

Functional disability among elderly patients attending the General Outpatient clinics of Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria

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ABSTRACT

Background: Population ageing is allied to an increase in chronic diseases and decreased functional independence. This study was conducted to assess the functional status of elderly patients attending the General Outpatient Clinic of Usmanu Danfodiyo Teaching Hospital, Sokoto, Nigeria.

Materials and methods: We conducted a cross-sectional study where 319 elderly patients were systematically selected. Structured interviewer-administered questionnaires and functionality assessment tools were used to collect the necessary information. Data were analyzed using IBM SPSS version 21 statistical computer software.

Results: The mean age of the respondents was 65±6, 7 years. The majority of the respondents were males (52.4%), Hausa (84.0%) and Muslims (89.7%). About 65.2% had no formal education and 53.2% lived in an extended family setting. Disability in ADL was 26.3% and 60.0% for IADL.

Conclusion: Functional disability in independent living within one's community is more affected than self-care. Older age is significantly associated with disabilities in both ADL and IADL while education and low income were significantly associated with functional disability in IADL

Keywords: Population Ageing, Functional Disability, Activities of Daily Living (ADL), Elderly Population.

Introduction

Population ageing is a global phenomenon affecting both developed and developing countries.¹ It has several implications for the population. First, it is accompanied by a rise in the percentage of older persons, an increase in the prevalence of non-communicable diseases (NCDs) as well as a shift in the demographic dependency ratio.^{1,2} Asia and Europe have the momentous number of elderly in the world.³ The elderly population in Beijing, China, in 2006 was about 219 million and is expected to get to about 400 million by the year 2025.⁴ United Kingdom has over 15 million people aged ≥ 60 years, with 1.5 million elderly aged ≥ 85 years and anticipates its ageing population to exceed the 20 million mark by 2030.³ Similarly, the United States was not left out in this demographics movement, as 12.4 % (35 million) of its populations were age ≥ 60 years and expected to reach 71.5 million by 2030.⁵ Estimates showed that developing countries have an

elderly population of about 63.0%, and a 10% increase is expected in the next 25 years.⁵ African continents, experienced an upsurge of elderly population of 3.3% within ten years, as observed in 2010 (3.6 % of the population were aged ≥ 60 years).⁶ At present, the elderly population in Nigeria is estimated at 4.0 % and it is expected to triple shortly.⁷ The Washington Group define disability as having at least a severe difficulty or being unable to perform any key or core activities of daily living. Activities of daily living (ADL) are the essential elements of self-care.⁸ Inability to independently perform even one activity may indicate a need for supportive services. These include bathing, dressing, toileting, transferring, eating and grooming.⁸ Instrumental activities of daily living (IADL) are associated with independent living in the community and provide the basis for considering the type of services necessary to maintain independence.⁹ They include shopping, housekeeping, food preparations, transportation, laundry and using a telephone.⁹

The increasing prevalence of disability among older persons is becoming an important dimension for research in developing countries.¹⁰ Broadly, disability affects the health and well-being of the elderly.⁷ It impacts physical functioning, leads to social exclusion and limits access to healthcare. In addition, disability creates the need for both formal and informal care.⁷ Africa remains the most economically active ageing population. In 1980, 46% of the population aged 60 years and above were participating in the labour force, but this declined to 40% in 2009.¹¹ However, labour force participation by the older population remains higher in Africa than in other regions of the world.¹¹ What this implies is that the elderly in Africa are continuing to participate in the labour force partly due to difficulties in securing a pension in their old age.¹¹ Disability in old age is an important indicator of community population health.¹² Therefore, as ageing is usually characterized by more than one illness, the functional impacts of combined conditions would provide a better measure of health than the diagnostic categories.¹² The study provided insight into the burden of functional disability in primary care clinics for a plan of care and preventive measures that will improve the functional status of the elderly through health promotion and disease prevention services.

Materials and Methodology

Study Design, Population and Area, Sample Size Determination and Sampling Method

A descriptive cross-sectional study that assessed functional disability of elderly patients attending the General Outpatient Clinic (GOPC) of the Family Medicine Department, Usmanu Danfodiyo University Teaching Hospital, Sokoto, was conducted between August and October 2018. UDUTH is a tertiary institution committed to quality healthcare delivery, training and research. The hospital has a 700-bed capacity and serves Sokoto State and neighbouring Kebbi, Niger and Zamfara States, as well as some parts of Niger Republic.

We recruited 319 patients, aged ≥ 60 years who presented to GOPC and consented to participate in the study. Those who were ill had a hearing or mental impairment or declined consent were excluded. The selection was done statistically using systematic random sampling over ten weeks. The purpose of the study was fully explained to the participants.

Data collection and analysis

Information on the socio-demographic characteristics and family structure was collected with a structured pretested interviewer-administered questionnaire. Functional disability was assessed with Katz's and Lawton's scales. The Kat's tool is used extensively as a

flag signalling functional capabilities of the elderly in clinical and home environments.⁹ Although no formal reliability and validity reports could be found in the literature, the evaluated ADLs are eating, transfer to and out of bed, continence, dressing and bathing. The validity of the Lawton IADL was tested by determining the correlation of the Lawton IADL with four scales that measured domains of functional status, the physical classification (6-point rating of physical health), Mental Status Questionnaire (10-point test of orientation and memory), Behavior and Adjustment rating. All correlations were significant at the 0.01 or 0.05 level. This assessment instrument is widely used both in research and in clinical practice.⁸ Instrumental activities of daily living are cooking, cleaning, phoning, shopping, and coping with transport, finances and use of medication. In these functional status assessment protocols, subjects were given 1 point if they were independent and 0 if assistance was sought in performing any component of ADL or IADL.

Data was checked, cleaned and analyzed using the statistical package for social sciences (SPSS version 21). Quantitative variables were presented in frequencies and proportions while qualitative variables were presented using charts and tables. The level of significance was set at $p\text{-value} < 0.05$. The chi-square test was used to compare differences between proportions. Binary logistic regression analysis was used to determine relationships between the variables.

Ethical clearance was obtained from the ethical committee of Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria. Permission to conduct the study was obtained from the head of the Department of Family Medicine and written informed consent from the participants before administering the questionnaire.

Results

4.1.1 Socio-demographic characteristics of the respondents

Table 1 shows the socio-demographic variables of the participants. All the 319 respondents who satisfied the inclusion criteria were included in the analysis. The mean age of the respondents was 65.8 ± 6.716 standard deviation. The majority were young and active elderly (60-64 years), predominantly males (52.4 %) and Hausa-Muslims (84.0 and 89.7 %). They lived in extended family settings (52.0 %); had no formal education (65.2 %) and 66, 5% of them lived below the current minimum wage of 18,000 Naira (=2 dollars/day).

Table 1: Socio-demographic characteristics of the respondents

A	Variable	Frequency (%)	B	Variable	Frequency (%)
	Age			Level of education	
	60-64	155(48.6)		None	208(65.2)
	65-69	77 (24.1)		Primary	45 (14.1)
	70-74	51 (16.0)		Secondary	23 (7.2)
	75-79	17 (5.3)		Tertiary	43 (13.5)
	80-84	8 (2.5)			
	≥85	11 (3.5)		Occupatin	
	Sex			None	43 (13.5)
	Male	167(52.4)		Farmer	102(32.0)
	Female	152(47.6)		Professional	18 (5.6)
				Retiree	43 (13.5)
				Trader	113(35.4)
				Monthly income	
	Marital status	237(74.3)		(Naira)	212 (66.5)
	Married	1 (0.3)		<18000	107 (33.5)
	Separated	12 (3.8)		≥18000	
	Divorced	69 (21.6)			
	Widowed			Number of children	
	Tribe			alive	3 (1.0)
	Hausa	268(84.0)		None	76 (23.8)
	Fulani	13 (4.1)		<5	240(75.2)
	Yoruba	12 (3.8)		≥5	
	Others	26 (8.1)			
	Religion				
	Islam	286(89.7)			
	Christianity	33 (10.3)			

Prevalence of disability among the respondents

Prevalence of ADL disability

Table 2 shows the proportion of disability in different components of ADL (using the Katz index in ADL). About one-quarter of the respondents had a disability with incontinence (24.8%), followed by toileting (3.8%) and bathing (3.7%). Only 0.9% of the respondents had difficulty in feeding and transferring each respectively.

Table 2: Prevalence of disability in different components of activities of daily living (using Katz index in ADL)

Variable	Activities of daily living (ADL)	Dependent Frequency (%)	Independent Frequency (%)
Bathing		12 (3.7)	307 (96.2)
Dressing		8 (2.5)	311 (97.5)
Toileting		12 (3.8)	307 (96.2)
Transferring		3 (0.9)	316 (99.1)
Continenence		79 (24.8)	240 (75.2)
Feeding		3 (0.9)	316 (99.1)

Figure 1 showed more than one quarter 26.3% of the participants had ADL disability. The majority (73.7%) were functionally independent in performing the activities of daily living (ADL).

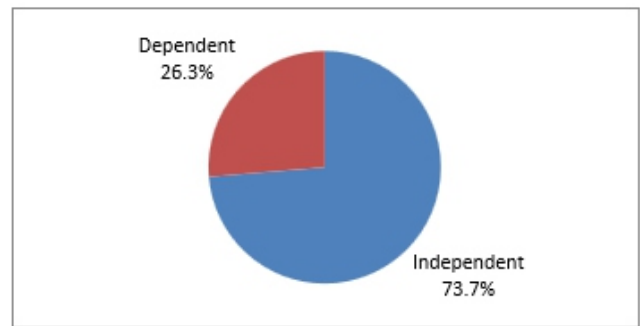
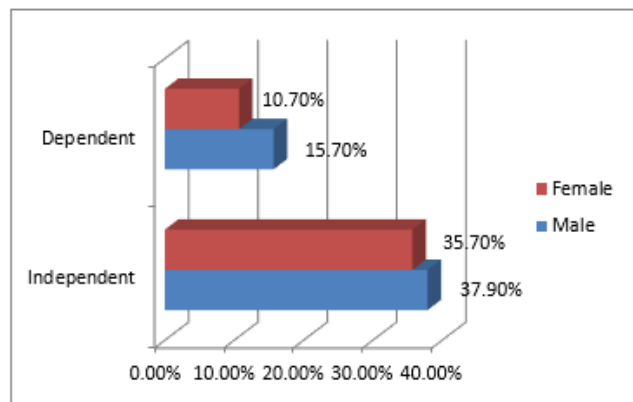

Figure 1: Prevalence of functional disability in ADL among the respondents

Figure 2 shows the proportion of ADL disability by gender. About 15.7% of males and 10.7% of females had ADL disability. In addition, 37.9% of male respondents and 35.7% of females were independent in ADL.


Figure 2. Proportion of ADL disability by gender.

Prevalence of IADL disability

Table 3 shows the prevalence of disability in different components of IADL among the respondents. The majority of the respondents had a disability in shopping (37.6%), telephoning (28.8%) and medication (24.5%).

Table 3: Prevalence of disability in different components of instrumental activities of daily living

Variable	Instrumental activities of daily living (IADL)	Independent Frequency (%)	Dependent Frequency (%)
Telephoning		227 (71.2)	92 (28.8)
Shopping		199 (62.4)	120 (37.6)
Food preparation		80 (25.1)	69 (21.6)
Housekeeping		122 (38.2)	27(8.5)
Laundry		79 (24.8)	70 (21.9)
Mode of transportation		256 (80.3)	63 (19.7)
Responsibility for own medication		241 (75.5)	78 (24.5)
Ability to handle finances		282 (88.4)	37 (11.6)

Figure 3 shows the overall prevalence of disability in IADL among the respondents. Disability in IADL was 62.0% and 38% were functionally independent.

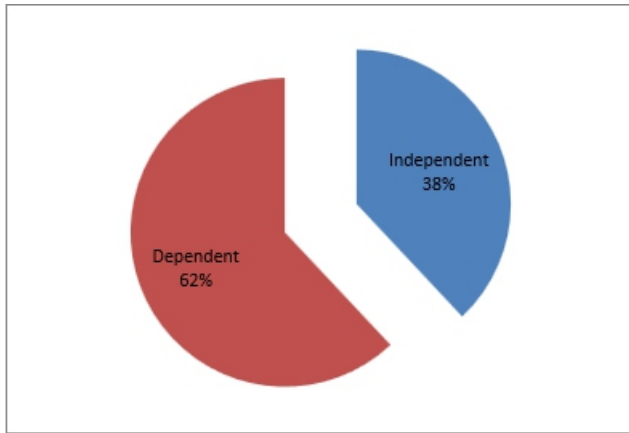


Figure 3: Prevalence of disability in IADL among the respondents

Figure 4 shows the gender prevalence of IADL disability. Females had the highest prevalence (36.2 %) compared to males (25.0 %).

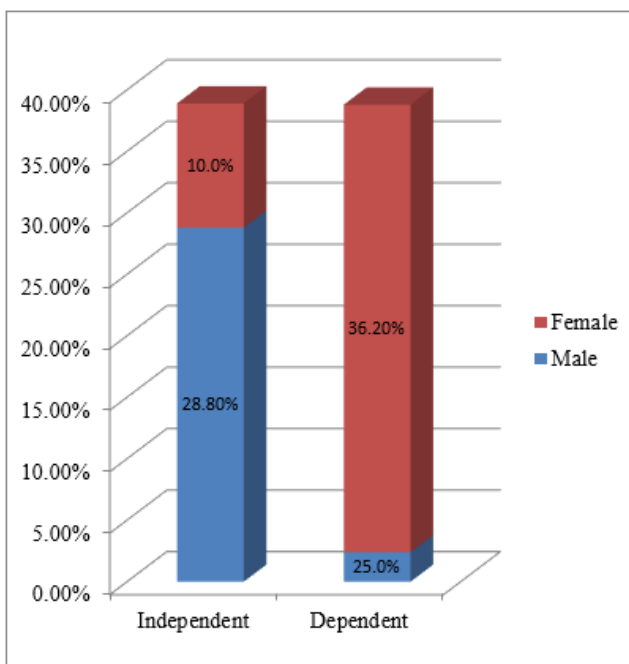


Figure 4: IADL disability by gender

Discussion

The study was conducted to assess the functionality among elderly patients attending the General Outpatient Clinic of Usmanu Danfodiyo University Teaching Hospital, Sokoto. The findings of the study showed that about half of the participants (48.6 %) fall within the age bracket 60-64 years, termed the active elderly. This is similar to the findings of Ajayi et al at University College Hospital, Ibadan, South-West Nigeria, and Abdurraheem in Maiduguri, North-West Nigeria.^{10,12} The finding was also in keeping with the reports of the Nigeria Demographic and Health Survey 2013, where an age-specific prevalence of 63 % for the age group 60-64 years was reported, making them the

elderly group with the highest prevalence in Nigeria.⁷ Correspondingly, the Ghanaian National Demographic and Health Survey 2014, also reported the active elderly group as having the highest proportion among the elderly.¹³ The similarities could be due to a global increase in life expectancy as a result of improved healthcare services and a reduction in child mortality. The age group 60-64 years has 'unique characteristics that differentiated them from other much older age groups' because of their physiologic function.¹⁴ Therefore, preventive measures against functional disability could be targeted at people in this age group for the reduction of care burden on families.

Despite the global phenomenon of 'feminization of old age' whereby women predominate, the elderly population, probably due to their longevity,¹⁵ in this study there was male predominance among the respondents. Perhaps, due to poor female participation in the study, in consonant with another study in the same institution which reported an over-representation of males due to low female participation.¹⁶ However, it was inconsistent with the findings from similar studies in Ibadan and Maiduguri where females predominated in the elderly cohort populations.^{10,12} The poor female participation in this study was due to the helplessness of the women to consent without the support of a male family member. Perhaps, the low status of women and the patriarchal system of African societies may have contributed.¹⁷ This may however not be applicable to that of Ibadan and Maiduguri with almost similar culture and environment as the study site.

The level of education of the participants revealed that more than half of the participants (65.2%) have no formal education and 21.3% have a low level of education (primary and secondary education). The findings were lower than the 88.3% proportion of elderly without formal education found in Maiduguri,¹² but much higher than the 37.5% proportion of elderly with low level of education reported from Ibadan.¹⁰ Hence, the disparities could be due to the disproportion in the literacy level between the northern and southern parts of the country. Reports from the Bureau of Statistics revealed that the literacy level in the Northern part of Nigeria is exceedingly low, especially among women in the Northeast and Northwest,¹⁸ where Sokoto State belongs. Perhaps, the elderly in the study area had low literacy levels because of delayed acceptance of Western education in the region.

The majority of the respondents were married (74.3%), Hausa (84.0%) and Muslims (89.7%), they lived with their relatives in an extended family setting. This corresponds to the findings by Abdurraheem in

Maiduguri, which reported that the majority of the elderly people in Nigeria live with their spouse or other family members.¹² The multigenerational household system is a common tradition in Africa and dictates that the elderly should be taken care of by their families.¹⁹ Likewise, the religion and the culture of both study areas encourage polygamy and support for the elders.

Regarding the elderly occupation and income; the study showed 67.4% of the respondents were self-employed (farmers and traders) and 66.5% lived below the current minimum wage of Nigeria (18,000 Naira) which was equivalent to 50 US dollars/ month or 1.7 US dollar per day, as of March 2019. A similar finding was reported in the previous study in Northern Nigeria where a majority of the elderly lived below 100 US dollars/ month.¹² However, it is not surprising because the opportunities for earning decrease as one gets older due to a decline in physical stamina and challenging health conditions.²⁰ Furthermore, the majority of the respondents were subsistent farmers and petty traders, indicating their low socio-economic class. Perhaps, the Northern part of the country has a low human development index, representing a lower income classification than the South.¹⁸ Moreover, the recent insurgency and insecurity experienced in the region have detrimentally affected its economy.

The study found a 26.3% prevalence of functional disability in ADL and 62.0% IADL. This was much lower than the 88.3% prevalence of ADL reported in Ibadan.¹⁰ Yet, the modal age of the respondents in the previous study was 70-74 which is a decade above the modal age of the respondents in this study.¹⁰ Meaning that the age-related decline in physical stamina is more favourable among the respondents in this study than the former. It was also in keeping with the study reports of Todd Manini in the USA that, the ability to carry out basic activities worsens in the seventh decade of life when compared with the prior level of activity assessed over a decade ago.²¹ Nonetheless, the author of the former study attributed his findings to the cultural perception of disability among the respondents.¹⁰ Similarly, the findings in this study were in agreement with the studies reported from India,²² Tanzania,²³ and Malaysia.²⁴ The prevalence of functional disability in ADL in this study was also in concordance with the figures 28.3% reported from a similar but community-based study in Maiduguri.¹² This could be attributed to the comparability in the socio-demographic characteristics and the modal age of the respondents in the studies. It was also comparable to the 33% prevalence of ADL reported from Uganda, East Africa,²⁵ 15% reported from USA,²⁶ and 20% prevalence found in Japan,²⁴ (differences less

than 15%). Thus, emphasizes the influence of the age of the respondents in all the studies despite the socio-economic and genetic differences.

Surprisingly, disability was higher among men than women respondents in this study, in variance with the findings from Ibadan,¹⁰ Maiduguri,¹² Malaysia,²² and India.²³ The reason may not be unconnected with the men's dominance in this study compared to the previous studies. Moreover, there was a high frequency of incontinence component of ADL in the study, it was also found to be commoner among older men than women, in consonant with the findings from previous studies.^{10,22,27} Nonetheless, women have a better coping mechanism in urine voiding strategies than men.²⁸ Prevalence of overactive bladder was also found to be commoner among men.²⁸

The study showed a 62.0% prevalence of disability in IADL which was much higher than the ADL, in concordance with the literature which reported a higher prevalence of dependence in IADL.²⁹ This could be explained by the age-related decline in physical and cognitive integrity, which is required more in IADL performance than in ADL.²⁹ Furthermore, IADL dependence was found to be commoner among women with a frequency of 36.2% against 25.0% for men, which could be attributed to the psychological stress and mood disorders with its attendant effects reported to be commoner among females.³⁰ Furthermore, the hormonal-related osteoporosis in post-menopausal women may be instrumental.²¹ The literacy level among the women respondents in this study was low compared to their male counterparts, yet, the study has found a statistically significant association between education and functional ability in IADL. This was in agreement with the literature which reported low schooling as a predisposing factor to disability in the elderly population, especially among elderly women.³¹

The commonest type of IADL disability in this study was shopping and telephoning with a prevalence of 37.6% and 28.8% respectively. This may not be unconnected with the culture of the study area/ Northern Nigeria which discourages women's participation in outside activities including shopping and travelling.¹² Yet, the majority of the respondents in this study live with their families or relatives in an extended family setting, where young members shop and escort the elderly when travelling. The majority of the study respondents could not read or write due to their low literacy level, thus, the inability to operate the telephone or take their prescribed medication without assistance. Yet, another study has reported a high reliance on phones as the commonest category of IADL among the elderly,³¹ and the author attributed

the finding to the high literacy level among the respondents.³¹ Moreover, the findings in this study were similar to the findings reported from another study in Brazil which reported higher functional dependence on shopping and transport among the elderly.³² This was at variance with the studies where finance and food preparations have a higher prevalence among the categories of IADL.^{22,27} It is worth noting that, the majority of the respondents in this study were active elderly who were capable of doing house chores, thus not surprising that the other IADL categories were less affected. However, the respondents were unemployed and dependent on their families for their daily needs, in accordance with the tradition in Africa.³³ Nevertheless, in Nigeria, in their efforts to provide unpaid care services to their families, the elderly engaged in activities like cooking and child-rearing, with women playing a greater role in this function than men.¹¹ Furthermore, men were exempted from domestic work such as food preparation in this study, in accordance with Lawton's scale for AIDL.⁸

Surprisingly, despite the higher illiteracy rate found in this study, the frequency of functional disability in handling finances was low, which could be explained by the economic status of the respondents as they were peasant farmers and petty traders who earn hand to mouth.

Conclusions

The study found a higher prevalence of active elderly comparable to most of the local and international studies. There was male predominance in the study due to poor female participation. The majority of the respondents were married, comparable to the previous studies, Hausa and Muslims who lived with their relatives in an extended family setting, in keeping with the culture and traditions of the study area. The prevalence of functional disability in ADL was 26.3%, comparable to the previous study reported from Maiduguri, but much lower than the prevalence reported from Ibadan. Prevalence of disability IADL was 62.0%, much higher than ADL.

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