Research Article

Validity and Reliability of Hausa Version of The World Health Organization Quality of Life-Short Form Among Spinal Cord Injury Survivors

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ABSTRACT

The World Health Organization's Quality of Life Bref (WHOQoL-Bref) is a well-validated, cross-cultural tool for measuring Quality of Life (QoL) across different populations. This study translated the WHOQoL-Bref into the Hausa language, through a forward-back translation phase, which involved two rounds of back translation. In addition, the translated Hausa version was investigated for validity and reliability among patients with spinal cord injury (SCI). Individuals with spinal cord injury (ISCI) and their sex- and age-matched apparently healthy individuals (AHI), participated in this correlational study. The ISCI and AHI were recruited using purposive sampling technique from physiotherapy clinics of tertiary health institution in Northern Nigeria. The ISCI completed both English and Hausa versions and a re-completion of the Hausa version of WHOQoL-Bref after two weeks, while the AHI completed the Hausa version only. Descriptive and inferential statistics were used at p<0.05. The ISCI (38 males; 11 females) and AHI (38 males; 11 females) were aged 32.86±7.15years and 33.68±7.15years respectively. The mean duration of SCI is 20.43±9.03 months. Domain scores on the Hausa version of the WHOQoL-Bref correlated significantly with English version (r=0.514-0.638, p=<0.0001). There were differences between scores obtained by participants with SCI and those without SCI on the Hausa version. Domain scores on the Hausa version of WHOQoL-Bref obtained on the first and second administrations correlated significantly (r=0.413-0.766, p=<0.0001). The Hausa version of WHOQoL-Bref is a valid, reliable and acceptable instrument for assessing QoL of spinal cord injury survivors. It is recommended for use in Hausa-speaking populations.

INTRODUCTION

Spinal cord injury (SCI) is possibly the most disruptive and traumatic event that can occur in anyone's life. It poses huge challenges in the form of coping process as well as rehabilitation (Kumar and Gupta, 2016). Some authors have reported that after an SCI, people usually experience a reduced subjective well-being, life participation, and quality of life (Singh *et al*, 2014). The quality of life (QoL) in SCI patients has been specifically defined as living with independence, living with self-esteem and living well without suffering (Khupantavee *et al*, 2008).. Therefore, it is important to measure the QoL to determine the success of rehabilitation programmes for SCI patients. The main goal of all

rehabilitation programmes is to enable the SCI affected individual to enhance their QoL .

The world health organisation has defined QoL as individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns (WHOQoL Group, 1998, Geyh *et al*, 2013). It is a broad concept incorporating in a complex way, the person's physical health, psychological state, and level of independence, social relationships, personal belief; and relationship to salient features of the environment (Yuh *et al*, 2004).

Of all the generic QoL instruments commonly used, only the World Health Organisation Quality of Life (WHOQoL) is based on a theoretical model developed by first establishing a

definition of QoL, and then, in an international collaborative effort, defining the dimensions that should be included to measure QoL (Carr and Hagginson, 2001). This definition fits the theoretical QoL model in spinal cord injury (SCI) rehabilitation and reflects the subjective perception of different aspects of life of persons with SCI (Jang *et al*, 2004). However, in a systematic review by Hill *et al* (2010) on quality of life assessment tools, it was found that the WHOQoL assessment instrument is the most consistently promising tool for prediction of quality of life in spinal cord injury.

Given recent advancement in technology and medical care, there has been an increase in survivor rate of individuals with SCI. However, this has resulted in an increase not only in disability arising from SCI but also its attendant challenges such as poor QoL (Ekechukwu *et al*, 2017). So, it is very important to improve the QoL of persons with SCI, QoL has hence become a key outcome in determining the success of rehabilitation programmes, and measurement of QoL is of increasing importance in the field of rehabilitation (Jang *et al*., 2004).

The World Health Organisation Quality of Life Group (WHOQoL Group) developed the WHOQoL-100 quality of life assessment within fifteen international field centres simultaneously, in an attempt to develop a quality of life assessment scale that would be applicable cross-culturally (WHOGroup, 1996). The WHOQoL-BREF (Appendix A) is a shorter version of the original instrument, the WHOQoL-100, and is designed to be more convenient for use in large research studies or clinical trials. The WHOQoL-Bref was intended to be used in epidemiological studies and clinical trials in which a brief assessment of QoL is of interest (Akinpelu *et al*, 2006). It is one of the best-known instruments that has been developed for cross-cultural comparisons of QoL and is available in more than 40 languages (Vahedi 2010). WHOQoL-bref is an exhaustive tool that clearly assesses life perspective of persons in any study, measures patient reported outcome and has been validated in multiple studies to measure QoL in SCI affected individuals (Jang *et al*, 2004). The WHOQoL-bref is suitable for measuring QoL in healthy and ill populations and is, therefore, neither a disability assessment nor only a measure of distress. It is the most widely used QoL measure in the world, in different population, like stroke, dementia (Skevington *et al*, 2004), HIV (Sakthong *et al*, 2007).

Hausa is one of the widely spoken languages in Africa. It has its largest number of speakers in West Africa with an estimated 34 million native speakers, plus additional 18 million second language speakers, giving an approximate 52 million people (Kaka *et al*, 2016). Akinpelu *et al* (2006) had submitted that many of the patients attending physiotherapy out patient clinics in South-Western Nigeria do not understand English. This may appear to be true for Northern Nigeria as well. Among the various ethnic groups in Nigeria, the official language of communication is English (Babajide 2001); however, most ethnic groups prefer to make use of their specific local languages as a medium of expression. Translation of the WHOQoL-Bref into the Hausa language would hence increase its utility among this large population. The Hausa translation of WHOQoL-Bref is presently not available in literature. The purpose of this study therefore was

to translate the WHOQoL-Bref into Hausa language and evaluate its' test-retest reliability and criterion-related validity using the English (original version as the ''criterion measure.'' We hypothesised that; there would be significant relationships between the scores obtained by spinal cord injured patients on the Hausa and English versions of the WHOQoL-Bref. In addition, there would be significant differences between scores obtained by spinal cord injured patients and apparently healthy participants on the Hausa version of WHOQoL-Bref (Known-group validity/ Discriminant Validity). In addition, there would be significant relationships between the scores obtained on the Hausa version of WHOQoL-Bref on two different occasions (test-retest reliability).

MATERIALS AND METHODS

The authors used the recommended guidelines for the translation of self-report measures by Beaton *et al*. (2000) in translating the WHOQoL-Bref into Hausa language. Two expert linguists proficient in English and Hausa languages, that were native Hausa speakers independently, translated the WHOQoL-Bref into Hausa (T1 and T2). Thereafter, both translators met to develop a reconciled version from both translations. A third linguist who was not associated with the initial translation then back translated the reconciled version into the English language. A bilingual expert panel that comprised a physiotherapist, a neurologist and an orthopaedic surgeon that were native Hausa speakers and who were fluent in both English and Hausa language reviewed the back translation. The consensus Hausa translated version of the WHOQoL-Bref was then administered to ten patients with spinal cord injury. Thereafter, the patients participated in a cognitive debriefing interview. All the patients reported that they quite understood all the items in the questionnaire and that there was no imprecision. The consensus Hausa translated version of the WHOQoL-Bref was therefore taken as the final version of the translated Hausa version (T3) (Appendix B)

Instrument

The English version of WHOQoL- Bref (Appendix A): This is a 26-item questionnaire developed by the World Health Organization. The first question assesses the overall quality of life while the second assesses general health. The remaining 24 questions constitute the four domains of quality of life, namely: physical health, psychological health, social relationship and environment. It is a valid and reliable alternative to the lengthier WHOQoL-100 (WHOQoL Group, 1998). It has Cronbach's alpha ranging from 0.61 to 0.81 across its four domains and the alpha value of the whole scale is 0.90. (Sakthong *et al*, 2007). Each item of the WHOQoL-Bref has five options to which the patient is expected to respond on a five - point Likert-type scale. The four domain scores are scaled in positive directions (higher scores denote higher QoL). The items on overall quality of life and general health perception are scored separately. The mean score of items within each domain is calculated and converted to 4-20 range by multiplying it by 4 and then dividing by the number of items in the domain[(mean domain score x 4)÷ no of items].

The second transformation involves multiplying the value obtained in the 4-20 range by 100 and then dividing it by 16. This second transformation converts domain scores to a 0-100 scale (WHOQoL Group, l998).

Participants and Procedure
Study Design, Population/Criteria and Location:
This was a descriptive correlational study carried out among 49 participants with spinal cord injury, who were bilingual in English and Hausa and aged 18 years and above. They must have sustained SCI for at least six months and had no physical illness before the onset of the injury and other chronic disease that may negatively influence QoL. The apparently healthy age-and sex-matched individual participants were also bilingual in both English and Hausa languages. According to Beaton *et al*, (2000), it is essential to recruit a minimum of 30 participants for validity and reliability analyses. Participants were recruited from the outpatient physiotherapy clinics of five tertiary health institutions using purposive sampling technique, from February to July 2012. All the hospitals were located in the North Western/Eastern geopolitical zone of Nigeria where the predominant language of communication/indigenous language are Hausa.

Data Collection Procedure:
The procedure for the study was explained to each participant and thereafter informed consent was obtained from all participants before their participation in the study. Information on the socio-demographic characteristics of the participants and clinical history was obtained through interview. The original English version of the WHOQoL-Bref and the Hausa version (WHOQoL-Bref) were administered to the patients. The source English version of WHOQoL-Bref and its' Hausa translation were randomly distributed to equal number of patients. The Hausa translated version was self-administered to every odd numbered patient (as they agreed to participate in the study) first and then the English version. The English version was first self-administered to every even numbered patient. The time lapse between the administrations of the Hausa translation and the English version was two hours. Then the Hausa version was re-administered on a second time within a period of one to two weeks among the individuals with spinal cord injury. The participants without spinal cord injury only completed (self-administration) the Hausa translated version of WHOQoL-Bref.

Data Analysis: Data collected were analysed by using Statistical Package for Social Science (version 18.0 SPSS Inc) with α set at 0.05. Descriptive statistics such as mean with their standard deviation, frequency and percentage were employed as required. Correlation between quality of life (QoL) scores (domain and single item) on the English and the Hausa versions of the WHOQoL-Bref was explored using Pearson correlation. Quality of life scores on the original (English) and Hausa versions of WHOQoL-Bref were compared using dependent t-test while independent t-test was used to compare the scores of participants with spinal cord injuries and those without spinal cord injuries on the Hausa translated version of WHOQoL-Bref. Correlation between QoL scores (domain and single item) obtained on the Hausa

translated version of WHOQoL-Bref assessed on two occasions was investigated using Pearson Correlation.

Ethical Consideration: Ethical approval for the study was obtained from the University of Ibadan/University College Hospital (UCH), Ibadan Institutional Review Board, Institute of Advanced Medical Research and Training (IAMRAT) (Appendix C).

RESULTS

The participants with (38 males; 11 females) and without SCI (38 males; 11 females) were aged 32.86±7.15years and 33.68±7.15years respectively. The SCI survivors had sustained injury for a mean duration of 20.43±9.03 months as shown below (Table 1).

Table 1:
Socio-demographic and clinical characteristics of the participants

Category	ISCI (n=49) n (%)	AHI (n=49) n (%)
Gender		
Male	38 (77.6)	38 (77.6)
Female	11 (22.4)	11 (22.4)
Total	49(100)	49(100)
Education		
Secondary	24(48.98)	23(46.9)
Tertiary	25(51.02)	26(53.1)
Total	49(100)	49(100)
Employment Status		
Employed	32(65.4)	34(69.4)
Unemployed	17(34.6)	15(30.6)
Total	49(100)	49(100)
Types of impairement		
Complete tetraplegia	4 (8.2)	
Incomplete tetraplegia	11(22.4)	
Complete paraplegia	18(36.7)	
Incomplete paraplegia	16(32.7)	
Total	49(100)	

Criterion-related validity
The correlation between the English version and Hausa translated version of WHOQoL-Bref was assessed using Pearson correlations (Table 2).There were significant positive correlation between the scores of participants with SCI on the English version and Hausa translated version of WHOQoL-Bref. The highest correlation (r=0.638) was obtained for psychological health while the lowest correlation(r=0.514) was obtained for social relationship. Lower correlation was

obtained for overall quality of life (r=0.409) while correlations for overall health was not significant (r=0.218, p=0.132).

The scores of participants with SCI on the English version and Hausa translated version of WHOQoL-Bref were compared using dependent (paired) t-test (Table 3). There was no significant difference in the SCI patient's scores of participants with SCI on both the English and Hausa translated version of WHOQoL-Bref. For both versions of the instrument, participants scored lowest in the physical health domain (37.27±16.71), (40.10±17.28) and highest in the social relationship (49.86±23.40), (53.84±25.26) domain. Although, the domain scores on the Hausa translated version tended to be higher than on the English version, there was no significant difference(p>0.05) in participants' scores on the two versions of the questionnaire.

Table 2 :
Correlation of the items/domains scores between the English version and Hausa translated version of WHOQoL-Bref

English	Hausa	r	p-value
Overall QoL	Overall QoL	0.409	0.004*
Overall Health	Overall Health	0.218	0.132
Physical Health	Physical Health	0.604	0.0001*
Psychological Health	Psychological Health	0.638	0.0001*
Social Relationship	Social Relationship	0.514	0.0001*
Environment	Environment	0.590	0.0001*

Known-group Validity / Discriminant Validity
The known-group validity/ Discriminant validity of the Hausa translated version of WHOQoL-Bref was assessed by comparing the scores of patients with SCI and participants without SCI on the scale (Table 4). The participants without SCI had significantly higher domain and overall health scores (p<0.0001) than patients with SCI. However, participants without SCI overall QoL score was not significantly different (p=0.078).

Test-retest reliability of the Hausa translation of WHOQoL-Bref
The test-retest reliability of the Hausa translated version of WHOQoL-Bref was assessed by correlating the scores obtained on two consecutive administrations of the instrument using Pearson correlation (Table 5). There were significant correlations between overall QoL, overall health and domain scores. The overall QoL (r=0.373 p<0.008), overall health (r=0.322, p<0.024) and physical health (r=0.670, p<0.0001), psychological health (r=0.670, p<0.0001), social relationship (r=0.413, p<0.0001), environment (r = 0.766, p < 0.0001).

DISCUSSION

This study has produced the first translation of WHOQoL-bref into Hausa Language. It revealed the validity and excellent test-retest reliability of the Hausa version of WHOQoL-bref in SCI populations. The WHOQoL-bref has been recommended as the best QoL instrument to use in SCI research (Hill *et al*, 2010).
The ISCHI and AHI participants in this study were aged 32.86±7.15 and 33.68±7.15 years respectively; which showed that the participants were within their active life. Even in the Nigerian civil service, the retirement age of an officer is 60 years (Kaka *et al*, 2016).

Table 3:
Comparison of scores obtained on the English version and Hausa translated version of   WHOQoL-Bref

Items/Domains	English version Mean±SD	Hausa version Mean±SD	t	p-value
Overall QoL	2.92±1.04	2.76±1.03	-1.884	0.315*
Overall Health	2.67±0.97	2.89±1.03	-1.158	0.213*
Physical Health	37.27±16.71	40.10±21.93	-1.384	0.271*
Psychological Health	45.39±14.39	48.10±17.28	-1.384	0.173*
Social Relationship	49.86±23.40	53.84±25.26	-1.158	0.252*
Environment	43.69±20.44	48.51±18.99	-1.884	0.660*

Table 4:
Comparison of scores of ISCI and AHI on Hausa translated version of WHOQoL-Bref

Items/Domains	ISCI Mean±SD	AHI Mean±SD	t-value	p-value
Overall QoL	2.92 ± 1.03	3.29± 1.00	1.784	0.078
Overall Health	2.67± 0.97	3.36±0.86	3.758	0.0001*
Physical Health	37.27±16.71	55.35 ±18.51	5.063	0.0001*
Psychological Health	45.39± 14.39	56.45±13.13	3.974	0.0001*
Social Relationship	49.86± 23.40	64.65 ±20.54	3.326	0.001*
Environment	43.69 ±20.43	61.51 ± 15.52	4.860	0.0001*

This active life involves activities such as transportation, construction works and mining, which predisposed them to road traffic and industrial accidents, which may results in spinal cord injury. The participants for this study were mostly males, a fact, which is, attributed to the cultural background of the Hausa people in which males did most of these activities. Where most of the women are homemakers without any career development..

Table 5:
Test-retest reliability of the Hausa translated version of the WHOQoL-Bref questionnaire

Hausa 1	Hausa 2	r	p-value
Overall QoL	Overall QoL	0.373	0.008*
Overall Health	Overall Health	0.322	0.003*
Physical Health	Physical Health	0.670	0.0001*
Psychological Health	Psychological Health	0.670	0.0001*
Social Relationship	Social Relationship	0.413	0.0001*
Environment	Environment	0.766	0.0001*

However, this study was delimited to those who were literate in both English and Hausa languages, a factor that could have excluded a number of men and women with SCI from participating in this study. Akinpelu *et al* (2006) had submitted that many of the patients attending physiotherapy outpatient clinics in South-Western Nigeria do not understand English. This appears to be true for North West/East Nigeria as well. This finding further supports the need for the translation of WHOQoL-Bref into the Hausa language. The WHOQoL-Bref was found amenable to translation into the Hausa language. This supports the fact that it was cross-culturally developed and has been found to be a reliable measure of QoL of patients for all pathologies or diseases and sensitive to various settings in which it was applied (WHOQoL Group, 1998).

The results obtained in this study shows there were significant direct correlations between the physical, psychological, social relationship and environment domain scores of the English version of WHOQoL-Bref and the Hausa translated version of the instrument. The hypothesis that there would be significant correlation between the scores obtained by spinal cord injured patients on the Hausa and English versions of the WHOQoL-Bref was therefore accepted. Moreover, the hypothesis that there would be significant difference between the scores obtained by spinal cord injured participants and those obtained by non-spinal cord injury participants on the Hausa translated version of WHOQoL-Bref was accepted. This implies that the Hausa translated version of WHOQoL-Bref is a valid translation of the English or source version. This finding is similar to the findings of Akinpelu *et al*, (2006) in a validity study carried out on the Yoruba version of WHOQoL-Bref, one of the Nigerian indigenous languages. Although the Hausa translated version of WHOQoL-Bref had a good correlation with the English version but was lower than values reported for the Taiwanese version of WHOQoL-Bref (r=0.74-0.78) by Jang *et al* (2004) and the Thailand version (r = 0.71-0.81) by

Sakthong *et al* (2007). This suggests that items on the Hausa translated version were well understood by the participants.

The results obtained from this study showed that there was a significant direct correlation between the scores obtained on the first and second administrations of the Hausa translated version of WHOQoL-Bref among individuals with SCI. The hypothesis that there would be significant correlation between the scores obtained on the Hausa version of WHOQoL-Bref on two different occasions was therefore accepted. It can thus be inferred that the Hausa translated version of WHOQoL-Bref is a reliable instrument as reliability refers to the consistency of assessment scores (Moskal and Jon, 2000). Therefore, the Hausa translated version of WHOQoL-Bref is a reliable instrument for assessing quality of life of patients with spinal cord injury.

Absence of a functional branch/chapter of the Spinal Cord Injury Association of Nigeria (SCIAN) or other such bodies in the northern part of the country, made it difficult to locate individuals with spinal cord injury in the community. However, the generalization of the present study was only limited to those fulfilling our inclusion and exclusion criteria. Further longitudinal studies testing the responsiveness, validity and reliability WHOQoL-Bref among larger sample is needed.

In conclusion the Hausa translated version of WHOQoL-Bref is a valid and reliable instrument that can be used to measure QoL as perceived by persons with spinal cord injury. This would better equip health professionals for the management of SCI and make it possible to set realistic goals for patients. The WHOQoL-Bref Hausa version can be adapted for QoL studies in other chronic diseases in Hausa-speaking areas of Nigeria and other West African countries.

Abbreviation
World health Oganisation Quality of Life-Bref - WHOQoL-Bref
World health Oganisation Quality of Life- WHOQoL
Quality of Life-QoL
Health Related Qualty of life -HRQoL
Spinal cord Injury-SCI
Individual with Spinal Cord Injury- ISCHI
Apparently healthy individual- AHI
Spinal Cord Injury Association of Nigeria –SCIAN

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