Original Article

A Descriptive Study of the Morbidity Pattern of Older Persons Presenting at a Geriatric Centre in Southwestern Nigeria

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Abstract

Context: Rapid population ageing is a demographic reality in most countries of the world. Old age is associated with changes which may culminate in health problems, necessitating provision of appropriate preventive, curative, and rehabilitative services. However, reports from many low- and middle-income countries have shown lack of preparedness to cater for the healthcare needs of older persons. **Aim:** This study described the morbidity profile and its determinants among persons aged 60 years and above who presented at an established geriatric centre in southwestern Nigeria. **Materials and Methods:** Data were obtained from electronic health records of 4886 patients aged ≥60 years who visited the facility between 1st January 2013 and 31st December 2014. Data were analyzed using Stata version 13 (Texas, USA). Frequency distributions were used for descriptive analysis, and chi-square test was used to test associations. **Results:** More than a half, 2919 (59.7%), of the respondents were females and almost three quarters 3501 (71.7%) were aged between 60 and 74 years. Mean number of morbidities was 1.81 ± 0.9, and less than half, 1097 (42.0%), presented with only one morbidity, most commonly, hypertension. There were significant age-related differences for musculoskeletal (P = 0.001), endocrine (P = 0.01), and psychological problems (P = 0.01). In addition, gender differences were observed as a significantly higher proportion of females presented with general symptoms (P = 0.02) and musculoskeletal problems (P = 0.0001) than men. **Conclusion:** The most common presenting morbidities at this geriatric health centre were mostly noncommunicable diseases. Information obtained will be useful in the design of similar facilities in other parts of the country and region at large.

Keywords: *Morbidity pattern, Nigeria, older persons*

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Introduction

Older persons aged 60 years and above represent an increasing proportion of the population in many countries. By 2025, the global population of this group of individuals will be approximately 1.2 billion.[1] Although the proportion of older people is higher in high-income countries (HIC), the percentage increase of the elderly population is significantly higher in the low and middle-income (LMIC).[1] Recent estimates have also projected that the total number of older persons living in LMIC will be approximately 850 million by 2025, which will account for 12% of the overall population of these countries.[1] Nigeria ranks 24th globally among countries with the highest proportion of older persons.[2] By 2050, the number of people aged above 60 years in the country is expected to increase to 25.5 million from the current 6.98 million.[1]

Ageing is associated with both intrinsic and extrinsic changes and increased incidence of chronic diseases which leads to increased morbidity. In many instances, older patients present with comorbidities which have drug load, compliance, and financial implications.[3-5] Furthermore, the care of older patient is often times complicated and multifaceted due to peculiarities of the group such as atypical presentation as well as the need to tailor their treatment and drug regimen. This predicament thereby necessitates the provision of specialized care in the emerging field of geriatrics and gerontology.[6]

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In many LMICs such as Nigeria there are few health care facilities dedicated to cater for the needs of the elderly. In order to address this gap, a geriatric centre was established in 2012 through a public–private partnership. This facility was necessary in view of the increasing numbers of older persons in Nigeria and the high prevalence of chronic diseases, and in many cases, multiple morbidities. Furthermore, the use of electronic health records at the centre ensures ease of access to patient records and has the added benefit of achieving more efficient, safer, and high-quality care. This geriatric centre has been in operation for 4 years and has generated information that will assist in the design and the provision of specialized health care services for older persons. This study, therefore, aims at describing the morbidity profile and its determinants among older persons who presented at an established geriatric centre in southwestern Nigeria.

Materials and Methods

Study design and setting

This study was a cross-sectional, hospital-based study. Secondary data were obtained from electronic health records of patients who visited the facility over a two-year period and analysed.

The study was conducted at a purpose-built facility for the care of older persons, which was commissioned in 2012. The centre aims at significantly improving access for older patients to specialist geriatric teams (doctors, nurses, and therapists), day hospitals, specialist inpatients beds, and rehabilitation beds. Patients are managed both on in and outpatient basis. The centre has various speciality units such as physiotherapy, dietetics, geriatric lifestyle, ophthalmology, geriatric dentistry, memory, and geriatric psychiatry units. There are six service areas in the centre namely outpatient service, inpatient service (ward), physiotherapy, dietetics, surgical (theatre), and the medical social work unit (recreational day unit). In addition, the centre uses an electronic health record (EHR) system and patients are reminded of their clinic appointment a day prior to the consultation day by Short Message Service (SMS). Cost of services at the centre is at 50% of what is being paid elsewhere in the larger tertiary institution and the daily turnout is between 90 and 110 elderly patients.

Older patients are comprehensively assessed by the attending physician using a checklist which was developed for this purpose and validated in the environment.[7] Patients requiring further specialist care are then referred to other specialty clinics within the centre as earlier stated (physiotherapy, dietetics, geriatric lifestyle, ophthalmology, geriatric dentistry, memory, and geriatric psychiatry units). When needed, patients are referred to the appropriate unit within the main tertiary hospital. Similar to a study in South Korea, detailed data on sociodemographic factors were collected.[8] These include age, gender, marital status, level of education, employment status, religion, smoking history, and alcohol intake. Other information collected include social problems encountered, body mass index, urinalysis, and visual acuity.

Strategy

The case note record of all elderly patients aged 60 years and above who presented during the period of the study were reviewed. The disease distribution at presentation were categorized using the electronic version of the International Classification of Primary Care, second edition (ICPC-2-E), which has been validated in this environment.[4]

The bone mineral density (BMD) was measured using the dual energy X-ray absorptiometry (DXA) OsteoSys machine (EXA 3000^{R}). This machine was manufactured by medical ECONET GmbH (15). It provides BMD in g/cm^{3}(gold standard) and the T-score within 5 seconds. This ensures speed, maximum reduction in patients' radiation dose, detailed imaging, and analysis as well as an excellent precision.[9] Osteoporosis was defined based on the quantitative assessment of bone mineral density (BMD) using the WHO operational definition of osteoporosis by DXA machine.[10] Respondents with a T-score of <-2.5 were classified as having osteoporosis.[10] Hypertension were categorized using the Joint National Committee Classification version 8 (JNC8) classification. Patients with blood pressure measurement above 140/90 mmHg were classified as hypertensive.[11]

Inclusion/exclusion criteria

No records were excluded as all health records of patients who presented at the facility within the study period were included in the study.

Data analysis

Data were analyzed using Stata version 13 and were presented using frequency tables and charts. Inferential statistics to test for associations between variables was done using the chi-square test at a 5% level of significance.

Results

For all 4886 patients, records for the period under consideration were analyzed. The mean age of patients was 70.6 ± 7.6 years (men = 71.3 ± 7.7 years; women = 70.0 ± 7.5 years). As shown in Table 1, the majority

of the patients 3501 (71.7%), were aged between 60 and 74 years, females 2919 (59.7%), married 3902 (79.9%), and from the Yoruba tribe 4508 (92.3%). Slightly more than half (53%) of the respondents presented with two or more morbidities. Hypertension 2393 (49.0%) was the most common health problems diagnosed among the patients. Other morbidities included osteoporosis 955 (19.5%), diabetes mellitus

Table 1: Age and sex distribution Socio-demographic characteristics of patients

Characteristic	Male (*n* = 1967) *n* (%)	Female (*n* = 2919) *n* (%)	Total (*N* = 4886) *n* (%)
Age group (years)			
60–64	382 (19.4)	725 (24.8)	1107 (22.6)
65–69	472 (24.0)	766 (26.3)	1238 (25.4)
70–74	499 (25.4)	657 (22.5)	1156 (23.7)
75–79	313 (15.9)	377 (12.9)	690 (14.1)
80–84	174 (8.9)	249 (8.5)	423 (8.7)
≥85	127 (6.5)	145 (5.0)	275 (5.6)
Marital status			
Single	14 (0.7)	20 (0.7)	34 (0.7)
Married	1883 (95.7)	2019 (69.2)	3902 (79.9)
Widowed	69 (3.5)	876 (30.0)	945 (19.3)
Divorced	1 (0.1)	4 (0.1)	5 (0.10)
Ethnicity			
Yoruba	1824 (92.7)	2684 (92.0)	4508 (92.3)
Igbo	94 (4.8)	144 (4.9)	238 (4.9)
Hausa	6 (0.3)	5 (0.2)	11 (0.2)
Others	43 (2.2)	86 (3.0)	129 (2.6)
Number of morbidities			
1	471 (45.3)	626 (39.7)	1097 (42.0)
2	384 (37.0)	629 (40.0)	1013(38.8)
3	146 (14.7)	241 (15.3)	387 (14.8)
≥4	37 (3.6)	80 (5.1)	117 (4.5)

Table 2: Gender differences in disease patterns at presentation (*N* = 4886)

	Gender			
Disease Condition	**Male** *n* =1967 *n* (%)	**Female** *n* =2919 *n* (%)	**Total** *N* =4886 *n* (%)	***P* value**
Hypertension	858 (43.6)	1369 (46.9)	2227 (45.6)	0.02*
Osteoporosis	311 (15.8)	644 (22.1)	955 (19.5)	0.00*
Diabetes Mellitus	206 (10.5)	307 (10.5)	513 (10.4)	0.10
**Other eye problems	135 (6.9)	190 (6.5)	325 (6.7)	0.63
Spondylosis	112 (5.7)	205 (7.0)	317 (6.5)	0.06
Arthritis	68 (3.5)	220 (7.5)	288 (5.9)	0.00*
Cataract	118 (6.0)	157 (5.4)	275 (5.6)	0.36
Malaria	52 (2.6)	106 (3.6)	158 (3.2)	0.60
Dementia	67 (3.4)	90 (3.1)	157 (3.2)	0.53
Hypertensive Heart Disease	63 (3.2)	71 (2.4)	134 (2.7)	0.11
Urinary Tract Infection	47 (2.4)	55(1.9)	102 (2.08)	0.23
Peptic ulcer disease	27 (1.4)	72 (2.5)	99 (2.0)	0.01*
Glaucoma	42 (2.1)	46 (1.6)	88 (1.8)	0.15
Hearing problems	84 (4.2)	--	--	--
Obesity	17 (0.9)	64 (2.2)	81 (1.7)	0.00
Pulmonary tuberculosis	16 (0.8)	4 (0.1)	20 (1.1)	0.00***
Asthma	27 (1.4)	25 (0.9)	52 (1.1)	0.10

*Significant at $P < 0.05$, ** Other eye problems include conjunctivitis, blepharitis, pterygium, *** Fischer's exact, *Total more than 100% due to multiple morbidity

513 (10.5%), and cataract 275 (5.6%). Table 2 shows gender differences in disease presentation. A significantly higher proportion of females presented with hypertension ($P = 0.02$) as well as musculoskeletal problems such as osteoporosis ($P = 0.00$) and arthritis ($P = 0.00$) than men.

Table 3 shows age differences for the diseases presented. A significantly higher proportion of individuals aged between 60 and 74 years presented with endocrine problems ($P = 0.01$), whereas musculoskeletal disorder was more common among older patients aged 75 years and above ($P = 0.001$) Psychological problems were, however, significantly less common at the two extremes ($P = 0.01$). Table 4 shows the gender differences in morbidity profile among the respondents. A significantly higher proportion of females presented with musculoskeletal problems compared to males ($P = 0.00$). Likewise, more females presented with generalized symptoms such as body pains and fever compared to males ($P = 0.02$).

Table 3: Association between age classification and disease presentation

Gender

System involved (ICPC-2)	Age group (years)			P value
	60–74 *N* = 3501 *n* (%)	75-84 *N* = 1113 *n* (%)	>85 *N* = 272 *n* (%)	
Cardiovascular (K01-99)	1740 (49.7)	521 (46.8)	123 (45.2)	0.12
Musculoskeletal (L01-99)	1057 (30.2)	415 (37.3)	101 (37.1)	<0.001*
General and unspecified (A01-99)	826 (23.6)	279 (25.1)	83 (30.5)	<0.001*
Eye (F01-99)	452 (12.9)	161 (14.5)	41 (15.1)	0.29
Endocrine (T01-99)	450 (12.9)	114 (10.2)	22 (8.1)	0.01*
Neurological (N01-99)	273 (7.8)	71 (6.4)	18 (6.6)	0.25
Psychological (P01-99)	139 (4.0)	73(6.6)	10 (3.7)	0.01*
Digestive (D01-99)	140 (4.0)	34 (3.1)	7 (2.6)	0.21
Urological (U01-99)	67 (1.9)	29 (2.6)	6 (2.2)	0.37
Male Genitalia (Y01-99)	57 (1.6)	20 (1.8)	7 (2.6)	0.50
Respiratory (R01-99)	39 (1.1)	13 (1.17)	1 (0.37)	0.50
Female Genitalia (X01-99)	14 (0.4)	3 (0.27)	0 (0.0)	0.50
Ear (H01-99)	10 (0.3)	3 (0.3)	0 (0.00)	0.68

*significant at $P < 0.05$

Table 4: Association between gender and morbidity profile at presentation

System involved (using ICPC-2 classification)	Male *n* (%) *N* = 1967	Female *n* (%) *N* = 2919	Total *N* = 4886	*P* value
Cardiovascular (K01-99)	933 (47.4)	1451 (49.7)	2384 (48.8)	0.12
Musculoskeletal (L01-99)	517 (26.3)	1056 (36.2)	1573 (32.2)	0.00*
General and unspecified (A01-99)	444 (22.6)	744 (25.5)	1188 (24.3)	0.02*
Eye (F01-99)	280 (14.2)	374 (12.8)	654 (13.4)	0.15
Endocrine (T01-99)	222 (11.3)	364 (12.5)	586 (12.0)	0.21
Neurological (N01-99)	133 (6.8)	229 (7.9)	362 (7.4)	0.16
Psychological (P01-99)	85 (4.3)	137 (4.7)	222 (4.5)	0.54
Digestive (D01-99)	70 (3.6)	111 (3.8)	181 (3.7)	0.70
Urological (U01-99)	47 (2.4)	55 (1.9)	102 (2.1)	0.23
Male Genitalia (Y01-99)	84 (4.27)	-	1967 (40.3)	-
Respiratory (R01-99)	27 (1.4)			0.11
**Female Genitalia (X01-99)	--	17 (0.62)	2919 (59.72)	-
Ear (H01-99)	5 (0.3)	8 (0.3)	13 (0.3)	0.90
Blood, Blood forming organs and Immune mechanisms (B01-99)	3 (0.2)	0 (0.00)	3 (0.1)	0.05

* significant at $P < 0.05$

Discussion

In our study, the mean age of the respondents was 70 years, which is higher than the age at presentation in an outpatient clinic in the same environment.[4] Aging is associated with both intrinsic and extrinsic changes as well as health problems with varying levels of disability and limitations in functionality. Although chronic diseases may occur at any stage in life, these are more common in old age. We found in our study that most of the patients presented with chronic diseases. This is similar to reports of studies among older persons in both HICs and LMICs, which has been reported to be the trend in many LMICs and expected in this age group.[12-14] Over half of the clients in our study had two morbidities or more, which corroborates prevalence reported from other studies in the country.[4,13] We found that hypertension was the most common health problem among the patients. This is expected especially in view of the atherosclerotic changes in the blood vessels with aging.[15] Musculoskeletal problems were also highly reported and the most common presentation was osteoporosis similar to other hospital based studies in the country.[4,13] Cataract was the major cause of eye-related morbidity in our study and is similar to other studies in the country.[4,12] Furthermore, peptic ulcer was the most common gastrointestinal disease and may be due to chronic use of nonsteroidal anti-inflammatory drugs (NSAIDS) common in this group as a result of osteoarthritic pain relief.[12] In our study, more women than men presented at the centre, which is not unusual as women have been documented to be more likely to use health facilities than men.[16] In addition, similar to a household survey of older persons in Ilorin metropolis by Abdulraheem, our study revealed that more women were widowed compared to men. This finding may be attributed to the expected longer life expectancy in women compared to men.[17] Our study revealed some gender differences in the morbidity profiles. Although not statistically significant, a higher proportion of women presented with cardiovascular problems. This finding is, however, not unexpected because research has shown that women have an initial protection against cardiovascular diseases as a result of estrogen. This cardioprotective advantage is, however, lost after menopause.[18] In addition, our study revealed that a significantly higher proportion of women reported musculoskeletal problems than men. This may also be due to lower levels of estrogen as well as higher bone resorption and chronic loss of bone mineral density than in men.[19] In addition, significant age differences were seen for endocrine, musculoskeletal, and psychological problems. Although a higher proportion of respondents aged 75 years and above had endocrine and musculoskeletal problems, we found that psychological problems were more common among respondents aged between 75 and 84 years.

Limitations

This study is not without its limitations. Facility-based studies have been shown to be limited in their generalizability as they are not representative of the general population. This is because the use of hospital-based data may have inadvertently excluded individuals who had issues of access to the facility due to distance, limitations in functional ability, and finances, thereby introducing some level of bias. Furthermore, at this age, the probability of seeing the more privileged persons in the general population at the facility is high. These limitations, however, do not take away from the fact that the findings of our study provides much needed information about the morbidity profile of patients presenting at a geriatric centre. However, to provide a more encompassing picture of the health problems of the elderly in the country, we recommend that further research should be considered in primary and secondary facilities among this population. In addition, there is a need for community-based studies which will further provide information on the prevalence of various diseases among the elderly in this region and other parts of Nigeria.

Conclusion

The review of patient records in this recently established geriatric centre revealed that most of the patient were suffering from multiple morbidities. Cardiovascular problems particularly hypertension were more prevalent. A number of the health problems were more common among female patients and those who were older. Although there were some infectious diseases at presentation among the patients, noncommunicable diseases were mostly prevalent in our study. There is, therefore, a need to develop appropriate interventions, which will include lifestyle modifications for modifiable risk factors through health promotion and education. More specialized health care services such as this are needed in more areas within the country, which must take into consideration the prevalent morbidity in the environment. This is critical especially in view of the expected increase in the number of older persons in the Nigerian population in the coming years.

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Conflicts of Interest

There are no conflicts of interest.

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