.5
RELIGION		
Christianity	686	73.1
Islam	244	26.5
Others	3	0.3
MARITAL STATUS		
Single	10	1.1
Married	509	54.3
Separated	17	1.8
Widowed	51	5.4
Divorced	351	37.4
HIGHEST EDUCATION OBTAINED		
None	274	29.2
Primary	150	16.0
Secondary	114	12.2
Tertiary	400	42.6
EMPLOYMENT STATUS		
Self Employed	593	63.2
Employee	135	14.4
Retiree	165	17.6
Never Worked	45	4.8
DURATION FROM DOMICILE TO HOSPITAL		
<1hr	353	37.6
1-2hrs	523	55.8
>2hrs	62	6.6
SOCIOECONOMIC STATUS		
Low	592	63.1
Middle	332	35.4
High	13	1.4
Not determined	1	0.1
LEVELS OF FAMILY SUPPORT		
Financial	32	3.4
Emotional	6	0.6
Financial and Emotional	897	95.6
None	3	0.3
LIVING ARRANGEMENTS		
Alone	64	6.8
Nuclear family [¥]	831	88.6
Other relatives	43	4.6

¥ = includes children, spouse or both

Psychiatric diagnoses, clinical and treatment related variables of subjects: The subjects' diagnosis, clinical and treatment related characteristics are depicted in Table 2. The most common diagnoses were psychotic disorders (34.8%) including paranoid schizophrenia, catatonic schizophrenia, psychotic mood disorders and other unspecified psychotic disorders. Alzheimer's disease comprised 5.5% of all the diagnostic categories.

About a quarter (24.7%) of the respondents had a past history of mental illness with slightly less than half (48.5%) experiencing co-morbid physical/medical conditions/problems. Among the participants who had co-morbid physical health conditions, majority had cardiovascular problems (53.0%). A fifth of the subjects had a positive history of psychoactive substance use. Only about a tenth (9.5%) of the study cases were

referred to the study center from another hospital and majority (83.3%) came directly from home. More than 90% (92.5%) of them were managed as outpatients

and using only medication (96.5%). The most commonly used medication was antipsychotics which were employed in almost two-thirds (59.6%) of the subjects.

Table 2: Diagnoses and treatment related characteristics of patients, mental health hospital, Lagos, Nigeria, -2007-2011

VARIABLE	FREQUENCY (n =938)	PERCENTAGE (%)
Psychiatric Diagnoses		
Alzheimers	52	5.5
Other Dementias	164	7.5
Organic mental disorders	113	12.0
Psychotic disorders	326	34.8
Mood disorders	224	23.9
Substance related disorders	21	2.2
Sleep problems	13	1.4
Seizure disorder	20	2.1
Anxiety disorder	4	0.4
PAST PSYCHIATRIC HISTORY		
Yes	232	24.7
No	706	75.3
PHYSICAL COMORBIDITY		
Yes	455	48.5
No	483	51.5
CO-MORBID PROBLEMS[±]		
Cardiovascular	241	53.0
Diabetes Mellitus	38	8.3
Arthritis	4	0.88
Others	142	31.2
Cardiovascular + Diabetes Mellitus	30	6.6
PSYCHOACTIVE SUBSTANCE USE		
Yes [†]	180	19.2
No	758	80.8
PATHWAY TO CARE		
From home	781	83.3
From other hospital	89	9.5
From Unorthodox facilities	55	5.9
Both	13	1.4
TYPE OF CARE		
Outpatient	868	92.5
Inpatient	70	7.5
TREATMENT MODALITY		
Medication only	902	96.2
Multimodal	36	3.8
TYPES OF MEDICATION		
None	32	3.4
Antipsychotic	559	59.6
Antidepressant	74	7.9
Antidementia	52	5.5
Combination	210	22.4
Others	11	1.2

[±] n = 455

[†] = includes alcohol, 108; tobacco, 17; kolanut, 13; cannabis, 1; multiple substances, 39 and other substances 2.

Correlates of Dementia among subjects: As shown in Tables 3 and 4, socio-demographic, clinical and treatment related variables were tested with two broad diagnostic categories (i.e. dementia and “other diagnosis”).

Following chi-square analysis, age, gender, level of functioning in the previous five years and level of education were the statistically significant. Forty five (41.7%) of the study participants aged between the 80-89 years age group had a diagnosis of dementia compared with 86 (16.6%), 81(27.6%) and 4(21.1%) of those in the 60-69, 70-79 and >90 years age groups, respectively ($\chi^2 = 36.8$, $p = <0.001$). A larger proportion of the male respondents (27.2%) had a diagnosis of dementia compared to the female respondents (20.8%) ($\chi^2 = 4.770$, $p = 0.03$). Thirty seven (32.5%) of 114 patients who had achieved a minimum of tertiary education had a diagnosis of dementia compared with 179 (21.7%) of 824 patients who had achieved less than tertiary level of education ($\chi^2 = 6.508$, $p = 0.01$). About a quarter (25.5%) of the patients who were not functioning in the five years prior to data collection had a diagnosis of dementia compared to less than a fifth (18.2%) of those who were functioning ($\chi^2 = 6.404$, $df=1$, $p = 0.01$).

One hundred and ninety five (27.6%) of 706 elderly patients who had no past history of mental illness had a diagnosis of dementia compared with 21(9.1%) of those who had a positive history of past mental illness ($\chi^2 = 33.968$, $p = <0.001$). With respect to the type of care received by the patients, a larger proportion (24.3%) of elderly patients who received outpatient care had a diagnosis of dementia compared with those who were treated as inpatients (7.1%) ($\chi^2 = 10.769$, $p = 0.001$). Slightly more than a quarter (26.2%) of the patients with a positive history of a medical comorbidity had a diagnosis of dementia compared to about a fifth (20.1%) of those who had a negative history of a comorbid medical condition ($\chi^2 = 4.872$, $p = 0.03$).

Logistic regression analysis was carried out with the diagnosis of dementia as dependent variable.. The identified independent correlates of dementia included being middle old - aged 70-79 years [Odd Ratio (OR) =1.72; 95% Confidence Interval (95%CI) =1.20-2.47; $p =-0.003$], very old -aged 80-89 years (OR =3.35; 95% CI = 2.09-5.37; $p<0.001$) and achieving a minimum of tertiary education (OR =1.94; 95% CI=1.21-3.09; $p=-0.006$). Elders with dementia were more likely to present with index episode of mental illness (OR =0.28; 95% CI=0.174-0.462; $p<0.001$) and receive outpatient care (OR =3.3; 95% CI=1.27-8.58; $p=-0.014$).

Table 3: Socio-demographic correlates of dementia among respondents of patients, mental health hospital, Lagos, Nigeria, -2007-2011

Variable	Dementias n (%)	Other Di- agnosis n (%)	Total (N=938)	χ^2	df	p
<i>Age (Years)</i>						
60-69	86(16.6)	432(83.4)	518	36.8	3	<0.001
70-79	81(27.6)	212(72.4)	293			
80-89	45(41.7)	63(58.3)	108			
>90	4(21.1)	15(78.9)	19			
<i>Gender</i>						
Male	88(27.2)	236(72.8)	324	4.770	1	0.029
Female	128(20.8)	486(79.2)	614			
<i>Religion</i>						
Christianity	163(23.8)	523(76.2)	686	1.034	2	0.596
Islam	52(20.9)	197(79.1)	249			
Others	1(33.3)	2(66.7)	3			
<i>Marital Status</i>						
Married	110(21.6)	399(78.4)	509	1.260	1	0.262
Unmarried	106(24.7)	323(75.3)	429			
<i>Highest Level of Education</i>						
None	91(22.8)	309(77.2)	400	7.174	3	0.067
Primary	55(20.1)	219(79.9)	274			
Secondary	33(22.0)	117(78.0)	150			
Tertiary	37(32.5)	77(67.5)	114			
<i>Level of Education</i>						
< Tertiary	179(21.7)	645(78.3)	824	6.508	1	0.011
At least Tertiary	37(32.5)	77(67.5)	114			
<i>Employment status</i>						
Employed	160(22.0)	568(78.0)	728	2.021	1	0.155
Unemployed	56(26.7)	154(73.3)	210			
<i>Functioning in last 5 years</i>						
Functioning	58(18.2)	261(81.8)	319	6.404	1	0.011
Not functioning	158(25.5)	461(74.5)	619			
<i>Duration from domicile to Hospital</i>						
<1hr	75(21.2)	278(78.8)	353	3.616	2	0.164
1-2hrs	121(23.1)	402(76.9)	523			
>2hrs	20(32.2)	42(67.7)	62			
<i>Living Arrangements</i>						
Alone	13(20.3)	51(79.7)	64	1.517	2	0.468
Nuclear family ^y	196(23.6)	635(76.4)	831			
Other Relatives	7(16.3)	36(83.7)	43			
<i>Socioeconomic Status</i>						
Low	140(23.6)	452(76.4)	592	0.630	3	0.889
Middle	73(22.0)	259(78.0)	332			
High	3(23.1)	10(76.9)	13			
Undetermined	0(0.0)	1(100.0)	1			

Table 4: Diagnostic and treatment-related correlates of dementia among patients, mental health hospital, Lagos, Nigeria, -2007-2011

Variable	Dementias n(%)	Other Diagnosis n(%)	Total (N=938)	χ^2	df	p
<i>Past Psychiatric History</i>						
Yes	21(9.1%)	211(90.9)	232	33.968	1	<0.001
No	195(27.6)	511(72.4)	706			
<i>Medical Co-morbidity</i>						
Yes	119(26.2)	336(73.8)	483	4.872	1	0.027
No	97(20.1)	386(79.9)	455			
<i>Psychoactive Substance Use</i>						
Yes	51(28.3)	129(71.7)	180	3.537	1	0.060
No	165(21.8)	593(78.2)	758			
<i>Pathway to Care</i>						
Home	179(22.9)	602(77.1)	781	3.301	3	0.347
Other Hospital	25(28.1)	64(71.9)	89			
From Non-orthodox facility	11(20.0)	44(80.0)	55			
Both [©]	1(7.7)	12(92.3)	13			
<i>Type of Care</i>						
Out-patient	211(24.3)	657(75.7)	868	10.769	1	0.001
In-patient	5(7.1)	65(92.9)	70			
<i>Treatment Modality</i>						
Medication Only	203(22.5)	699(77.5)	902	3.616	1	0.057
Multimodal	13(36.1)	23(63.9)	36			

[©]= includes both hospitals/orthodox and non-orthodox facilities; non-orthodox facility include traditional homes, syncretic churches and faith based centers

DISCUSSION

This study depicts a descriptive research work on the mental health services rendered to elderly clients in a foremost mental health hospital in Nigeria. Such research effort is particularly important, given the gaps that have been identified with respect to addressing the growing unmet needs of elders in the developing countries. The tackling of public health implications of the growing population of old people in resource restricted settings like Nigeria is currently compounded by poor resources as well as lack of important information from research. For example, the available estimates on the rate of growth in the population of the elderly in Nigeria (2-4) are more likely conservative due to deficient statistics. Additionally, data on the comprehensive needs of elders are largely unavailable and this is made worse by inadequate expertise in fields that are related to geriatric issues and research. Closely linked is that old-age is characterized by increased demands on multiple physical, social and health services (5,6,11); yet the available re-

sources to address the needs of the elderly are abysmal when compared to what is needed. Overall, a number of important lessons on geriatric mental health issues that can guide future policy and service design direction are highlighted below.

Socio-demographic characteristics of participants: In this study, more than half of the elders seen with one form of mental disorders or another were in their sixth -decade of life, and there was decline in the proportion of elders seen with increasing age. While this observation tallies with some previous works (5,12), it also contradicts other earlier studies (13-15). As it is, our finding may be more reflective of the trend with respect to life expectancy in Nigeria (16). Equally important is that the sixth-decade of life constitutes a significant transition period which has been linked with major life-events with known risks for mental disorders. For instance, the sixth decade of life marks the chronological beginning of old-age in general, and the likely time for onset of many age-related health issues (5,6,12). In Nigeria, it is also the recognized period for retirement; and may particularly be stressful because of poor social security programs for retirees,

dwindling in financial resources and constricting social network along with poor social support (16).

In the same vein, about two-thirds of the elders seen at this service point with mental health needs were females and those with tertiary-level education constituted the largest proportion of the elders attended to within the period of this review. These findings buttressed previous observations that women and those with education may take health issues more seriously as well as readily present for health care in this setting irrespective of the age (6,17). Again, elders that belonged to the lower social economic class were over-represented among those seen in this public mental health facility. While this finding may indirectly reflect the association previously shown between low social economic class as well as its attendant psychosocial stressors and mental health problems (14,18); it is also explainable by other reasons because researchers have fielded contradictory finding (19). Some of the plausible reasons include the study center being a public hospital, and may be more affordable for old and retired people with diminished earning power, especially because social security programs are virtually lacking.

Psychiatric diagnoses and associated factors among the participants: We observed that elders with psychotic disorders were more likely to present for mental health care as more than one-third of those seen over the period of review had psychotic disorders. While this is similar to previous work (12); it also points to the fact that psychotic mental illness with striking externalizing symptoms may be easy to identify and distressful to patients as well as their caregivers to warrant presentation at the service point (4). Again, a good proportion of the elders seen over the period of review, consisting of approximately one-quarter had previous history of mental illnesses that include psychotic illnesses. This may have enhanced prompt presentation when there are relapses. It is also notable that treatment with medications was the rule rather than exception among this elderly population. Although not surprising but still worrisome for many reasons. For example, advanced age is often linked with suffering from comorbidities, poor drug tolerability, and propensity to experience side-effects. More importantly, this observation indirectly reflects the abysmal deployment of other treatment modalities (including psychotherapy, physical and psychosocial intervention) with known efficacy among elders in many developing countries due to constrained resources (4).

In the same vein, about one in every twenty elders seen had Alzheimer's dementia. This is in agreement with what has been fielded in previous literature (20) and tallies with the prevalence rate of Alzheimer's dementia reported among elders in their sixth decade of life, especially as the mean age in this study falls in the sixth decade of life. Again, a significant proportion of the elders, made up of one-fifth reported the use of psychoactive substances, and more than half had coexisting physical morbidities. These observations underscore the vulnerability of elders to both physical and mental health disorders; and indirectly illustrate the compounding effects of comorbidity of these disorders on each other as well as on their care. Specifically, the frequency of medical morbidities elicited among elders in this study is generally higher when compared to findings among the general population of elders, with up to two folds increase in certain instance (21,22). To a large degree, findings in this work bring to fore the need for comprehensive biopsychosocial health services to address different varieties of social, physical, and mental health needs of the elderly as previously advocated (5,6).

The important correlates of dementia in this elderly population include age and attainment of tertiary level of education. Specifically, the trend in the diagnosis of dementia increases with advancing age in line with what is expected (6,20), and elders with higher level of education were more likely to be seen with dementia. The finding on positive correlation between dementia and tertiary educational level strengthens the notion suggesting that higher education may promote presentation for care in the first instance (6,20,23). Again, it suggests that better level of education may have made the dementing process more obvious, especially if there is development of cognitive problems, contrary to thinking that such elders may have better methods of coping or coping up their cognitive deficits.

Lastly, medical co-morbidity, outpatient type of care and presentation as index episode of mental illness were more common among elders with dementia. This is not surprising because previous researchers have fielded similar findings (5,6,24). Largely, it depicts the disabling impacts of dementia in the elderly, and perhaps may suggest the influential role of disability with its related psychosocial consequences on presentation and the culture of arranging the care of dementia around the family within home setting. Equally important is the need for home-grown community based mental health services that are close to the elders, especially because a significant proportion of the elders had to commute for hours to receive care

despite their poor health and functional status. In spite of the advantages of this descriptive study towards the promotion of geriatric mental health services in Nigeria and other resource restricted settings, a number of limitations were identified. These include its retrospective cross-sectional design and clinical-based study setting. Thus, the extrapolation of its findings to all populations of elders in the community should be done cautiously.

Conclusion: The elders were managed for a wide range of treatable mental illnesses that include psychotic disorders and dementia in comorbidity with medical illnesses. A large number of the elders commute for hours to access care and were solely treated

with pharmacotherapy. These findings underscore the enormity of the burden of geriatric mental health problems, and the role of home-grown comprehensive care for the elderly. To this end, there is need for training as well as development of expertise to address the bio-psychosocial needs of the elders. Scaling up of comprehensive mental health services with appropriate linkage or integration with existing services across all tiers of health care delivery (primary, secondary and tertiary) to enhance better access to care is implied. Future policy, service design and research to provide integrated geriatric care to address physical and mental health issues in a holistic manner are implied.

REFERENCES

1. World Health Organization (WHO) in Population ageing: a looming public health challenge. *Health Millions 1998*, 24(5):20-22
2. National Population Commission/Macro (NPC). Nigeria Population. The Elderly. Abuja, Nigeria. 2006, Chapters 5 and 7.
3. Obashoro JO. Global Aging Issues: The Nigerian Situation. *The Journal of Aging in Emerging Economies. December 2011 pg 57-64* (accessed online on 31/01/2015) <https://www2.kent.edu/sociology/resources/jaeel/upload/obashoro.pdf>
4. Ogunnubi PO, Adikea DC, Oshodi YO, Olagunju AT, Adeyemi JD, Aina OF, *et al.*, Community Psychiatric Service in a Nigerian Rural Centre: Bridging Mental Health Gap. *Nigerian Journal of Psychiatry 2014;12 (1):2-33*
5. Olutoki M, Olagunju AT, Adeyemi JD. Correlate of depressive illness among the elderly in a mixed urban setting in Lagos, Nigeria,. *Aging and mental health 2014;18(5):561-9 PMID: 24102150*
6. Olagunju AT, Olutoki MO, Akinbode AA, Erinfolami AR, Yakasai BA, Adeyemi JD. Profile of cognitive impairment and health status of the elderly in a sub-Saharan African community: relevance to public policy and health service design. *Nigerian Quarterly Hospital Journal 2014*
7. National Health Insurance Scheme. Available from: www.nhis.gov.ng. 2013. Accessed October 17, 2013
8. Forman D E; Berman AD, McCabe C H; Baim, DS, Wei JY. "PTCA in the elderly: The "young-old" versus the "old-old"". *J Amer Geriatr Soc* (1992;40 (1):19-22. PMID 1727842
9. WHO. International Classification of Diseases (ICD-10). Clinical Description and Diagnostic Guidelines. 10th edn, World Health Organization, Geneva, Switzerland. 1992;119-82.
10. Statistical Package of Social Sciences version 16 (SPSS-16.0). SPSS Inc., 233 South Wacker Drive, 11th floor, Chicago, IL. 2007 [606066412].
11. Olayinka OO, Mbuyi NN Epidemiology of Dementia among the Elderly in Sub-Saharan Africa. *International Journal of Alzheimer's disease. Volume 2014 (2014), Article ID 195750, 15 pages* <http://dx.doi.org/10.1155/2014/195750>
12. Ajiboye PO, Yusuf AD, Pattern of Psycho Geriatric Disorders In A Nigerian Outpatient Psychiatric Clinic. *Trop J Health Sci* 2008;15(1):13-17
13. Bergdhal E, Gustavssen JM, Kallin K, Heideken V, Wagert P, Lundman B, Bucht, G, Gustafson Y. Depression among the older old: The Umea 85p study. *International Psychogeriatrics* 2005;17(4),557-75
14. Chen R, Wei L, Hu Z, Copeland JRM, Hemingway H. Depression in elderly people in rural areas of China. *Arch Intern Med* (2005);16(5):2019-2025
15. Palsson, SP, Ostling S, Skoog I. The incidence of first-onset depression in a population followed from the age of 70 to 85. *Psychological Medicine* 2001;31(7):159-1568
16. Bureau of statistics Life expectancy in Nigeria Aging -2015

17. Joshi K, Kumar R, Avasthi A. Morbidity profile and its relationship with disability and psychological distress among elderly people in Northern India *International J Epidemiol* 2003;32,(6):978-987
18. Sokoya OO, Baiyewu O. Geriatric depression in Nigerian primary care attendees. *Intern Jo Geriatric Psychiatry* 2003;18(6):506-510
19. Gureje O, Kola L, Afolabi E. Epidemiology of major depressive disorder in elderly Nigerians in the Ibadan study of Ageing: A community-based survey. *Lancet*, 2007;370(9591):957-64.
20. Semple D, Symth R, Burns J, Darjee R, McIntosh A. *Oxford handbook of psychiatry*. 2nd ed. Oxford: Oxford University Press; 2005.
21. Clausen F, Sandberg E, Ingstad B, Hjortdahl P. Morbidity and health care utilisation among elderly people in Mmankgodi village, Botswana. *J Epidemiol Com Health* 2000;54:1 58-63 doi:10.1136/jech.54.1.58
22. Abiodun OA Physical morbidity in a psychiatric population in Nigeria. *General Hospital Psychiatry*. 05/2000; 22(3):195-9. DOI: 10.1016/S0163-8343(00)00065-7
23. Ogah OS, Okpechi I, Chukwuonye II, Akinyemi JO, Onwubere BJ, Falase AO, et al. Blood pressure, prevalence of hypertension and hypertension related complications in Nigerian Africans: a review. *World J Cardiol*. 2012;4:327-40
24. Baiyewu O. Dementia in Nigeria. *Archives of Ibadan Medicine* 2003;4(1), 21-22.