

Urdu Version of Oxford Knee Score and its Application on Osteoarthritis Knee Patients

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ABSTRACT

Objective: To translate the English version of the Oxford Knee Score into Urdu and then to see the internal consistency and validation with the Visual analogue scale and Numerical rating scale in patients suffering from primary knee osteoarthritis.

Study Design: Cross sectional study.

Place and Duration of study: Tertiary Care Hospital, Peshawar Pakistan, from Apr 2019 to Feb 2020.

Methodology: In the first stage, Oxford Knee Score English was translated into Urdu, and it was administered to Osteoarthritis knee patients. In the second stage, the validation of the Oxford knee score Urdu version was carried out with two pain scales.

Results: In this study, 92 patients with Osteoarthritis knee were included. These include 59(64%) males and 33(36%) females. Based on the grading of the Urdu Oxford knee score, 34(36.95%) patients had severe OA knee, 36(39.13%) patients had moderate, and the remaining 22(23.91%) patients had mild knee osteoarthritis. The reliability of the Urdu version of the Oxford knee score was checked, which showed Cronbach's Alpha with a value of 0.813. The Pearson correlation coefficient value of Oxford knee score Urdu with Visual analogue scale and Numerical rating scale was 0.951 and 0.961, respectively.

Conclusion: This study shows that the Urdu version of the Oxford knee score is a valid and reliable method for osteoarthritis knee patients of our cultural background.

Keywords: Numeric rating scale, Oxford knee score, Osteoarthritis, visual analogue scale.

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INTRODUCTION

Osteoarthritis (OA) affects almost 250 million people worldwide. It is a progressive degenerative disease affecting most commonly females.¹ OA knee affects almost 10% of men and 13% of women worldwide above 60 years of age.² There are different tools to assess a patient's pain and disability. Pain can be assessed with a Visual Analogue Scale (VAS), Numeric Rating Scale (NRS) and Graphic Rating Scale (GRS).³ OKS is a disease-specific questionnaire that has been translated into many different languages so far. There are a total of 12 questions in OKS; each question has five options, which are graded from zero to four.^{4,5}

The Visual Analogue Scale consists of a straight line of 100mm without markings with the endpoints indicating the two extremes, i.e., 0 shows no pain, and 100mm is the worst possible pain. A score of 30mm on a 100mm scale corresponds to moderate pain, and a score of 54mm or more shows severe pain.^{6,7} Many studies have examined the use of NRS in order to quantify the adjectives. Mild pain has been quantified as between 1 and 4 on an 11-point scale, 5 and 6 as moderate pain and severe pain as seven and above.⁸⁻¹⁰

In the present study, OKS translation was done for self-evaluation of the speaking population suffering from OA knee as per standard protocol. VAS and NRS are used for the validity of Oxford Knee Score.

The reason for conducting this study is to minimize the potential bias unwillingly introduced by the medical personnel when assisting those who do not understand the English language. Another advantage of translating the OKS is that the patient outcome measures are completed locally and economically. This translation will help decrease the time spent by health-care workers and specialists translating OKS each time. This will also help to achieve patient satisfaction as a complete expression of their problems to healthcare providers. The primary objective of this study was to translate a patient-reported outcome questionnaire Oxford Knee Score (OKS) from English into Urdu and then to see the internal consistency and its validation with VAS and NRS among primary OA knee. This study was carried out for the application and validation of the Urdu version of the Oxford knee score (OKS-urdu) for our specific cultural background.

METHODOLOGY

The cross sectional study was conducted at the Tertiary Care Hospital, Peshawar, Pakistan, from April 2019 to February 2020 after approval from Hospital Research and Ethical Committee.

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Inclusion Criteria: Osteoarthritis knee patients of either gender aged 40-75 years diagnosed on the basis of typical clinical and radiographic features were included.

Exclusion Criteria: Patients with polyarthritis, OA other than secondary OA, septic arthritis and the presence of co-morbid like diabetes mellitus, tuberculosis, trauma, post-infection and rheumatoid arthritis, were excluded.

The research process was conducted in two stages. In the first stage, the Oxford Knee Score (OKS) was translated into Urdu version (OKS-Urdu) through international standardized protocol.¹⁰ The translation into Urdu version was done by one of the authors. Two language experts did construct validation. Finally, the questionnaire was administered to OA knee patients who understood English and Urdu as a pilot project. The construct validity was assessed by applying Cronbach's alpha test.¹¹ All the patients understood the questions and responded correctly, but their results were not shown in the analysis. In the second stage of the study, we evaluated the validity and application of OKS-Urdu by using two pain scales, i.e. VAS and NRS. The OKS-Urdu was administered to study the population of OA knee patients visiting the outpatient department (OPD). All the patients were asked to complete the OKS-Urdu, VAS and NRS. Microsoft Access® database was used for the patients' records.

Statistical Package for Social Sciences (SPSS) version 25.0 was used for the data analysis. Quantitative variables were expressed as Mean±SD and qualitative variables were expressed as frequency and percentages. Pearson's correlation test was applied to measure the strength of the linear relationship between variables. The *p*-value of 0.05 or less was taken as significant.

RESULTS

Ninety-two patients with osteoarthritis knee were included in our study. These include 59(64%) males and 33(36%) females. The mean age of the patients was 57.4±12.4 (Table-I). Among 92 patients, only 24(26.08%) patients were able to understand English, but all were able to understand Urdu and thus completed the Urdu-OKS. Based on the grading of Urdu-OKS, 34 (36.95%) patients had severe OA knee, 36(39.13%) patients had moderate and the remaining 22(23.91%) patients had mild knee osteoarthritis. The results of pain assessment with VAS and NRS are shown in Table-II. The reliability of the Urdu version of the Oxford knee score was checked by applying all 12 OKS questions to patients. The Pearson correlation coefficient value of

OKS-Urdu with NRS and VAS were (*r*= -0.961 and *r*= -0.951 respectively, *p* <0.001) shown in Table-III.

Table-I: Descriptive Statistics of the Patients (n=92)

Variables	Gender	Minimum	Maximum	Mean	Standard Deviation
Age (years)	Male	30	81	58.59	12.35
	Female	40	83	56.79	12.0
Visual Analogue Scale	Male	1.11	9.7	6.90	2.70
	Female	1.5	9.7	7.30	2.48
Numerical Rating Scale	Male	2	10	7.66	2.65
	Female	3	10	8.00	2.47
Oxford Knee Score	Male	17	42	25.91	7.75
	Female	18	4	25.50	7.27

Table-II: Results Oxford Knee Score, Visual Analogue Scale and Numerical Rating Scale

Assessment Tools	Mild	Moderate	Severe
Oxford Knee Score (total score= 48) (Mild=30-48), (Moderate=20-29) & (Severe=0-19)	22(23.91%)	36(39.13%)	34(36.95%)
Visual Analogue Scale (total score=100mm) (Mild=1-44), (Moderate=45-74) & (Severe=75-100)	19(20.65%)	37(40.21%)	36(39.13%)
Numerical Rating Scale (total score=10) (Mild=0-3), (Moderate=4-6) & (Severe=7-10)	21(22.82%)	34(36.95%)	37(40.21%)

Table-III: Correlation of Oxford Knee Score with Numerical Rating Scale and Visual Analogue Scale

		Pearson Correlation Co-efficient (r) and <i>p</i> -value
Numerical Rating Scale	Pearson Correlation Co-efficient	0.961
	<i>p</i> -value	<0.001
Visual Analogue Scale	Pearson Correlation Co-efficient	-0.951
	<i>p</i> -value	<0.001

DISCUSSION

Oxford Knee Score (OKS) is a valid and reliable tool to measure pain in patients with total knee replacement and is widely accepted.¹¹ OKS has been translated into different languages due to needing to understand the original version in English for the local population. The validation can then be done by comparing it with other pain assessment tools.¹² Hove *et al.* showed a high correlation between post-operative OKS and VAS and a low correlation with performance-based functioning.¹³ Another study showed well-

demonstrated and accepted psychometric properties in OA knee patients undergoing total knee replacement.¹⁴

Rieto *et al.* carried out a study in 2017 in Finland titled "Translation and validation of the 12-item Oxford knee score in Finnish language". The paper shows that the feasibility was acceptable, with a response rate of 96% in both pre and post-operative assessment.⁹ In the present study, all the patients (100%) were able to complete OKS-Urdu without any help.

In a study, good internal consistency was shown by Cronbach's alpha value of 0.89 and a moderate to strong relationship between OKS-CV and WOMAC by Pearson's correlation value of -0.80 during translation into Chinese in similar patients.¹⁵ Amer *et al.* did a study titled Arabic translation and validation of three knee scores: Lysholm knee score (LKS), Oxford Knee Score (OKS) and International Documentation Committee Subjective Knee Form (IKDC).¹⁶ This paper shows high validity for Arabic LKS and Arabic OKS with a value of 0.7 and 0.913, respectively, while the Arabic IKD was mild at 0.8 in osteoarthritis cases. In one of the other studies, which was done by Jenny *et al.* in 2012, OKS showed better performance in those patients who were waiting for surgery than those who had already been operated.¹⁷

Nakamura N *et al.* did a study in Japan which showed good internal consistency with Cronbach's alpha of about 0.9 and Spearman's coefficients of about 0.5, which means a good correlation between OKS & KOOS.¹⁸

In the present study, the internal consistency was better with a Cronbach's alpha value of 0.813, and validity is supported by a strong Pearson correlation between OKS-Urdu with VAS and NRS, showing the values of 0.956 and 0.961, respectively. This validates the OKS-Urdu. It means that using OKS-Urdu is a good tool for people who speak Urdu all over the World. The Proforma of the Urdu version of OKS is given in the figure.

CONCLUSION

Our study shows that the Urdu version of OKS is a valid and reliable method for OA knee patients. OKS is an established score for knee osteoarthritis assessment, which has been translated into different languages worldwide for the local population's understanding and cultural requirements. OA knee is increasing in Pakistan, and OKS-Urdu introduced in this study will assist in measuring OA knee disability in the local population.

Conflict of Interest: None.

Author's Contribution:

Following authors have made substantial contributions to the manuscript as under:

AUR & SI: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

KUR& MF: Study design, drafting the manuscript, data interpretation, critical review, approval of the final version to be published.

ANN& IFP: Critical review, data acquisition, drafting the manus-crypt, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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