

Translation and Validation of the Oxford Knee Score into Yoruba Language

Ojoawo Adesola Ojo^{1*}, Oladejo Tioluwani Lois¹ and Timothy Adeyemi²

¹Department of Medical Rehabilitation, Faculty of Basic Medical Sciences, College of Health Sciences, Obafemi Awolowo University Teaching Hospitals Complex, Ile Ife, Nigeria

²Physiotherapy Department, Faculty of Basic and Health Sciences, Bowen University, Iwo, Nigeria

***Corresponding Author:** Ojoawo Adesola Ojo, Department of Medical Rehabilitation, Faculty of Basic Medical Sciences, College of Health Sciences, Obafemi Awolowo University Teaching Hospitals Complex, Ile Ife, Nigeria. **E-mail:** aoojoawo@yahoo.com

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Abstract

The study translated Oxford Knee Score (OKS) questionnaire into Yoruba Language and assessed the reliability of both English and Yoruba version of the translated OKS scores for effective management of knee osteoarthritic patients among the Yoruba language speakers.

Forty-five radiographically confirmed knee osteoarthritis patients participated in this study. The original English version of the OKS was translated into Yoruba Language. The translated version was used as the Yoruba version. This Yoruba-translated version was retranslated to English language to ensure accuracy. Each subject was administered the original and the retranslated versions of the OKS questionnaire, after two weeks another copy of the retranslated questionnaire was re-administered to each participant to test for its reliability.

Data was analyzed using descriptive and inferential statistics at alpha level of 0.05.

Results showed that there was a positive relationship ($r = 0.970$, $p < 0.001$) between the scores of original version and the retranslated, there was also positive relationship ($r = 0.980$, $p < 0.001$) between the scores of the translated version of the OKS and another copy of it that was re-administered after two weeks. Cronbach's alpha for the total population was 0.96 showing that the questionnaire had strong internal consistency.

It can be concluded from the study that the Yoruba version of the Oxford Knee Score (OKS) questionnaire is reliable and valid as an outcome measure for assessing knee osteoarthritis patients.

Keywords: Oxford Knee Score; Knee Osteoarthritis; Yoruba Language; English Language

Introduction

Osteoarthritis (OA) of the knee is regarded as a notable cause of incapacitation in the adult population globally. The population of OA patients is ever rising with older adult patients (aged 35 to 65 years) representing the fastest growing segment of them [1]. A case study conducted in Nigeria by Akinpelu, *et al.* [2] has it that one out of every five adults who are 40 years or older in a rural community (Igbo-Ora) had symptomatic knee osteoarthritis and that it was found more in women than the men with a ratio of 1.2:1. Knee osteoarthritis manifests in form of numerous symptoms and they ultimately result in a fear of falling and an increase in energy expenditure. The important symptoms that patients most commonly complain of include: pain on movement, tenderness, swelling, crepitus, weakness and feeling of the joint giving way [3].

There is therefore, a great need to measure the level of function knee osteoarthritis patients are able to achieve as they perform their day-to-day activities [4]. White, *et al.* found that assessing this is crucial as it helps to evaluate the success of physical therapy interventions [4]. There are numerous tools that have been developed to achieve this feat; they include the Knee Injury and Osteoarthritis Outcome Score (KOOS), Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and many others like the Oxford Knee Score (OKS) [5].

A study done by Dawson, *et al.* to assess the construct validity of the Oxford Knee Score showed that it has good correlation with knee-specific and general health questionnaires, such as the Western Ontario and McMaster Universities Osteoarthritis Index, American Knee Society Score, Knee Outcome Survey Activities of Daily Living Scale and pain and physical function components of the Short Form 36 and Health Assessment Questionnaire [6].

Due to the simplicity and ease of administering the Oxford Knee Score, it has been used widely, especially in the UK, and is available in languages other than English [7]. Because of this, there have been many studies performed to translate the Oxford Knee Score into native languages thus increasing its efficacy in clinic usability. This has even further shown the reliability of the Oxford Knee Score as it has been translated into numerous languages and a few of them include the German, the Swedish, and the Finnish versions [8-10].

One of the most popular Languages in Nigeria is Yoruba Language is a language majorly spoken in the South- west of Nigeria. In sub-Saharan Africa, Yoruba constituted one of the largest groups in terms of ethnicity and language. In the modern day Nigeria they occupied more than 20% [11]. In order to apply OKS appropriately, within the region, it is important to have the Yoruba version of OKS. There is low level of literacy in Nigeria, it is not out of point that patient can misinterpret OKS which was originally in English. It is therefore highly necessary to translate the original OKS in to Yoruba Language, validate the content and establish the reliability of it for effective administration among the Yoruba speakers.

Material and Methods

Participants

The subjects for this study were a total of 45 knee osteoarthritis patients who were receiving treatment at the Physiotherapy Department of Obafemi Awolowo University Teaching Hospital, Ile Ife, and who were also able to understand English and Yoruba fluently.

Inclusion criteria

The inclusion criteria for the subjects that participated in this study was knee osteoarthritis patients who were able to comprehend the English and Yoruba languages. Participants were patients diagnosed from the Orthopedic Outpatient Clinic of the Obafemi Awolowo University Teaching Hospitals Complex, Ile Ife. The X-Ray of each patient also showed evidence of knee osteoarthritis. Compression test to the patellofemoral joint is positive.

Exclusion criteria

1. Patients who were unable to comprehend Yoruba and English language.
2. Patients with secondary knee osteoarthritis.

Research design

A cross sectional research design was used for this study.

Instruments

The Oxford Knee Score Questionnaire: It is a 12-item questionnaire with five questions in each item with its major index pertaining to knee pain and function (pain severity, mobility, limping, stairs, standing after sitting, kneeling, giving way, sleep, personal hygiene, housework, shopping, and transport). The total score is 60 marks. Score 0-19 indicates severe knee arthritis, Surgical intervention may be needed, 20-29 may indicate moderate to severe knee arthritis, 30 to 39 is mild while 40 to 48 indicate satisfactory joint function which may not require any treatment [12].

Stadiometer: The Seca 213 mobile stadiometer was used to obtain the height of the subjects.

Weighing Scale: The Ozeri weighing scale was used to obtain the weight of the subjects.

Site of study

This research was conducted in the Outpatient Physiotherapy Clinic of the Obafemi Awolowo University Teaching Hospitals Complex, (OAUTHC), Ile-Ife, Osun State, Nigeria.

Sampling technique

Forty five patients who were diagnosed with knee osteoarthritis were purposively selected to participate in the study. They were given the Yoruba and original English versions of the Oxford Knee Score.

Procedure

Ethical approval (HREC/2019/025) from the Heath Research and Ethical Committee of the Institute of Public Health, College of Health Sciences Obafemi Awolowo University, Ile-Ife, Nigeria was obtained for this study.

Prior to the data collection, the original English version of the Oxford Knee Score was given to two linguists from the Department of Linguistics, Obafemi Awolowo University, Ile Ife, Nigeria who were well-versed in the English and Yoruba languages. The linguists translated this questionnaire into Yoruba and the new Yoruba version was taken to the English Department of the same university for a re-translation back into the English language in a bid to check its consistency.

The aims and techniques of the research study were explicitly explained to each of the respondents, and their informed consent was obtained. Each respondent was given a copy of the Yoruba and original English versions of the Oxford Knee Score questionnaire to fill. The questionnaires were collected immediately after they were filled and, in a bid, to investigate its validity and reliability, each participant were made to refill the questionnaires after two weeks.

Data analysis

Data was analyzed using SPSS version 22. Descriptive of inferential statistics of Spearman rho was used to examine the relationship between the scores of the original Oxford Knee Score and the final scores. Alpha level was set at 0.05. To measure the internal consistency of the questionnaire, the Cronbach’s Alpha was calculated.

Results

Sociodemographic variables of the respondents

The sociodemographic data of respondents is contained in table 1. The percentage of male respondents was 37.8% and that of females, 62.2% thus signaling that females with knee osteoarthritis that participated in the study were higher.

Variables	Frequency	Percentage
Sex		
Male	17	37.8
Female	28	62.2
Educational Level		
Primary	21	46.9

Secondary	13	28.9
Tertiary	11	24.4
Grading of the Oxford Knee Score Original		
Mild	11	24.4
Moderate	15	33.3
Satisfactory	2	4.4
Severe	17	37.8
Grading of the Translated Questionnaire		
Mild	14	31.1
Moderate	16	36.6
Satisfactory	0	0
Severe	15	33.3

Table 1: Sociodemographic variables of the respondents.

Also, 33.3% of the respondents had no level of education while 13.3% had a primary level of education, 28.9% a secondary level and 24.4% tertiary education.

Relationship between the original OKS, the translated and the re-administered (After 2 weeks) versions

Presented in table 2 below is the relationship between the original copy of the OKS questionnaire, the translated copy and that which was re-administered after two weeks. There was a positive relationship ($r = 0.970, p < 0.001$) between the grade scores of the original version and the translated, there was also positive relationship ($r = 0.980, p < 0.001$) between the scores of the translated version of the OKS another copy of it that was re-administered after two weeks.

	Original Sc	Translated Sc	Re-admin Sc
Original Sc	1		
Translated Sc	0.970**	1	
Readmi SC	0.960**	0.980*	1

Table 2: Relationship between the original OKS, the translated and the re-administered (After 2 weeks) versions.

Intraclass correlation coefficient

As shown in table 3, the Crohnbach’s alpha for the total population was obtained. The value was 0.96 showing that the questionnaire had strong internal consistency.

	95%	Confidence	Interval	Cronbach’s Alpha	N of Items
	Intraclass Correlation ^a	Lower Bound	Upper bound		
Single measures	0.98	0.97	0.95	0.96	2
Average measures	0.97	0.96	0.94		

Table 3: Intraclass correlation coefficient.

Discussion

Tools of outcome measures have become very important in assessing and monitoring the efficacy and progress during management. The Oxford Knee Score (OKS) questionnaire is one such tool used during the treatment of knee osteoarthritis patients. Its application among the population that are non-English speaking may be problematic because of language barrier; therefore there is need for the interpretation of the tool into different languages in which Yoruba language is one.

Among the total number of patients that participated in the study, there were more females than males. This shows that osteoarthritis may be more prevalent among females individuals than males which is in agreement with a study conducted by Bhaskar, *et al* [14]. The study of Bhaskar, *et al.* reported that women typically present with more advanced stages of osteoarthritis and more disability than men [14]. This has been found to be caused by multiple factors that may be related to less cartilage volume and greater cartilage wear, overall differences in mechanical alignment, and other gender and social factors [14].

Also, it was observed that majority of the patients were about 50 years old and above which is in agreement with findings of a study conducted by Akinpelu, *et al* [2]. Akinpelu, *et al.* reported that people older than 40 years were highly likely to suffer knee osteoarthritis [2]. This can be deduced to the old age, the joint components are already compromised having undergone degeneration because of the ageing process.

The results of this study showed that there was positive relationship between the grade scores of the original version and the translated, there is positive relationship between the scores of the translated version of the OKS and the translated version that was re-administered after two weeks. Cronbach's alpha for the total population was 0.96 showing that the questionnaire had strong internal consistency. This is an indication that the translated OKS was valid for the purpose in which it is meant for.

The OKS was developed by Dawson, *et al.* to document patients' perceptions on replacement surgeries, in 1996 for hip and 1998 for knee [6]. It is a 12-item knee joint-specific patient-reported outcome measures for the assessment of function and pain in PKOA [3]. The OKS has proven to be valid, reliable, and responsive to document clinical changes following intervention to knee. The result of our study also established the reliability and the content validity of the Yoruba version of OKS. These findings supported a previous report by Reito, *et al.* and Haverkamp, *et al.* who developed the Finnish and the Dutch version of the Oxford Knee Score questionnaire respectively and which were both found to be reliable and valid [10,15]. The reliability and validity of the Yoruba language, Aiyegbusi, *et al.* found that the Yoruba version of the Oswestry Disability Index is valid and reliable [16]. Similarly, Odetunde, *et al.* found that the Yoruba version of the Stroke-Specific Quality of Life (SS-QoL) scale was valid and reliable when used to assess the different effects of different interventions on stroke prevention and management [17].

The Cronbach Alpha of the result was very high an indication that the Yoruba version of the questionnaire is a good representative of the original. Again, there is a very strong relationship between the score of the Yoruba version first administered and the score after the second administration. This is an evidence that test retest reliability is very strong. The implication is that if the Yoruba version of OKS is applied several times there result that will be obtained will not be different from original one. The result of this study also indicated that the Yoruba-translated version of the Oxford Knee Score questionnaire is reliable and valid for use in Yoruba-speaking communities. The high validity and reliability obtained from our study was due to the fact that all the content of the original version were accurately interpreted in to Yoruba language, an indication that the Yoruba version of the OKS is an excellent representation of the original English version. This implies that using any of the two version-English and Yoruba version will give us the same result.

Conclusion

This study concluded that the Yoruba version of the Oxford Knee Scores is reliable and valid as an outcome measure for assessing patient with knee osteoarthritis.

Recommendations

It is recommended that the Yoruba-translated version of the Oxford Knee Score questionnaire can be used in Yoruba speaking communities for patients that are suffering from knee osteoarthritis.

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