

Disability and quality of life among community elderly with dizziness: report from the Ibadan Study of Ageing

A O LASISI, O GUREJE*

Abstract

Background: Dizziness is prevalent among the elderly. However, little is known about its impact on quality of life and disability, especially in developing countries, where the number of elderly people is increasing.

Aim: This study aimed to determine the prevalence of disability, and the quality of life, among elderly persons with dizziness living in the community.

Setting and design: Longitudinal cohort study of dizziness among elderly persons (i.e. aged 65 years and over) residing in Yoruba-speaking areas of Nigeria.

Method: Face-to-face interviews with respondents selected using a multi-stage, stratified area probability sampling of households. Dizziness was based on self-reporting and health-related quality of life was measured using the brief version of the World Health Organization quality of life assessment.

Result: Dizziness was reported and confirmed in 318/1281 elderly respondents, a prevalence of 24.8 per cent. Respondents comprised 197 (61.9 per cent) women and 121 (38.1 per cent) men. Thirty-nine respondents (12.3 per cent) were aged 65–69 years, 91 (28.6 per cent) 70–74 years, 66 (20.8 per cent) 75–79 years and 122 (38.4 per cent) ≥ 80 years. The prevalence of disability in activities of daily living was 29.56 per cent, and that of disability in instrumental activities of daily living 10.1 per cent. The influence of gender was not significant. The prevalence of disability in activities of daily living ($p = 0.00$) and in instrumental activities of daily living ($p = 0.00$) increased significantly with age. Univariate analysis revealed that disability in activities of daily living ($p = 0.00$), disability in instrumental activities of daily living ($p = 0.01$), poor family interaction ($p = 0.00$), poor community involvement ($p = 0.00$), overall poor health ($p = 0.00$), current depression ($p = 0.01$), and difficulty with sedentary ($p = 0.00$) and vigorous ($p = 0.00$) activities were significantly more common among elderly respondents with dizziness, compared with non-dizzy elderly respondents. In contrast, cognitive impairment ($p = 0.05$) was not significantly correlated. The probabilities of the occurrence of difficulty with vigorous or sedentary mobility in our elderly respondents were 2.6 and 1.9, respectively, compared with non-dizzy elderly respondents. Similarly, the probabilities of the occurrence of disability in activities of daily living, current depression and dementia were 1.6 each. Logistic regression analyses for age, sex, medical conditions and presence of disability confirmed that dizziness was significantly associated with worsened cognition. Similarly, dizziness was significantly associated with reduced total quality of life ($p = 0.00$), and also with reductions in the physical ($p = 0.00$), psychological ($p = 0.00$) and environmental ($p = 0.00$) domains of the research instrument.

Conclusion: Among elderly people with dizziness, there was a high prevalence of significant disability requiring assistance. In addition, dizziness alone significantly reduced these individual's overall total quality of life, and their quality of life as regards physical, psychological and environmental parameters. This information will assist policy planning for the elderly.

Key words: Dizziness; Vertigo; Aged; Longitudinal Studies; Nigeria

Introduction

Dizziness is a well known problem in the elderly, with a reported prevalence of 13–38 per cent depending on the population studied.^{1–5} Even though dizziness is often chronic and associated with physical and psychological morbidity, its aetiological factors remain unexplained in 40–80 per cent of cases.^{4–6}

Researchers have reported the detrimental influence of chronic dizziness on elderly people's quality of life as well as on their functional and psychological outcomes.^{3–7}

Research on the personal and societal burden of ill health usually focuses on specific diseases rather than

From the Departments of Otorhinolaryngology, and *Psychiatry, University of Ibadan, Nigeria.
Accepted for publication: 4 January 2010. First published online 23 March 2010.

symptoms.³ However, this diagnosis-based approach may underestimate the burden of common symptoms such as dizziness and vertigo.²⁻⁵ Dizziness and vertigo may be caused by a variety of conditions, often requiring a multidisciplinary approach; however, referral to a specialist and hospital admission for specific investigation are not as common as the prevalence of these symptoms would suggest.^{5,6} Common conditions such as benign paroxysmal positional vertigo, migrainous vertigo and psychiatric dizziness remain largely under-diagnosed outside of specialty clinics.^{5,6} Moreover, epidemiological data on the prevalence of specific dizziness and vertigo disorders are scarce and based primarily on selected case series, with diagnostic criteria not explicitly defined.⁷⁻¹⁰

Due to these restrictions, little is known about the individual and social burden of dizziness and vertigo in the community, especially in developing countries (in many of which there is an increasing population of elderly people, at potential risk of poor quality of life due to these symptoms). Therefore, this study aimed to investigate the impact of dizziness on the quality of life of elderly persons residing in the community in Nigeria.

Methods

Patients

The Ibadan Study of Ageing is an ongoing, longitudinal, cohort study of the functioning and mental and physical health status of elderly persons (aged 65 years and over) residing in the Yoruba-speaking areas of Nigeria, consisting of eight contiguous states in the south-western and north-central regions (i.e. Lagos, Ogun, Osun, Oyo, Ondo, Ekiti, Kogi and Kwara). These states account for about 22 per cent of the Nigerian population (i.e. approximately 25 million people). The baseline survey was conducted between November 2003 and August 2004. The methodology has been described in full elsewhere,^{11,12} and only a brief summary is provided here.

Respondents were selected using a multi-stage stratified area probability sampling of households. In households with more than one eligible person (i.e. aged 65 years or over and fluent in the language of the study, Yoruba), the Kish selection method was used to select one respondent.¹³ Face-to-face interviews were conducted with 2152 respondents who consented to participate, representing a response rate of 74.2 per cent.

Annual, three-wave follow up of the cohort began in 2007. Self-reporting of the experience of dizziness was sought during the second wave in 2008. The 2008 sample consisted of 1474 persons who were successfully interviewed; these comprised surviving respondents from the baseline and 2007 samples as well as new respondents recruited in 2008. Of these people, 1281 (86.9 per cent) provided complete information about dizziness, disability and quality of life. Those who could not be interviewed comprised 112 who had died, 275 who had relocated or could not be found after repeated visits (a maximum of five visits was made), and 13 who refused to be interviewed.

The survey was approved by the joint ethical review board of the University of Ibadan and University College Hospital, Ibadan.

Measures

Using standardised protocols administered by trained interviewers, self-reporting of dizziness (included in a checklist of chronic physical and pain conditions)¹⁴ was sought in face-to-face assessments. In this study, dizziness was defined as a positive response to the question "Do you have a feeling of spinning or rotational motion in relation to the environment, or a feeling of light-headedness?"

All respondents were assessed for functional limitations in six activities of daily living. These included bathing, dressing, toileting, arising and transferring, continence and eating.¹⁵ In addition, seven instrumental activities of daily living were assessed: (1) climbing a flight of stairs, (2) reaching above the head to carry something weighing approximately 4.5 kg, (3) stooping, (4) gripping small objects with the hands, (5) shopping, and activities such as (6) sweeping the floor with a broom or (7) cutting grass.¹⁶ Each of the activities of daily living and instrumental activities of daily living was rated as follows: 1 = can do independently with or without difficulty; or 0 = can do with assistance or cannot do at all. If any one of the items was rated 0, the respondent was scored as disabled in activities of daily living or instrumental activities of daily living.

Respondents with a total rating of 0 were classified as disabled. A subgroup of 37 respondents was assessed twice, about seven days apart, in order to measure the test-retest reliability of these disability markers. Agreement was generally very good to excellent, with a κ range of 0.65–1.0.

Respondents' mobility was assessed by enquiring about (1) slow walking on the same level within the house, and (2) pacing, fast walking up a flight of stairs, and walking while carrying a weight. In this study, sedentary mobility was defined as walking within the house on the same level, while vigorous mobility was defined as ascending a height or walking while carrying a weight.

Family and community interaction was determined using the World Health Organization (WHO) Disability Assessment Schedule II instrument, and rated as 1 = good or 0 = impaired.¹⁷

All respondents also completed the brief version of the WHO quality of life (QoL) assessment instrument.¹⁸ This specific version was developed as an instrument for the subjective assessment of health-related QoL which would be applicable across many cultures.¹⁹ It was designed in diverse cultural settings, including sub-Saharan Africa,¹⁹ and has been validated as a measure of QoL in elderly people.²⁰ In our study, this instrument had previously demonstrated excellent reliability (Cronbach α = 0.86).¹¹ The lower the score on this instrument, the poorer the respondent's QoL.²¹

We also assessed the presence of depression, using the WHO Composite International Diagnostic

Interview, version 3, a fully structured, diagnostic interview pro forma.²¹ Diagnosis was based on the criteria of the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition.²² This publication's exclusion rules for the diagnosis of depression were imposed.

All research instruments were translated into Yoruba with iterative back-translation methods. As part of the translation process, all the instruments used underwent cultural adaptation. For example, during the functional assessment, a tuber of yam (a local staple food) of appropriate weight was used to indicate 4.5 kg.

The 24 trained interviewers all had at least 12 years' education (i.e. to high school graduation).

Data analysis

Here, we present unweighted estimates of the occurrence of dizziness. We also present demographic and other correlates of the condition, derived via logistic regression analysis,²³ as well as estimates of standard errors of the odds ratio, calculated using the Stata statistical software package.²⁴ Univariate analysis determined the significance of the differences in occurrence of the variables, comparing respondents with dizziness versus those without. The probability of occurrence of variables were determined using multivariate analysis. The mean total score for the brief version of the WHO quality of life instrument, and for each domain within that instrument, was determined for respondents with dizziness and those without, and the significance of any difference was determined using the Student *t*-test. Using logistic regression analysis controlling for age, sex, medical conditions and disability, we determined the significance of the association between dizziness and the total mean score of the brief version of the WHO QoL instrument, and each domain of that instrument. All of the confidence intervals reported were adjusted for design effects. In order to take account of the sample design, we used the jackknife replication method implemented with the Stata statistical package to estimate standard errors for the means and proportions. Statistical significance was set at 0.05 in two-sided tests.

Results

The sample consisted of 318 elderly respondents who reported dizziness, out of a total of 1281 elderly respondents surveyed (24.8 per cent). Respondents comprised 197 (61.9 per cent) women and 121 (38.1 per cent) men. Thirty-nine respondents (12.3 per cent) were aged 65–69 years, 91 (28.6 per cent) 70–74 years, 66 (20.8 per cent) 75–79 years and 122 (38.4 per cent) ≥80 years.

Disability in activities of daily living was reported by 94 respondents, constituting a prevalence of 29.56 per cent, while disability in instrumental activities of daily living was reported by 32 (10.1 per cent) (Table I). Respondents' gender was not significant in this respect; however, the prevalence of disability increased significantly with increasing age.

TABLE I
RESPONDENTS' AGES AND PREVALENCE OF DISABILITY TYPES

Parameter	ADL*		IADL†	
	Rts (%)	<i>p</i>	Rts (%)	<i>p</i>
<i>Gender</i>				
Male	34.04		31.25	
Female	65.96	0.34	68.75	0.40
<i>Age (y)</i>				
65–69	4.26		0.00	
70–74	23.40		9.38	
75–79	15.96	0.00	15.63	0.00
80+	56.38		75.00	

**n* = 94; †*n* = 32. ADL = disability in activities of daily living; IADL = disability in instrumental activities of daily living; rts = respondents; y = years

Respondents reporting dizziness had significantly worse activities of daily living disability, family interaction, community involvement, overall reported health, current depression, and difficulty with sedentary and vigorous activities, compared with non-dizzy respondents (Table II). In contrast, dizziness did not correlate significantly with cognitive impairment. Logistic regression, adjusting for age, sex and medical conditions, confirmed the significance of dizziness (Table III). In respondents with dizziness, the probabilities of occurrence of difficulty with sedentary and vigorous mobility were 2.6 and 1.9, respectively, compared with non-dizzy respondents. Similarly, the probabilities of occurrence of activities of daily living disability, current depression and dementia were 1.6 for each.

Student *t*-test analysis of dizzy respondents' mean scores for the WHO brief QoL instrument revealed significant deterioration in cognition, total QoL, and physical, psychological, social and environmental QoL domains, compared with non-dizzy respondents (Table IV).

Table V shows logistic regression analysis of dizzy respondents' quality of life, adjusted for age, sex, medical conditions and presence of disability. This confirms the significant effect of dizziness on deterioration in cognition, total QoL and QoL for each of the instrumental domains.

TABLE II
UNIVARIATE ANALYSIS COMPARING RESPONDENTS WITH AND WITHOUT DIZZINESS

Variable	Respondents (%)		<i>p</i>
	Dizzy	Not dizzy	
Poor family interaction	21.1	12.5	0.00
Poor community involvement	24.8	15.5	0.00
Sedentary activity	34.6	19.7	0.00
Vigorous activity	67.4	41.6	0.00
ADL	29.6	20.8	0.00
IADL	10.1	5.6	0.01
Current depression	13.5	8.2	0.01
Poor reported overall health	17.3	7.3	0.00
Cognitive impairment	1.9	14.0	0.05

ADL = disability in activities of daily living ; IADL = disability in instrumental activities of daily living

TABLE III

MULTIVARIATE ANALYSIS COMPARING RESPONDENTS WITH AND WITHOUT DIZZINESS, BY VARIABLE

Variable	OR	95% CI	<i>p</i> > z
Dementia	1.65	1.16–2.33	0.00
Current depression	1.64	1.10–2.44	0.02
Poor family interaction	0.59	0.42–0.84	0.00
Poor community involvement	0.60	0.44–0.84	0.00
Sedentary activity	1.89	1.42–2.53	0.00
Vigorous activity	2.52	1.91–3.32	0.00
ADL	1.66	1.03–2.66	0.04
IADL	1.43	1.05–1.93	0.02

OR = odds ratio; CI = confidence interval; ADL = disability in activities of daily living; IADL = disability in instrumental activities of daily living

Discussion

This is the first large scale study of the QoL of elderly people with dizziness in sub-Saharan Africa. It shows that approximately three in 10 elderly people living with dizziness within the community have a level of disability that requires assistance. This study also provides further confirmation that dizziness alone significantly reduces elderly people’s total QoL and their QoL as regards each of the research instrument domains. In addition, this study documents the fact that elderly people living with dizziness have significant difficulties in, and thus require assistance with, essential activities of daily living such as bathing, toileting, dressing, eating, and family and community interactions. Problems with family interaction, as detected in this study, may possibly prevent respondents’ dependence upon their family for basic self-care, thus worsening their quality of life.

In agreement with our findings, other authors have reported that dizziness prevented 22 per cent of affected individuals from performing normal daily activities for one day or more per month, and was associated with worsening self-reported health and other functional and psychological outcomes.^{7–10,25,26}

TABLE IV

STUDENT T-TEST ANALYSIS OF WHO BRIEF QOL ASSESSMENT INSTRUMENT SCORE, FOR VARIOUS DOMAINS: DIZZY VS NON-DIZZY RESPONDENTS

QoL domain	Respondent		Mean score	95% CI	<i>p</i>
	Type	<i>n</i>			
Phys	ND	966	24.89	24.53–25.24	0.00
	D	315	21.58	20.90–22.25	
Psych	ND	966	21.86	21.64–22.09	0.00
	D	313	20.18	19.77–20.60	
Soc	ND	968	9.73	9.59–9.88	0.01
	D	314	9.34	9.07–9.61	
Env	ND	963	27.10	26.82–27.38	0.00
	D	312	25.72	25.26–26.19	
Total	ND	936	83.68	82.87–84.50	0.00
	D	304	76.97	75.54–78.41	
Cogn	ND	969	3.88	3.76–4.01	0.00
	D	310	3.27	3.04–3.51	

WHO = World Health Organization; QoL = quality of life; CI = confidence interval; phys = physical; psych = psychological; soc = social; env = environmental; cogn = cognition; ND = non-dizzy; D = dizzy

TABLE V

LINEAR REGRESSION ANALYSIS OF DIZZY RESPONDENTS’ QOL, BY WHO BRIEF QOL ASSESSMENT INSTRUMENT, CONTROLLING FOR AGE, SEX, MEDICAL CONDITIONS AND DISABILITY

QoL domain	β	95% CI	<i>p</i> > t
Phys	−0.02	−0.02 to −0.01	0.00
Psych	−0.02	−0.03 to −0.01	0.00
Soc	−0.01	−0.02 to 0.00	0.15
Env	−0.01	−0.02 to −0.01	0.00
Total	−0.01	−0.01 to 0.00	0.00
Dem	0.09	0.02 to 0.16	0.01
Cogn	−0.03	−0.04 to −0.01	0.00

**n* = 318. QoL = quality of life; WHO = World Health Organization; CI = confidence interval; phys = physical; psych = psychological; soc = social; env = environmental; dem = dementia; cogn = cognition

Tinetti *et al.*¹⁰ and others^{23,26} have also reported that elderly patients with chronic dizziness living in the community were more likely to report worsening self-reported health, depressive symptoms, participation in social activities and confidence in performing daily activities without falling. Declining QoL has also been documented, most notable in terms of role limitations in the physical and emotional dimensions; the frequency of dizziness attacks correlated with perceived disability.^{9,10}

Neuhauser *et al.*⁵ reported a significantly greater incidence of medical consultation, sick leave, interruption of daily activities and avoidance of leaving the house in vertigo sufferers compared with non-sufferers. In addition, they reported that dizziness and vertigo had considerable personal effects on sufferers, including reduced health-related QoL, compared with non-dizzy control subjects in the general population, which may interfere with individual lifestyle and social behaviour.

Similarly, our study found a significant correlation between dizziness and current depression. In our study, the prevalence of depression was 19 per cent. In comparison, Kroenke *et al.*²⁵ reported that psychiatric disorders were the primary or contributing factors to dizziness in 40 per cent of patients with persistent dizziness. Other authors have reported various psychoaffective complaints in their populations of dizzy patients. Kroenke *et al.*²⁵ also found that their dizzy patients had a higher lifetime prevalence (23 vs 8 per cent), as well as recent history (11 vs 0 per cent), of major depression or dysthymia, compared with non-dizzy control patients. In addition, somatisation disorders have been found to be strikingly more common among dizzy patients than among control patients (37 vs 8 per cent, respectively; *p* = 0.005), with the dizzy patients reporting more than three times as many psychiatric or unexplained physical symptoms (5.2 vs 1.5 per cent). Many studies^{8–10,25–28} have reported that certain vertigo syndromes may cause patients to feel depressed and insecure. Fear of dizziness may lead to anxiety and even panic. Depression may develop and cause individuals to withdraw from social activities, family members and professional colleagues, as well as to limit leisure and household activities, leading to dependence upon family members which may compromise family dynamics.

In our opinion, depression in such patients occurs as a consequence of dizziness. The observed coexistence of dizziness, anxiety and depression has been explained to result from the functional interaction between those systems responsible for psychic and physical balance.^{28,29} Furthermore, an improvement in psychological well-being in patients treated in dizziness clinics has been reported to be predictive of a general improvement in QoL.^{30–32}

- **Dizziness is common in the elderly, with a reported prevalence of 13–38 per cent depending on the population studied**
- **This study reports dizziness and its correlates in a longitudinal cohort of elderly subjects (≥65 years) living in the community in Yoruba-speaking areas of Nigeria**
- **The prevalence of significant disability requiring assistance among dizzy elderly respondents was high; also, dizziness alone significantly reduced quality of life assessment scores, both total and in the physical, psychological and environmental domains**

The current study reports the consequences of dizziness on disability and quality of life among elderly people living in the community. A total of 1281 respondents were able to answer the questionnaire meaningfully (some others were too ill or frail to respond). However, the sample population was substantial enough to enable reliable scientific deductions, and compared well with the sample populations of Colledge *et al.*² ($n = 1000$), Hsu *et al.* ($n = 197$),⁸ and Mattos and Veras ($n = 238$)³³ (although others have studied larger populations, such as Neuhauser *et al.*⁵ ($n = 4869$) and Steven *et al.* ($n = 2925$)).³⁴

In addition, the current study made efforts to achieve a diagnosis in the subjects studied. Our patients' aetiological factors for dizziness included atrial fibrillation, ataxic neuropathy, hypertensive encephalopathy, and causes of peripheral vestibular vertigo such as benign paroxysmal positional vertigo, Ménière's disease and cervical spondylosis. Some of the patients were already receiving treatment for their various causative conditions, while others were commenced on treatment.

Conclusion

We have documented a high prevalence of disability due to chronic dizziness in elderly people living in the community, and we have demonstrated the significant consequences of chronic dizziness on these patient's QoL and general well-being. This suggests a need to redirect the current goals for the care of elderly patients. In addition, our findings highlight the need for further research focused upon detecting and ameliorating contributing factors (which may effectively reduce the development of chronic dizziness) as well as reducing the resulting physical, psychological, domestic and social disabilities.

Acknowledgement

The Ibadan Study of Ageing is funded by the Wellcome Trust. The Wellcome Trust was not involved in the collection, analysis or interpretation of data presented in this report.

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Address for correspondence:
 Dr A O Lasisi,
 Senior Lecturer,
 Department of Otorhinolaryngology,
 College of Medicine,
 PO Box 22040,
 University of Ibadan,
 Ibadan, Nigeria.

E-mail: akeemlasisi@gmail.com

Dr A O Lasisi takes responsibility for the integrity of the content of the paper.
 Competing interests: None declared
