Original Article

Functional Disability and Associated Factors in Two Samples of Elderly Nigerians

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ABSTRACT

Background: The increasing number of elderly persons and their attendant functional disability have implication on public health programmes in developing countries. However, there is limited information on the profile of disability in the elderly residing outside major cities in Nigeria. **Objectives:** This was to estimates disability in a representative sample of persons aged 60 and older in an urban and a rural areas of Oyo State. **Methods Design:** A comparative cross-sectional survey. **Setting:** Iseyin and Ilua are urban and rural communities, respectively, in Oke-Ogun area of Oyo State, in South Western Nigeria. **Materials and Methods:** A structured interviewer administered questionnaire was used to obtain information on socio-demographic characteristics and instrumental activities of daily living. **Participants:** Consenting adults aged 60 years and above. **Main Outcome Measures:** These include the prevalence of disability in both communities major impairments or health problems with a significant difference in limiting the activities of the elderly, instrumental activities of daily living activities of daily living (IADL-ADL) disability by location and significant predictors of disability in both groups. **Results:** A total of 630 respondents: 316 in urban and 314 in rural locations were interviewed. The majority (61.4%) were females and 42.1% were aged 60–69 years. The prevalence of disability was 32.7% (30.1% and 35.4%) among urban and rural respondents, respectively. The main ADL-IADL disabilities reported were going to farm or some other places of work (19.2%), doing everyday household chores (18.1%) and getting around the house (15.7%). Significantly higher proportion of those in urban (73.7%) compared to rural (57.7%) had a severe disability ($P = 0.016$). IADL was also significantly higher (20.9%) among urban respondents ($P = 0.010$). Significant predictors for disability were increasing age, not working currently and having a health problem. **Conclusions:** Functional disability was prevalent in both communities, but more so in the urban area. Other social factors were predictors.

Key words: Activities of daily living, disability status, elderly, Oyo State, rural and urban communities

INTRODUCTION

Lower fertility rates, improved health and longevity have generated growing numbers and proportions of older persons throughout most parts of the world. From a traditional pyramid shape with a broad base and tapering top, the world's population structures is evolving into an inverted pyramid.[1]

Increased life expectancy has also been associated with increasing prevalence of chronic diseases, disability dependent life and consumption of costly health-care services.[2,3] Although many individuals can now look forward to longer lives, the

risk of having at least one chronic disease such as hypertension and diabetes which contribute to the age-related physical incapacitation increases with age.[4] Functional disability is a common reason for loss of independence and need for formal and informal care by elderly persons.[5]

Other than demographic characteristics such as female sex and older age, lifestyle characteristics such as smoking and alcohol consumption, low education, low income and urban dwelling have been associated with greater risk of disability in elderly persons.[6] These correlates of disability are particularly

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germane to sub-Saharan Africa in general and Nigeria in particular.[7] Preventing and ameliorating the increasing burden of functional disability requires opportunities for health promotion and disease prevention in the community as well as disease management within health-care services. Surveys carried out in Nigeria have not provided sufficient information on the disability status of the elderly at the community level, especially outside major cities.

This article reports estimates of disability in a representative sample of persons aged 60 and older in an urban and a rural area of Oyo State, Nigeria. Information is also provided on sociodemographic, health and lifestyle correlates of disability.

MATERIALS AND METHODS

This study was carried out in Iseyin an urban community and Ilua a rural, predominantly tobacco farming community both located in the Oke-Ogun area of Oyo state, Nigeria. The residents in both locations were mainly of Yoruba ethnicity. Participants for the study were household members who were 60 years and above, and residing in Ilua or Iseyin. Their ages were determined by direct enquiry, or estimated by the use of historical events, age at marriage and age of their eldest child. Information on disability was obtained from them. In situations where an elderly individual could not provide information themselves due to dementia, dumbness, deafness or psychiatric illness, a reliable informant was interviewed to obtain information on the disability status of such a participant. Cluster sampling method was used to select the respondents. A list of all the compounds ('Agbo-Ile') in Ilua was obtained from the local government authorities. A rapid sample of compounds carried out earlier on in Ilua provided an estimate of thirty houses per compound, with about 2–3 elderly in each house; an average of two families co-habited in each house. Each compound was taken as a cluster, and five clusters were selected using simple random sampling technique. All consenting elderly people in the households in the selected clusters were interviewed. A list of all the compounds in Iseyin town was obtained from Iseyin local government secretariat. On the average, there were twenty-five houses per compound, with about 1–2 elderly in each house, and on average, two families co-habited in each house. Each compound was taken as a cluster; 12 clusters were selected using simple random sampling technique. All houses in those clusters were selected, and all consenting elderly people in the households in the selected houses were interviewed.

Questionnaire

A pretested structured questionnaire was used to obtain data. The questionnaire consisted of four sections which focused on the following: Sociodemographic data, social, family, living status and behavioural factors (e.g., smoking, use of non-smoked tobacco, alcohol consumption and exercise). Activities of daily living-instrumental activities of daily living (ADL-IADL) disability assessment, major health problems/impairments limiting activities of the elderly.

Measures of disability

The instrument for disability assessment was a modification of the disability/quality of life questions in the Rhode Island Behavioral Risk Factor Surveillance System (RIBRFSS).[8] This instrument was modified for local use and tested for reliability before use.

The RIBRFSS classifies respondents as one of the three categories; people with NO disability, with moderate disability, and with severe disability. To do this, all respondents will be classified into two categories first; those with disability and those without disability. Those with disabilities were classified as either with severe or moderate disabilities.

1. People with Disability were defined as those who responded 'yes' to at least one of a set of four screener questions
2. People with no disability were defined as those who responded 'no' to all of the four screener questions.
1. People with severe disability were defined as those who responded positively to at least one of another set of three screener questions among those who have disabilities
2. People with a moderate disability were defined as those who met the criteria for disability, but who did not meet the criteria for severe disability.

The four screener questions that were used to sort out the respondents into those with disability and those without a disability were based on:
a. Work limitation referred to limitation in the kind or amount of work the respondents can do because of a health problem or impairment
b. Learning difficulty referred to problem in remembering, concentrating or learning because of a health problem or impairment
c. Use of aid referred to use of special aid or help to get around because of a health problem or impairment
d. Activity limitation referred to a limitation in any way in any activities because of a health problem or impairment.

The three questions for identifying those with severe disability were based on:
a. The need for help of other persons with personal needs such as feeding, bathing, or dressing (ADL)
b. The need for assistance of other persons in handling routine needs such as household chores, getting around for other purposes (IADL)
c. Using help or special aid, the farthest distance the respondents can go.

The extent of disability on each item in this domain was rated as (1) only slightly (2) appreciably (3) completely.

Statistical analysis was performed using SPSS software version 17.0. Frequency counts (expressed in percentages) were used for all variables and reported health problems/impairments limiting the activities of the elderly. The prevalence of disability was calculated separately for both groups. Bivariate analysis was performed to detect the relationship between some background characteristics and disability; while logistic regression model

was used to determine the predictors for each category of the independent variable that were significant at 10% on bivariate analysis while controlling for the effect of other potential risk factors. Statistical significance was set at $P < 0.05$.

RESULTS

In all, six hundred and forty people were approached to participate in the study, (630) of them consented; giving a response rate of 98.4%. In total, 316 in the urban area and 314 from the rural. Their ages ranged from 60 to 110 years, and the mean age of respondents in an urban location was 72.2 ± 9.5 years compared to 70.8 ± 8.1 years for those in the rural. The 630 respondents

comprised 245 males (38.9%) and 385 females (61.1%). Most respondents were married, while about one-third of them were widows/widowers. The majority of the respondents in both population were of Yoruba ethnicity and more than half, Moslems. Most of them were either engaged in trading or farming. Some of the other important sociodemographic characteristics of the respondents are presented in Table I. Considering the differences in the lifestyle of the respondents in both groups; there was a significant difference in the frequency of use of other forms of tobacco between both groups ($P < 0.007$). Similarly, respondents from the rural were more likely to be currently drinking alcohol ($P = 0.023$).

Table I: Sociodemographic characteristics of the elderly by location

Sociodemographic characteristics	Urban ($n=316$), n (%)	Rural ($n=314$), n (%)	Total ($n=630$), n (%)
Age (years)			
60-69	124 (39.2)	141 (44.9)	265 (42.1)
70-79	119 (37.7)	122 (38.9)	241 (38.3)
80-89	51 (16.1)	42 (13.4)	93 (14.8)
≥90	22 (7.0)	9 (2.9)	31 (4.9)
Sex			
Male	132 (41.8)	113 (36.0)	245 (38.9)
Female	184 (58.2)	201 (64.0)	385 (61.1)
Marital status			
Single	12 (38)	9 (2.9)	21 (3.3)
Married	197 (62.3)	200 (63.7)	397 (63.0)
Separated	2 (0.6)	1 (0.3)	3 (0.5)
Divorced	3 (0.9)	7 (2.2)	10 (1.6)
Widow/widower	102 (32.3)	97 (30.9)	199 (31.6)
Highest education attained			
No formal education	295 (93.4)	296 (94.3)	591 (93.8)
Primary education	13 (4)	15 (4.8)	28 (4.4)
Secondary education	5 (1.6)	1 (0.3)	6 (1.0)
Tertiary education	3 (0.9)	2 (0.6)	5 (0.8)
Religion			
Christianity	123 (38.9)	114 (36.3)	237 (37.6)
Islam	183 (57.9)	185 (58.9)	368 (58.4)
Traditional	10 (3.2)	15 (4.8)	25 (4.0)
Tribe			
Yoruba	316 (100.0)	310 (98.7)	626 (99.4)
Igbo	0	2 (0.6)	2 (0.3)
Hausa	0	2 (0.6)	2 (0.3)
Family type			
Monogamous	123 (38.9)	107 (34.1)	230 (36.5)
Polygamous	193 (61.1)	207 (65.9)	400 (63.5)
Number of living children			
1-4	164 (53.9)	189 (61.8)	353 (57.9)
5-8	125 (41.1)	95 (31.0)	220 (36.1)
9-12	11 (3.6)	18 (5.9)	29 (4.8)
≥12	4 (1.4)	4 (1.3)	8 (1.2)
Current job			
Farming	86 (27.2)	118 (37.6)	204 (32.4)
Trading	102 (32.3)	76 (24.2)	178 (28.3)
Artisans	33 (10.4)	34 (10.8)	67 (10.6)
Others	9 (2.8)	10 (3.2)	19 (3.8)

ADL-IADL disabilities with the highest prevalence in both locations include going to farm or some other places of work (19.2%), doing everyday household chores (18.1%) and walking outside the house (16.8%). The health problem with the highest prevalence in limiting the activities of the elderly in both locations was arthritis/rheumatism. The health problem/impairment with a significant difference in limiting the activities of the elderly in both locations was visual problems and hypertension. The elderly in urban location were more likely to have eye/visual problems limit their activities compared to those in rural ($\chi^2 = 8.151; P = 0.005$). Similarly, they were also more likely to have hypertension limit their activities compared to those in the rural ($\chi^2 = 11.52; P = 0.001$). Table II shows the proportion of those with disability in both groups; with no statistically significant difference between the two groups. However, among those that had a disability, the elderly in the urban were significantly more likely to have a severe disability compared to those in a rural location ($\chi^2 = 5.783, P = 0.0016$), this is shown in Table III. As depicted in Table IV. Females in the urban were more likely to have a disability compared to males, while in the rural, males were more likely to have disability compared to females, as depicted in Figure 1. Table IV shows ADL-IADL disability in both groups. Only two ratings were significantly different between the two groups (going to farm or some other place of work and doing everyday household chores). Significant predictors for disability were increasing age, 60–69 years (odds ratio [OR] = 4.7, 95% confidence interval [CI] = 1.95–11.19) 80 years and above (OR = 8.4, 95%CI = 3.31–21.62). Having an existing health problem (OR = 6.03, 95%CI = 2.08–17.45). Current occupational activity was a protective factor (OR = 0.08, 95% CI = 0.04–0.16).

DISCUSSION

Physical disability and functional limitation are common among the elderly leading to adverse consequences such as dependency and institutionalisation.[5] This study set out to assess and compare the prevalence of disability and its correlates among the elderly in rural and urban communities of Oyo state, Nigeria. The highest proportion of the respondents

in this study fell within the age group of 60–69 years in both locations and the least proportion was within the age group $\geq$ 90; majority of the respondents in both locations were women, and this has been attributed to their longer life expectancy.[4] The prevalence of disability was generally similar in both locations on bivariate analysis. However, those in urban were more likely to have a severe disability than those in the rural. This finding corroborates those of other authors which reported that urban dwellers had a greater risk of being functionally disabled.[5] Older age was associated with a higher rate of disability. Age was a significant predictor of disability, and this finding has been reported in literature.[5,9] Multivariate analysis, confirmed the salience of average monthly income for the occurrence of disability in this study. Perhaps for the same reason, those that were currently working had lower rates of disability. This finding is at variance with the study[5] by Gureje *et al*. where economic status was found not to have any significant relationship to the occurrence of functional disability. This difference in findings may be due to the fact that economic status in Gureje's study was assessed using ownership of personal and household items or the quality of house floor while in the present study average monthly income in dollars was used as a covariate in the logistic regression
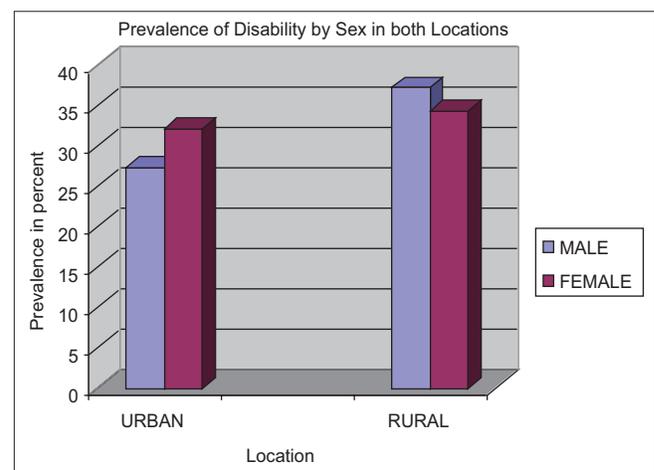

Figure 1: Prevalence of disability by sex in both locations

Table II: Prevalence of disability in the elderly by location

Disability	Urban (*n*=316), *n* (%)	Rural (*n*=314), *n* (%)	Total (*n*=630), *n* (%)	χ^2	*P*
Present	95 (30.1)	111 (35.4)	206 (32.7)	2.001	0.092
Absent	221 (69.9)	203 (64.6)	424 (67.3)		
Total	316 (100.0)	314 (100.0)	630 (100.0)		

Table III: Severity of disability in the elderly by location

Severity of disability	Urban (*n*=95), *n* (%)	Rural (*n*=111), *n* (%)	Total (*n*=206), *n* (%)	χ^2	*P*
Moderate disability	25 (26.3)	47 (42.3)	72 (35.0)	5.783	0.016
Severe disability	70 (73.7)	64 (57.7)	134 (65.0)		
Total	95 (100.0)	111 (100.0)	206 (100.0)		

Table IV: Activities of daily living-instrumental activities of daily living disability by location

Activities+	Urban (n=316), n (%)	Rural (n=314), n (%)	Total (n=630), n (%)	χ^2	P
Walking outside the house					
Only slightly	35 (11.1)	22 (6.7)	57 (8.9)	3.509	0.173
Appreciably	15 (4.7)	20 (6.1)	35 (5.4)		
Completely	9 (2.8)	7 (2.2)	16 (2.5)		
None	257 (81.3)	267 (85.0)	524 (83.2)		
Handling money					
Only slightly	20 (6.2)	11 (3.5)	31 (4.8)	0.444	0.801
Appreciably	17 (5.3)	12 (3.8)	29 (4.5)		
Completely	6 (1.8)	3 (1.0)	9 (1.5)		
None	274 (86.7)	288 (91.7)	562 (89.2)		
Going to farm or some other place of work					
Only slightly	18 (5.7)	10 (3.2)	28 (4.3)	9.310	0.010
Appreciably	12 (3.8)	24 (7.6)	36 (5.5)		
Completely	36 (11.4)	21 (6.7)	62 (9.4)		
None	250 (79.1)	259 (82.5)	509 (80.8)		
Doing everyday household chores, for example, sweeping, washing clothes, cooking					
Only slightly	35 (11.1)	18 (5.7)	53 (8.4)	6.573	0.037
Appreciably	12 (3.8)	20 (6.4)	32 (5.1)		
Completely	16 (5.0)	13 (4.1)	29 (4.6)		
None	253 (80.1)	263 (83.8)	516 (81.9)		
Bathing					
Only slightly	40 (11.2)	14 (4.5)	54 (8.6)	2.232	0.328
Appreciably	9 (2.8)	7 (2.2)	16 (2.5)		
Completely	6 (3.4)	4 (1.3)	10 (1.6)		
None	261 (82.6)	289 (92.0)	550 (87.3)		
Dressing					
Only slightly	35 (11.1)	12 (3.5)	47 (7.5)		
Appreciably	11 (3.5)	4 (1.1)	15 (2.4)		
Completely	6 (1.9)	4 (1.1)	8 (1.2)		
None	264 (83.5)	296 (94.3)	560 (88.9)		
Feeding					
Only slightly	29 (11.1)	9 (2.9)	38 (6.0)		
Appreciably	9 (2.9)	5 (1.6)	14 (2.2)		
Completely	3 (1.0)	1 (0.3)	4 (0.6)		
None	275 (87.0)	299 (95.2)	574 (91.1)		
Getting around the house					
Only slightly	36 (11.4)	20 (6.4)	56 (8.9)		
Appreciably	17 (5.4)	15 (4.8)	32 (5.1)		
Completely	7 (2.2)	4 (1.2)	11 (1.7)		
None	256 (81.0)	275 (87.6)	531 (84.3)		
Toileting					
Only slightly	30 (9.5)	9 (2.9)	39 (11.4)		
Appreciably	22 (7.0)	7 (2.2)	29 (8.5)		
Completely	2 (0.6)	4 (1.3)	6 (1.8)		
None	262 (82.9)	294 (93.6)	566 (88.3)		
Taking medicine					
Only slightly	27 (8.5)	9 (2.9)	36 (5.7)		
Appreciably	10 (3.2)	6 (1.9)	16 (2.5)		
Completely	5 (1.6)	3 (0.9)	8 (1.3)		
None	274 (86.7)	296 (94.3)	570 (90.5)		

model for the determination of significant risk factors for the dependent outcome disability. The observation that about 1 in every 3 elderly had some disability and may therefore, need assistance is of serious concern. Traditionally, elderly persons in need of care in African societies have relied on family members to provide it.[10] The findings of this study

demonstrate the urgency of the need for developing countries to become more aware of the consequences of the growth in the population of the older people. The consequences include not just the inevitable rise in the numbers of the elderly persons who will become dependent on others for their daily needs, but also the decline, for economic reasons (e.g., internal migration, increase in women working outside the home), in the availability of family members able and willing to provide such needs. Policies aimed at supporting family members to fulfil such roles remain the most viable and possibly more likely to be culturally acceptable than those centred around institutional or formal care. In the same vein, Social factors relating to urbanisation, marital status and poverty may be related to disability. The economic security of the elderly is therefore of special concern.

CONCLUSION

Functional disability was prevalent in both communities, but more so in the urban area. Other social factors were predictors

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Conflicts of interest
There are no conflicts of interest.

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