



Assessment of health-related quality of life in stroke survivors attending two healthcare facilities in Benin City, Nigeria

Ehijie F. O. Enato^{1*}, Edith O. Yovwin² and Olubunmi A. Ogunrin³

¹Department of Clinical Pharmacy & Pharmacy Practice, Faculty of Pharmacy, University of Benin, Benin City, Nigeria.

²Department of Pharmacy, University of Benin Teaching Hospital, Benin City, Nigeria.

³Neurology Unit, Department of Medicine, University of Benin, Benin City, Nigeria.

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Abstract

The objective of the study was to assess the quality of life (QoL) of stroke survivors attending two major hospitals in Benin City, Edo State. 78 patients drawn consecutively from two health facilities were used. Data on QoL of the patients were collected using a disease specific quality of life instrument – Newcastle Stroke Specific Quality of Life (NEWSQoL) measure, with some slight modifications. Means of the different subscales were determined, and the impact of the demographic variables on the dimensions was explored using Student's *t*-test or one-way ANOVA. In addition, responses on each dimension were transformed into scores ranging from "0" to "100," with higher scores indicating lower QoL. The demographic profiles of the respondents were: male (63%), married (83%), civil servants (40%), and postsecondary education (50%). Over half (60%) of the respondents were age 50 years and above, and only 42% of them had average monthly income of 30, 000 naira and above. The Cronbach's alpha coefficient of reliability ranged from 0.57 to 0.92. Quality of life of the different domains on a scale of "0" to "100" showed the highest value for "feeling" domain (50) and lowest value for "vision" domain (18). Socio-demographic variables did not have any impact on several domains of QoL ($p > 0.05$), except on activities of daily living in which women had significantly poorer QoL when compared to men ($p < 0.05$). The study provided evidence that stroke survivors experienced a fairly moderate QoL. In addition, the survey instrument demonstrated a reasonable level of reliability for its routine use in assessment of QoL of stroke survivors in our locality.

Keywords: Assessment, Health related quality of life, Stroke patients

INTRODUCTION

Worldwide, stroke remains a major cause of death and disability (Bamford *et al.*, 1990, Thorvaldsen *et al.*, 1995, and Ogun *et al.*, 2000), despite advances in its management (Ogun *et al.*, 2000). Stroke is the leading cause of long-term disability in western countries (Carod-Artal *et al.*, 2009, and Edwards *et al.*, 2010), the functional outcome of which depends on its severity

(Carod-Artal *et al.*, 2009). In Nigeria, reports from three major hospitals in southwestern part of the country, indicate that stroke constitutes between 5 and 17% of all medical deaths (Ogun *et al.*, 2000 and Adetuyibi *et al.*, 1976), 0.9 - 4% of hospital admissions (Owolabi, 2006), and results in 6-month case fatality of 46% (Ogun *et al.*, 2005). The community prevalence of stroke varied from 58/100,000 to 400/100,000 with crude annual

* Corresponding author. *E-mail address:* enatoefo@uniben.edu; ehise2002@yahoo.com Tel: +234 (0) 8023597448
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mortality rate of about 70/100,000 per year in Nigeria (Owolabi, 2006).

The impact of stroke can be devastating, leaving a person with residual impairment of physical, psychological, and social functions (Lai *et al.*, 2003, and Kim *et al.*, 1999). Though recent advances in diagnosis, management, and rehabilitation of stroke have had a significant impact on its clinical and functional outcomes (Edwards *et al.*, 2010), however, the disorder still continue to negatively impact on the survivors (Edwards *et al.*, 2010, and Kim *et al.*, 1999), as well as the care givers (Jonsson *et al.*, 2005, and Marco *et al.*, 2010). For example, studies of long-term stroke survivors have found a reduction in health-related quality of life (QoL) associated with stroke (Xie *et al.*, 2006, Kwok *et al.*, 2006, and Huang *et al.*, 2010). Quality of life (QoL) has been defined by the World Health Organization QoL Group as ‘individuals’ perceptions of their position in life in the context of the culture and value system in which they live and in relation to their goals, expectations, standards and concerns (WHOQOL, 1998). Furthermore, QoL has also been defined as “a person’s sense of well-being, purpose in life, autonomy, ability to assume worthwhile roles, and ability to participate in significant relationships” (Carod-Artal *et al.*, 2009).

Globally, stroke outcomes have traditionally focused on 1-year mortality, annual recurrence and 1-year disability, and these have been extensively studied in the literature (Carod-Artal *et al.*, 2009). In Nigeria, outcome among stroke survivors has been studied using a modified Rankin scale, a measure of functional outcome and Glasgow outcome score (GOS). The QoL of stroke survivors is an important aspect of stroke rehabilitation. Unfortunately, there is little information on QoL among stroke survivors in Nigeria. Owolabi *et al.*, (2006) assessed the health-related quality of life among Nigerian

stroke survivors and observed a significant impact.

The understanding of the impact of stroke on survivors’ QoL is essential to planning and implementation of rehabilitation and support services aim at improving their total well being. With the introduction of stroke units and improvement in health services, more people are expected to survive stroke and the issue of the QoL becomes paramount. This study was therefore designed to assess the health-related quality of life of stroke survivors attending the neurology clinic of a tertiary health facility and the outpatient medical clinic of a secondary (general) health facility, both located in Benin City, Nigeria.

EXPERIMENTAL

Setting: The study was carried out in two health facilities in Benin City, Edo State. The health facilities were medical department of Central Hospital and neurology unit of University of Benin Teaching Hospital (UBTH). Ethical approval for the study was obtained from the Hospital’s Ethics Committee, and verbal consent was obtained from the study participants.

Data collection: The Newcastle Stroke Specific Quality of Life (NEWSQOL) instrument, which is a standard disease specific, patient-derived, stroke-specific QoL questionnaire, was used for data collection (Buck *et al.*, 2004). NEWSQOL was developed as a comprehensive stroke-specific patient-based measure of impact of neuroprotective drugs and other therapeutic interventions on quality of life; to facilitate the assessment of post-stroke QoL in clinical practice, and as a means of improving health professional/patient communication (Buck *et al.*, 2004). The questionnaire consists of 56 items with a 4 point Likert – type response scale. The lowest possible score was “0”, and the highest possible score on the questionnaire was “3”. The dimensions

covered by the questionnaire include: Mobility (9 items), Activities of Daily Living (8 items), Pain/sensation (3 items), Vision (2 items), Cognition (5 items), Communication (4 items), Feelings (6 items), Interpersonal relationships (6 items), Sleeps (6 items), and Fatigue (3 items). In addition, provision was made on the questionnaire to obtain the respondents' socio-demographic data.

Data collection was undertaken by one of the investigators (EOY) and a trained research assistant. In order to facilitate responses from the patients, the instrument was read by the investigator or research assistant with the patient, except in few cases when the patients wanted to complete the questionnaires on their own with the guide of the investigator. Thereafter, every questionnaire was checked for any missing item(s) and supplemented when necessary. It took between 20 and 25 minutes to fully interview one patient or complete a questionnaire.

Patients who had suffered from stroke, had registered with the health facilities utilized for the study, gave consent, had reasonable cognitive and language function adequate to participate in study procedures, and were literate enough to respond to the items on the questionnaire were recruited. While those with markedly decreased level of consciousness and who were not literate enough to respond to the questionnaire were excluded from participation in the study. Diagnosis of stroke was based on both clinical and radiological evidence. The presence of a sudden-onset of focal neurological deficit which lasted for more than 24 hours and exclusively of vascular etiology was the clinical diagnosis, and this was confirmed with a computerized tomographic scan of the brain.

Data analysis: Usable responses were entered into Microsoft Excel spreadsheet and rechecked prior to sorting. Thereafter, the responses were loaded into the SPSS version

10 or Graph Pad InStat® version 2.05a for descriptive and inferential statistical analysis. Descriptive statistics on sample characteristics and responses were computed, including means, standard deviation and percentage frequencies distribution. Cronbach's alpha test of reliability was used to explore the internal consistency of the instrument. Possible associations between socio-demographic variables and the patients' QoL were explored using Student's *t*-test and one-way ANOVA. Furthermore, responses on each dimension was transformed into scores ranging from "0" to "100," with higher scores indicating lower QoL, while lower scores indicating higher QOL.

RESULTS

Ninety three patients who met the inclusion criteria were approached for interview, and of this number, 78 agreed to participate in the study and were subsequently recruited, while 15 declined, giving a response rate of 84% (78/93). A majority of the respondents were male (63%), married (83%), civil servants (40%), had attained post secondary education (50%), and age group of 50 years and above (62%). Only 42% of them had average monthly income of 30, 000 naira and above (Table 1). Cronbach's alpha coefficient of reliability ranged from 0.57 to 0.92. The highest value was obtained for "feelings" domain, while the lowest value was found in "fatigue" domain. Overall, the respondents rated their mobility as 11.24 ± 5.17 (mean \pm sd), which was the highest mean value obtained, and the lowest mean value was found in the domain of vision (1.09 ± 1.43) as shown in Table 3. In addition, the quality of life subscales measured on a scale that ranged from "0" to "100" was highest in the "feelings" (50) domain and lowest in "vision" domain (18) (Table 4).

Analysis of the impact of three socio-demographic profiles (patients' age, sex and marital status) of the respondents' on their

QoL showed that there was only a significant difference ($p < 0.05$) for sex on activities of daily living, while the p-value for age on mobility domain was found to be 0.53 (data not shown).

Table 1: Socio-demographic profile of respondents.

Variable	Category	Number	%
Sex	Male	49	62.8
	Female	29	37.2
Age	<20years	-	-
	20-29years	4	5.1
	30-29years	3	3.8
	40-49years	23	29.5
	50years & above	48	61.5
Educational status	no formal education	11	14.1
	primary school	16	(20.5
	secondary school	12	15.4
	post-secondary	39	50.0
Marital status	single	6	7.7
	married	65	83.3
	separated	6	7.7
	divorced	-	-
	Widowed	1	1.3
Occupation	Civil servant	31	39.7
	Businessman/woman	22	28.2
	Student	7	8.97
	Not employed	18	23.1
	Others	-	-
Average monthly income (naira)	Less than 5,000	11	14.1
	5,000 – 10,000	14	17.9
	10,000 - 10, 000	10	12.8
	20,000 - 29,00	10	12.8
	30,000 - 39,000	15	19.2
	40.000 - 49,000	9	11.5
	50, 000 and above	9	11.5

Table 2: Reliability coefficients of different subscales compared with reference values*

Subscale	Alpha coefficient	
	n=78	*n=100
Mobility	0.88	0.84
ADL	0.83	0.90
Pain/sensation	0.72	0.79
Vision	0.68	0.76
Cognition	0.89	0.89
Communication	0.87	0.79
Feelings	0.92	0.90
Interpersonal relationship	0.73	0.84
Emotion	0.62	0.76
Sleep	0.76	0.79
Fatigue	0.57	0.72

*= reference values obtained by Buck *et al.* (2004)

Table 3: Results of subscale analysis

Subscale	Mean	s.d.
Mobility	11.24	5.12
ADL	9.63	5.49
Pain/sensation	3.83	2.19
Vision	1.09	1.43
Cognition	4.85	4.12
Communication	4.24	3.38
Feelings	8.94	4.72
Interpersonal relationship	5.38	2.39
Emotion	4.40	2.30
Sleep	6.62	1.91
Fatigue	3.63	1.91

Table 4: Results of each domain on a transformed scale of “0” to “100”

Subscale	Transformed scale*
Mobility	42
ADL	40
Pain/sensation	43
Vision	18
Cognition	32
Communication	35
Feelings	50
Interpersonal relationship	30
Emotion	37
Sleep	37
Fatigue	40

*Higher score indicating a greater perceived impact of stroke on the respondents' quality of life

DISCUSSION

The questionnaire achieved a high response rate. The reason for this could possibly be due to the fact that the study was carried out in health facilities, and the respondents could have considered the study as part of their medical care, thus anticipating improvement in their health, afterwards. The internal consistency of the instrument computed as Cronbach's alpha in our local environment gave results, which were comparable with the reference values, except for “fatigue” sub-scale that was found to be 0.57 (Reference value 0.72) (Table 2). Compared to the reference values, the slight decrease in Cronbach's alpha observed in some sub-scale as well as that of “fatigue” sub-scale could have been a reflection of cultural differences as regards health concerns between our environment and that of the United Kingdom, where the questionnaire was

developed and the reference study undertaken (Buck *et al.*, 2004).

Reports of studies elsewhere showed that stroke negatively (and in some cases severely) impact on the QoL of the survivors (Xie *et al.*, 2006, Kwok *et al.*, 2006, and Huang *et al.*, 2010). The quality of life subscales measured on a scale that ranged from “0” to “100” with higher values indicating greater impact of the disorder on QoL of the patients, showed values ranging from “18” to “50” for all domains. These findings give indication of a fairly moderate QoL among the study participants, a suggestion that the patients were coping well with their disabilities. A possible explanation for the observed moderate QoL of the stroke survivors in our locality could be a reflection of the quality of medical care that they receive. Another possible reason would be the impact of social and family support that the patients receive, a practice that is still very high in Africa. Wyller *et al.*, (1997) revealed that high

levels of social support have been associated with better outcomes. Furthermore, the finding may have been due to selection criteria that excluded patients with decreased consciousness and severe cognitive and language impairments; as such patients may experience worse QoL.

A further analysis showed that age, sex and marital status did not affect the QoL of study participants, except for activities of daily living, in which women had significantly poorer QoL when compared to men, this finding is at variance with a report by Owolabi in Ibadan, Nigeria (Owolabi, 2006), where gender was observed not to have any significant impact on the health-related quality of life of stroke survivors.

Though results from this study seem reassuring, we recommend that they should be interpreted in the light of some identified limitations. As mentioned above, the selection criteria, which excluded patients with decreased level of consciousness as well as those with severely impaired cognitive and language impairments is one example. Others include non classification of stroke into disease sub-types and categorization of the duration of post stroke event. In addition, the subjects were drawn from tertiary and secondary health facilities, and this may not reflect the general trend in community. Finally, lack of linguistic and cultural validation of the research questionnaire means the impact of local culture and norms may not have been fully explored. However, despite these limitations, the study represents a bold attempt to incorporate patients' views in outcome assessment of stroke survivors in our locality. Further exploration of QoL assessment of stroke survivors warrants future attention by clinicians and researchers. We are of the opinion that this study should as a matter of urgency arouse all stakeholders in the management of stroke survivors on the importance of patient reported outcomes in clinical decision making. They fact that a

majority of the patients expressed their views regarding their QoL gives an indication that time has come when we cannot afford to continually ignore their preferences.

In conclusion, the study provides evidence that stroke survivors' overall quality of life was on the average, and female sex had significant poorer QoL on activities of daily living domain. It is recommended the results of this study could form the basis of further research in the area, particularly exploring the QoL of stroke survivors in the general population. Also, routine assessment of QoL of the patients should be considered as part of clinical management of stroke survivors. Furthermore, assessment of QoL could as well be the evaluator of sequelae of stroke, an indicator of the effectiveness of the post-stroke rehabilitation and management in Nigeria (Opara and Jaracz, 2010).

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