Assessment of Functional Impairments among the Elderly in Ijebu Ode Local Government Area of Ogun State, Nigeria

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ABSTRACT

Background: *The aging process is characterized by various physiological conditions that results in decline of functional capacity and physical abilities. This leads to limited quality of life and increased dependency among the elderly.*

Objective: *The study assessed the prevalence of functional impairments among elderly persons in Ijebu-Ode Local Government Area of Ogun State, Nigeria.*

Methods: *This is a descriptive cross-sectional study conducted among 500 elderly subjects selected from 100 households in the study area using systematic random sampling. An interviewer administered questionnaire was used to elicit relevant socio-demographic information. Functional impairment was assessed using the Katz Index of Independence Activities of Daily Living (KADL). Six aspects of daily activities were assessed - urinary continence, toileting, dressing, bathing, feeding and transferring. Frequency counts, percentages, mean, standard deviations and Chi square test were used in data analysis.*

Results: *The study comprised of 41.2% males and 58.8% females with age ranging from 60-92years and mean age of 71.10±8.40years. More female (58.6%) compared to male (41.4%) were impaired. Overall prevalence of functional impairment was 26.6%. There were significant associations between functional impairment, older age and lower educational level (p=0.001). The most common impairment was related to transference (25.6%) while the least was with feeding (3.6%).*

Conclusion: *Elderly subjects are prone to functional impairments related to transference which advances with age and more in women. Thus, assessing functional impairment is important in preventive geriatric health care for screening to help in reducing further morbidity in the elderly.*

Keywords: Assessment, prevalence, functional impairment, elderly

INTRODUCTION

The elderly are group of adults in the last stage of the human life cycle and to belong to this group, an adult must be 60years of age and above (1). It is a stage that is characterized by aging which is an irreversible biological change that occurs in all living things with the passage of time which eventually results in death (2). Old age is a period of returned dependence, weakness, lack of energy, need for support, a period in which even if the spirit is willing the body is generally weak (2).

As people get older, bodily function decreases which include change in vision, hearing, touch, skin, endocrine, renal and musculoskeletal. The normal aging process is associated with some form of impairment and this has been found to increase with age (3).

Functional impairment is regarded as the need for assistance to carry out specific activities of daily living which helps to quantify the impact of

disease or injury. It is a useful concept in assessing the health status of the elderly subjects because they have diseases occurring simultaneously with varied severity and impacts on their daily lives (4). Functional ability is seen as the ability to perform the basic activities of daily life without support which is the key to overall independence and quality of life. The passage from a state of independence to that of dependence is characterized by the inability to perform activities of daily living such as getting out of bed, dressing, personal hygiene, eating and walking. It refers to only that part of functional capacity which is related to essential activities of daily life (5). It is common in the elderly due to various physical and psychological factors and has numerous components or dimensions such as mobility, manual ability, flexibility, muscular strength, psychomotor and cognitive function (5). Issues concerning the elderly, therefore, must be addressed in the context of healthy living.

Assessment of functional impairment among the elderly is of great importance in geriatric health care planning to have an overview of the common physical impairments among the elderly population (6). It is necessary for the preventive aspect of their health care, for early screening of functional impairment and for effective counseling and advice to their care givers pertaining to the specific area of impairment the elderly may be suffering from which may vary from person to person (6).

METHODOLOGY

Study design

The study adopted a descriptive and cross-sectional study design.

Study Population

The study was conducted among the elderly respondents in Ijebu - Ode Local Government Area.

Sample size and sampling procedures

This was determined by calculation based on estimated average prevalence of impairment among the population (7) using the formula:

$$n = \frac{z^2.p.q}{d^2}$$

where, n = minimum sample size
p = the prevalence of functional disability
d = the precision of the study which is 5% (0.05)
q = conditional probability(1-p)
z^2 = the area under the curve corresponding to a 95% confidence interval which is 1.

For the purpose of the study, p is 12.3% (7) therefore the minimum sample size (n) was calculated as:

$$\mathbf{n} = \frac{(1.96)^2 \times 0.123 \times 0.877}{(0.05)^2} = 165.75$$

However, this was increased to 500 to account for non-responsive respondents, incomplete questionnaires and to improve representation.

Sampling Procedure

The sampling procedure used was multi stage. Ijebu-Ode was purposefully chosen while five (5) of the eleven (11) electoral wards in Ijebu Ode Local Government Area were randomly selected. Five communities were randomly selected from each of the wards and from these communities 100 households comprising study groups were chosen using systematic random sampling
They include;
Ward 1 - Isoku - Ososa
Ward 5 - Ijada/Imepe II
Ward 6 - Porogun I
Ward 9 - Odo-Egbo/Oliworo
Ward 11 - Itamapako

Consent

The consent and approval of the community leaders in each ward were sought. The subjects were duly informed, their verbal consent and that of their caregivers was obtained after the objective of the study have been explained to them.

Description of the study area

Ijebu Ode Local Government Area is one of the twenty (20) LGA that make up Ogun State. It was created on March 11, 1938 with the headquarter at Ijebu-Ode. It is bounded in the North by Ijebu-North, in the East by Ijebu-East Local Government

and in the South by Lagos State while Odogbolu Local Government is to the Western side. It has an estimated population of 222, 653 people (8).The LGA consist of eleven (11) electoral wards namely; Isoku-Ososa, Odo-Esa, Itantebo/Ita-Ogbin, Ijada/Imepe I, Ijada/Imepe II, Porogun I, Porogun II, Ijasi/Idepo, OdoEgbo/Oliworo, Isiwo and Itamapako wards.

Eligibility for the Study

To be eligible for the study, an individual must have attained the age of 60years and must have resided within the study location for at least 2years prior to the study.

Instrument for Data Collection

A structured questionnaire which was interviewer administered was used in conjunction with Katz Index of Independence Activities of Daily Living (KADL) Questionnaire.

Methods of Data Collection

The questionnaire was sectionalized as follows

A. Socio Economic Characteristics
B. Assessment of Functional Impairment

Socio economic characteristics

This provided personal information of the subjects of study such as the age, sex, marital status, occupation, monthly allowance, level of education, occupation, living arrangement and the number of children alive.

Assessment of Functional Impairment

All respondents were assessed with the Katz Activities of Daily Living (ADL) questionnaire (5) to identify those with impairment and those without impairment. They were assessed for functional limitation in six (6) activities of daily living (ADL) of bathing (help with bathing more than one part of the body, getting in and out of bath tub or requires total bathing), dressing (help with dressing up self or to be completely dressed up), toileting (needs help transferring to the toilet, cleaning self or need to use bed pan or potty) , transferring (moving in and out of bed to chair or requires complete transfer), continence (partial or total incontinence of bowel or bladder) and feeding (partial or total assistance with feeding or requires parenteral feeding). The subjects were asked of difficulty or the need for assistance in performing any of the activities of daily living. Total score ranges from 0-6 with higher score indicating increased impairment.

Data Analysis

Data collected were subjected to descriptive statistics such as frequency counts, percentages, mean and standard deviation and inferential statistics - Chi square test using Statistical Package for Social Science (SPSS 20.0).

RESULTS

The socio-economic and demographic characteristics of the subjects with respect to their age, gender, marital status, living arrangement and occupation are shown in Table 1. It revealed that 47% of the elderly subjects were in the age range of 60-69years while 16.8% were ≥80years. Twenty-seven percent of the total subjects of study were functionally impaired. Impairment was found more among elders (51.1%) in the age group of ≥80years and less among age range of 60-69years. The mean age of the elderly respondents was 71.10 ± 8.40years. More female (58.6%) compared to male (41.4%) were impaired. There were more widow/widower (61.6%) than the married (32.3%) among them. The table further showed that impairment increases with age with a significant level of $p = 0.001$.The living arrangement of majority of the respondents (55.4%) indicated living with multiple relations which comprise of their spouse, children/grandchildren and other family members. About(3.6%) of them live alone. Impairment was common among the pensioners/unemployed (60.2%) and least among farmers while none of the few civil servants in the study were found to be impaired.

Table 1: Socio-economic and demographic characteristics of the Respondents by Impairment

Age Group (Years)	With Impairment (n=133)		Without Impairment (n=367)		Total	
Age distribution	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
60-69	19	14.3	216	58.9	235	47.0
70-79	46	34.6	135	36.8	181	36.2
≥ 80	68	51.1	16	4.3	84	16.8
Mean Age (mean ± SD)	78.74 ± 8.22		68.33 ± 6.54		71.10 ± 8.40	
$\chi 2$	168.49					
P	0.000					
Sex						
Male	55	41.4	151	41.1	206	41.2
Female	78	58.6	216	58.9	294	58.8
Marital Status						
Married	43	32.3	230	62.7	273	54.6
Divorced	5	3.8	32	8.7	37	7.4
Separated	3	2.3	16	4.4	19	3.8
Widow/Widower	82	61.6	89	24.2	171	34.2
Living Arrangement						
Alone	5	3.8	13	3.5	18	3.6
With Spouse	8	6.0	24	6.5	32	6.4
With Children/Grandchildren	43	32.3	92	25.1	135	27.0
With Other Relatives	25	18.8	13	3.5	38	7.6
With multiple relations	52	39.1	225	61.4	277	55.4
Occupation						
Farming	6	4.5	26	7.1	32	6.4
Trading/Artisan	47	35.0	192	52.3	239	47.8
Pensioner/Unemployed	80	60.2	146	39.8	226	45.2
Civil Servant	0	0	3	0.8	3	0.6
Total	**133**	**100**	**367**	**100**	**500**	**100**

*Statistically significant ($p \leq 0.05$)

Impairment was assessed using the Katz Activity of Daily Living (KADL) instrument in which impairment is the need for assistance in carrying out specific activity of daily living such as bathing, dressing, feeding, toileting, transferring and continence. Figure 1 showed the frequency of the elderly subjects of the study found to be with and without impairment. More than two-third (73.4%) of the elderly subjects were found to be without impairment while the remaining 26.6% are present with one or more form of impairments. The assessment of the subjects based on the Katz Activities of Daily Living (ADL) showed the various level of impairment among them where severe functional ability is inability to perform 5-6 activities out of the total 6 activities assessed, moderate impairment and mild impairment means inability to perform 3-4 impairment and 1-2 impairment respectively. Table 2 therefore implied that (49.6%) of the total number of

Table 2: Level of Impairment among Respondents

	Level of Impairment	Frequency	(%)
1-2	Mild Impairment	66	49.6
3-4	Moderate Impairment	47	35.4
5-6	Severe Impairment	20	15.0
Total		**133**	**100**

*Level of Impairment according to Katz activity of daily living (ADL)
Mild impairment (Unable to perform 1-2 activities of daily living)
Moderate impairment (Unable to perform 3-4 activities of daily living)
Severe impairment (Unable to perform 5-6 activities of daily living)

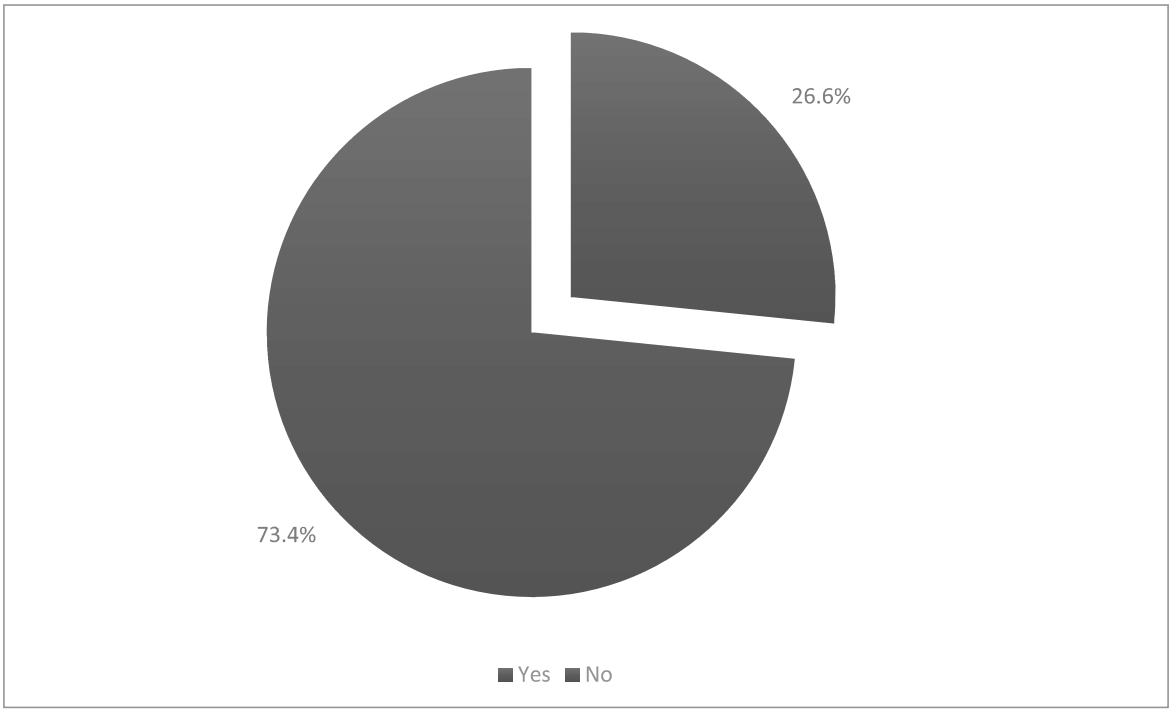

Figure 1: Presence of Functional Impairment among subjects

subjects (133) with impairment were mildly impaired while 15% of them were severely impaired.

Among the elderly subjects of study, 133 of them were identified as having an aspect of functional impairment which made up 26.6% of the respondents. Among the six aspects of daily activities of living assessed, the common impairment has to do with transference (25.6%) followed by toileting (25.4%) which include help/assistance in getting to the toilet, cleaning self as well as use of bed pan or potty. The need for assistance in feeding was found to be the lowest (3.6%) among them Figure 2.

The eldest category for age 80years and above was found to have significant association with severe functional impairment (p=0.001) as compared to those below 80years which implies that the presence of an impairment depends on the age, a larger proportion of the elderly subjects with severe impairment were found to belong to the age group of 80years and above as indicated in Table 3. Severe functional impairment was also significantly associated with no formal education and primary education (p= 0.001). No statistical significant association was observed between functional impairment with sex and monthly allowance.

DISCUSSION

The number of people surviving into old age is increasing and is a global phenomenon affecting developing and developed countries. The process of aging is mostly characterized with one form of impairment found to be the common reason for the loss of independence and need for informal care by the elderly persons (9). Old age often brings about health problems and decreasing functional capacity which may affect the sense of wellbeing of an individual. In this regard, the goal of health for the elderly in the society may not be that of freedom from disease but the possibility of having a good life despite illness and decreasing capacities (10).

The study assessed functional impairments and its prevalence among elderly subjects in Ijebu-Ode Local Government Area of Ogun State. There are more female respondents than male respondents in the study which could be because socio-cultural roles tend to make women stay longer at home than men in the area of study

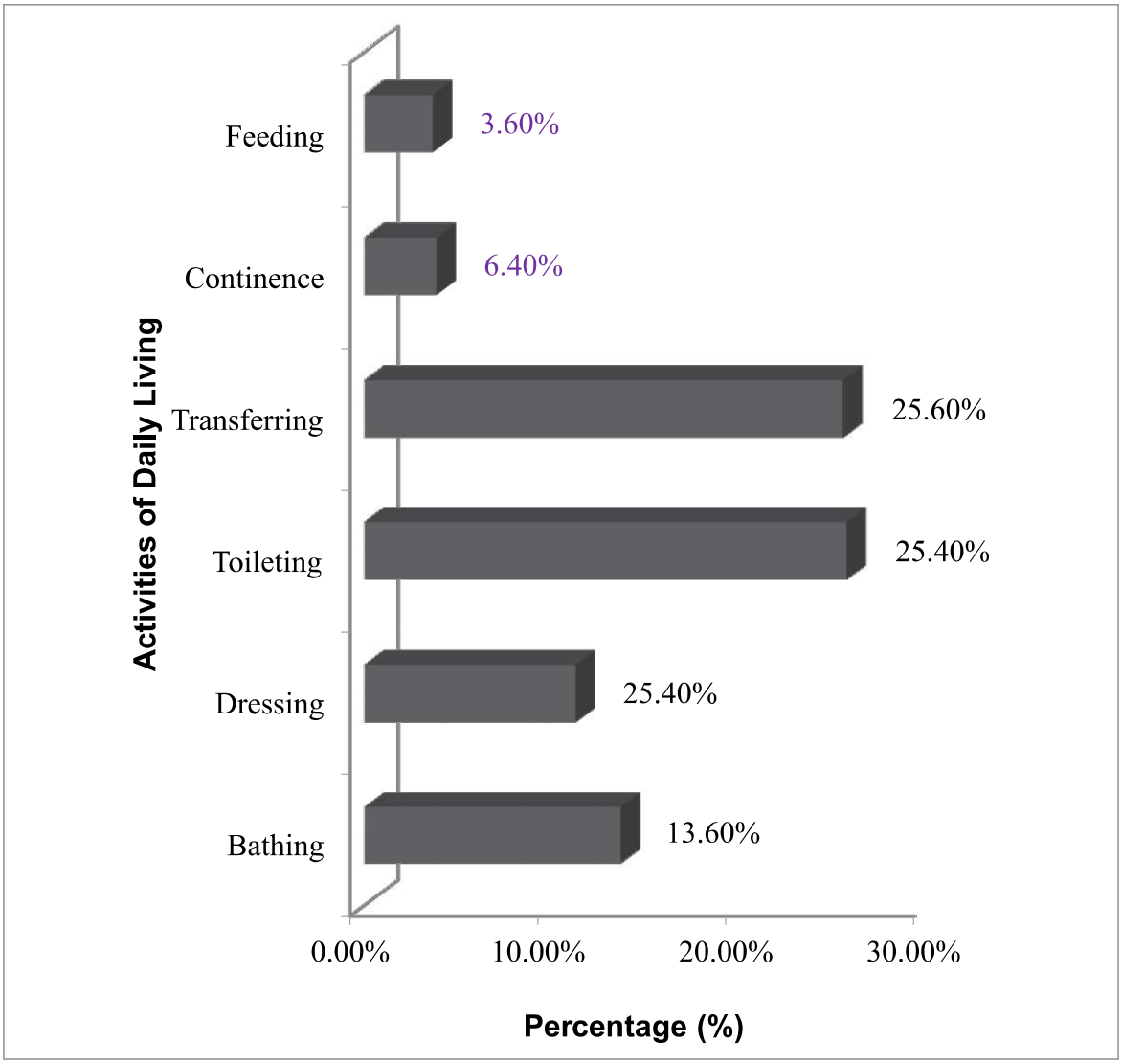

Figure 2: Type of Impairment Based on Katz Activities of Daily Living

(11). The incidence of widowhood increases with age with women being more likely to be widowed than men (8). This higher ratio of women in widowhood is because many Nigerian women don't remarry unlike men, in fact the family structure among Yoruba tribe in Nigeria reveals that men have more than one wife and some are in the habit of marrying younger women at old age (7) and that could be why there are more widows than widowers in this study. The number of females observed in this study had been reported earlier also by (12,13), with a probable explanation that the death rate among males tended to be higher thereby making more women survive into old age than men (12,14).The result of the study also indicated that few of the elderly subjects of study were found to live alone without a spouse or any family member. Studies have shown that married elderly who have contacts with their spouse, children, friends or family members tend to show lower social and sentimental loneliness than the divorced and widows/widowers living alone(15, 16). In the elderly subjects living with their spouse, family relation or children, the presence of these people gives a feeling of security while those living alone are more vulnerable to a heart attack or a stroke. The elders who live close to their family have social support, exhibit better psychological health and lower loneliness (15,16).

Table 3: Test of association between Functional Impairment and Socio-economic characteristics

Socio economic Characteristics	No Impairment	Mild	Moderate	Severe	Total	χ^2	P
Age (yrs.)							
60-69	216	14	5	0	235	169.131	0.001
70-79	135	36	8	2	181		
≥ 80	16	16	34	18	84		
Sex							
Male	151	23	25	7	206	0.002	0.967
Female	216	43	22	13	294		
Educational Level							
No Formal Education	21	7	4	7	39	29.810	0.001
Primary Education	77	20	23	8	128		
Secondary Education	108	14	4	2	128		
Tertiary Education	116	16	14	2	148		
Vocational Training	45	9	2	1	57		
Monthly Allowance							
₦10,000 - ₦50,000	226	49	31	18	324	6.807	0.146
₦50,001 - ₦100,000	133	17	15	2	167		
₦100,001 - ₦150,000	6	0	1	0	7		
₦150,001 - ₦200,000	1	0	0	0	1		
Above₦200,000	1	0	0	0	1		

The overall prevalence of functional impairment among the elderly studied was 26.6%. This does not differ much from worldwide prevalence which is approximately 10-30%(17, 18 and 19).However, a multi-country study on the prevalence of disability in 54 countries using World Health Survey data reported disability to be at 15% and was higher in developing than developed countries (20). The prevalence rate is comparable to Malaysia- a middle income country where impairment was reported to be highest (25%) among those aged 60 and older (21). Studies conducted in India at different years found the overall prevalence of functional impairment in the elderly subjects to be 33.5% and 36.2% respectively (5, 22). Meanwhile in Ibadan,Oyo State the prevalence of any functional disability defined as inability to independently perform any function was 9.2% (9).

As expected, impairment among the older people increased with advancement in age, the highest level of impairment was seen in the age group of 80years and above. The impairment rate at age 80-89years is about three times the rate for age 60-69years as the lowest rate was observed at that age confirming the fact that among the elderly, impairment increases with age. Advanced age is associated with co-morbidities or non-communicable diseases (NCDs) that elevate the risk of disability especially among older people in Nigeria (4), in the US (23), Malaysia (22) and Brazil (24). The significant increase of impairment with age found in this study agrees with the report of another study undertaken among the Yorubas (25).This was attributed to the fact that as people get older, bodily function decreases such as change in vision, hearing, touch, skin, endocrine, renal and musculoskeletal. The decline in functional capacity and physical abilities, the diminishing

mental health and cognitive function cause many adults to seek help from family members or institutions in performing the basic activities of daily living (26).The results also indicated impairment to be more in the elderly women (58.6%) than their male (41.4%) counterparts. This observation has been reported in Ibadan (9) but contradict other findings where functional disability was more in male than female elderly subjects (5, 7). According to Berlau *et al.* (23) and Emam *et al.* (27) gender had no effect on functional activity, in the same manner irrespective of gender, advancement in age leads to the depreciation in the physical functioning of body organs and systems. This is associated with non-communicable diseases that elevate the risk of disability among older people (28).Older women have been reported to be at a higher risk of impairment than older men in several studies (4, 29, 30 and 31). Women are at greater risk because their bone loss accelerates after menopause as well as the stress of child bearing. It is generally known that older women appear to have more functional disabilities, health problems and dependence on others because women's organism weakens earlier than in men (32, 33). This difference in gender could be due to strenuous activities like the house chores, extensive farming activities, shopping coupled with the child bearing and other stress work that women were involved with in their younger years. All these could have accounted for the increased number of women found to be impaired than the men. However, lower prevalence of functional impairment was reported by Nzeagwu and Uwaegbute (34). The reason could be that the elderly subjects in their study might have been stronger, healthier, normally ambulatory and not too frail. Frank (12) had asserted that older persons are not severely limited in their daily activities despite living with chronic conditions. This could also be because in Nigeria, people are used to striving to do things themselves without the need of assistance or help so that they will not be tagged as been lazy by their friends and family members.

Conclusion

The elderly subjects are prone to functional impairments found more in women with advancement in age. The most common impairment was related to transference. Severe functional impairment was significantly associated with no formal education and primary level of education while there was no significant association between functional impairment sex and monthly allowance.

Recommendation

Healthy aging and ability to function independently are essential components of a good quality of life. Assessment of functional impairment among the elderly is of importance in geriatric health care for early screening that may help in reducing secondary morbidity, for effective counseling and advice to their care givers pertaining to the specific area of impairment the elderly is suffering from which may vary from person to person. Thus, the need for further assessment of functional ability using the instrumental activities of daily living (IADLs) to capture more activities than those needed for personal self-care assessed using the activities of daily living instrument.

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