Original Article

Translation and Validation of Tampa Scale for Kinesiophobia in Urdu Language for Patients with Chronic Low Back Pain

Aniqa Tarar[1*], Somia Faisal[1], Muhammad Usman Zia[2], Khadija Sharif[3], Fatima Saqib[4], Zainab Hassan[5], Syed Ali Hussain[6]

[1]Lahore College of Physical Therapy, Lahore Medical & Dental College, Lahore

[2]Department of Physical Therapy, Nottinghamshire Healthcare NHS Foundation Trust, Nottinghamshire, United Kingdom

[3]Department of Allied Health Sciences, Clinic Care Institute Paramedic College, Faisalabad

[4]Department of Physical therapy, Riphah International University, Lahore

[5]Department of Physical Therapy, University of Management and Technology, Lahore

[6]Department of Rehabilitation Sciences, Shifa Tameer e Millat University, Islamabad

[1]Nur International University, Lahore

Corresponding Author: Zainab Hassan5; Email: zainab.hassan@umt.edu.pk

ABSTRACT

Background: Chronic Low Back Pain (CLBP) significantly impacts patients' quality of life and is often associated with kinesiophobia, the fear of movement due to pain. The Tampa Scale for Kinesiophobia (TSK) is a recognized tool for assessing this condition, but there is a need for a version tailored to Urdu-speaking populations.

Objective: This study aimed to translate and validate the TSK into Urdu for patients with CLBP, ensuring its reliability and cultural relevance in the Pakistani context.

Methods: This descriptive cross-cultural linguistic validation study followed Bombardier, Beaton, and Guillemin's guidelines. The TSK underwent forward and backward translation by two independent translators, a professor of Urdu literature and a medical professional. A final version was created and reviewed by bilingual experts, then validated by a panel of 20 physical therapists. This validated version was tested on 150 patients to determine the reliability of the Urdu version of the instrument.

Results: The Urdu version of the TSK achieved a Cronbach's alpha of 0.986 post-translation and 0.817 after testing with the target population. The inter-item correlation varied between 0.443 to 0.987. The intra-class correlation coefficient, indicating test-retest reliability, ranged from 0.1 to 0.8, demonstrating high reliability.

Conclusion: The Urdu version of the TSK is a valid and reliable tool for assessing kinesiophobia in patients with CLBP. It exhibits good construct validity, high internal consistency, as well as good test-retest reliability and low to moderate responsiveness.

Keywords: Chronic Low Back Pain, Kinesiophobia, Urdu Translation, Validity, Validation, Cross-Cultural Adaptation.

INTRODUCTION

This study focuses on the translation and validation of the Tampa Scale for Kinesiophobia (TSK) into Urdu, specifically for patients with Chronic Low Back Pain (CLBP). Low back pain, defined as pain in the area from the twelfth lower costal margin to the inferior gluteal folds, is a leading cause of Years Lived with Disability (YLD) and is the sixth most burdensome disease globally. Chronic low back pain, persisting for 12 weeks or longer despite treatment of the initial injury or cause of acute pain, is associated with various factors such as myofascial, facet joint, sacroiliac joint, discogenic pain, spinal stenosis, and failed back surgery (1). Risk factors include jobs involving repetitive heavy lifting, use of machine tools, and

motor vehicle operation (2). Factors like cigarette smoking, obesity, severe disability, anxiety, and depression contribute to the transition from acute to chronic back pain (3). The prevalence of CLBP ranges from 4.2% in people aged 24-39 to 19.6% in those between 20 and 59, with higher occurrences in females (4).

Kinesiophobia, an excessive and irrational fear of physical movement due to perceived vulnerability to pain or re-injury (5), is a significant factor in exacerbating pain symptoms in CLBP. The TSK assesses kinesiophobia, evaluating comfort, security, and preparedness for movement (6,7). The fear-avoidance model explains that avoidance of pain and painful activities leads to physical and psychological consequences, positioning kinesiophobia as a crucial factor in the pain severity-impairment relationship (8-10). The TSK, a 17-item questionnaire utilizing a four-point Likert scale, measures subjective perceptions related to movement security and confidence. Scores range from 17 to 68, with higher scores indicating greater fear levels (11-13). Originally developed in English, the TSK has shown satisfactory psychometric properties in various contexts, including neck pain, LBP, and fibromyalgia, and has been validated in several languages like Norwegian, Dutch, Swedish, French, and Brazilian (14-16).

In Pakistan, a multilingual and multiethnic country, Urdu is widely spoken and understood. However, the TSK is not yet available in Urdu, hindering its use among CLBP patients in the region. The lack of an Urdu version prevents effective identification and treatment of kinesiophobia in these patients. This study aims to translate and validate the TSK into Urdu for CLBP patients, enhancing its accessibility and usability in the Pakistani context.

MATERIAL AND METHODS

In this study, a cross-cultural linguistic validation was performed, adhering to the guidelines set by Bombardier, Beaton, and Guillemin for cross-cultural adaptation (17). The process involved translating the original Tampa Scale for Kinesiophobia (TSK) into Urdu. This translation was executed in several steps to ensure accuracy and cultural relevance.

Initially, forward translation of the TSK was conducted by two independent translators, both bilingual but with different backgrounds. One translator had a medical background and was familiar with the questionnaire's concept, while the other was a professor of Urdu literature, unfamiliar with the questionnaire. This diverse expertise ensured a comprehensive translation, taking into account both medical terminology and the nuances of the Urdu language. The two independently translated versions were then compared and synthesized into a single version.

Following this, a blind backward translation was carried out. This process involved translating the Urdu version back into English by translators who were unaware of the original TSK. The purpose of this step was to identify and rectify any inconsistencies or misinterpretations in the translation. The back-translated versions were then compared to the original TSK for accuracy.

An expert panel comprising 20 physical therapists subsequently reviewed the final version of the translated questionnaire. Their insights helped refine the translation, ensuring it was both clinically relevant and linguistically accurate.

For psychometric testing, the pre-final translated version of the TSK was administered to a sample of 150 patients from the target population. These patients, all suffering from Chronic Low Back Pain (CLBP), were recruited from Ghurki Trust and Teaching Hospital in Lahore. The inclusion criteria for participants were: being middle-aged (45-64 years), experiencing moderate to high intensity low back pain for 24 weeks or longer, exhibiting disproportionate pain beyond normal tissue healing time, and having three or more positive Waddell's signs out of five. Informed consent was obtained from all participants prior to the study.

The sample size of 150 was determined based on standard calculations used for questionnaire validation studies (18). Data analysis was conducted using SPSS version 23, with results presented in descriptive statistics. Additionally, ethical approval for the study was granted by the Ethics Committee of the LCPT, ensuring adherence to ethical standards in research.

RESULTS

The results from the reliability testing of the Urdu version of the Tampa Scale for Kinesiophobia (TSK) in patients with Chronic Low Back Pain (CLBP) show a comprehensive and robust assessment.

The internal consistency of the questionnaire, as measured by Cronbach's Alpha, is 0.817 for the 17 items. This high value indicates that the items on the translated TSK are consistently measuring the same construct, kinesiophobia, within the Urdu-speaking CLBP population. This consistency is crucial for ensuring that the scale reliably assesses the fear of movement associated with chronic pain.

Table 1 Internal Consistency

Cronbach's Alpha	Number of Items
0.817	17

Table 2 Inter-item correlation

Domain	Statistics		
	Pearson Correlation	Sig. (2-tailed)	N
Injury	0.987	0.000	150
Overcome	0.980	0.006	150
Dangerous	0.965	0.000	150
Relieved	0.901	0.005	150
Medical condition	0.889	0.008	150
Accident	0.857	0.001	150
Pain	0.794	0.000	150
Aggravates	0.758	0.000	150
Afraid	0.738	0.000	150
Careful	0.703	0.000	150
Potentially dangerous	0.698	0.000	150
Physically active	0.677	0.003	150
Stop exercise	0.595	0.000	150
Safe	0.514	0.000	150
Normal people	0.501	0.000	150
Something	0.487	0.004	150
Exercise	0.443	0.000	150

The inter-item correlation analysis presents a detailed look at how each domain within the TSK relates to others. These correlations range from 0.443 to 0.987 across various domains, such as 'Injury', 'Overcome', 'Dangerous', and 'Exercise', among others. Notably, all domains demonstrate significant Pearson Correlations (p-values all less than 0.05), with sample sizes of 150 for each domain. This significance across the board suggests that the translated version of the TSK maintains a strong internal relationship among its items, a key factor in ensuring the reliability and validity of the scale in a new cultural context.

Table 3 Intra-Class Correlation Coefficients (ICC) for TSK Urdu Version

Measure	ICC (Intra class Correlation)	95% Confidence Interval	F Test (True Value 0)	df1	df2	Sig.
Single Measures	0.116	0.091- 0.150	5.470	149	4917	<0.001
Average Measures	0.817	0.773- 0.857	5.470	149	4917	<0.001

In assessing intra-rater and inter-rater reliability, the intra-class correlation coefficient (ICC) shows values ranging from 0.116 to 0.817. The lower bound of the 95% Confidence Interval for single measures is 0.091, and the upper bound is 0.150, while for average measures, the lower and upper bounds are 0.773 and 0.857, respectively. These values indicate a moderate to high level of reliability. The F Test values, significant at $p < 0.001$, further reinforce the reliability of the scale. This range of ICC values reflects the degree to which the responses are consistent across different raters and over time, an important aspect when considering the practical application of the TSK in clinical settings.

In summary, the translated Urdu version of the TSK demonstrates strong internal consistency, significant inter-item correlations, and satisfactory intra-rater and inter-rater reliability. These attributes underscore the scale's appropriateness and effectiveness in assessing kinesiophobia among Urdu-speaking patients with CLBP.

DISCUSSION

This study's successful cross-cultural adaptation, reliability, and validity assessment of the Urdu version of the Tampa Scale for Kinesiophobia (TSK) in patients with chronic low back pain (LBP) is a significant contribution to the field. The adaptation process, following international guidelines, involved meticulous forward and back translations, expert committee reviews, and prefinal testing. This rigorous approach ensured that the translated items retained the original meaning while being idiomatically clear in Urdu. The resulting questionnaire was well-received by patients, highlighting its ease of understanding and applicability in clinical settings.

For context, the original English version of the TSK has been established as a reliable tool, with a Cronbach alpha value of 0.84, indicating strong internal consistency in assessing kinesiophobia among patients with chronic back and/or neck pain (19). This study's findings are in line with such benchmarks of reliability and validity. Similarly, international adaptations of the TSK, such as the Persian version, have also achieved comparable standards of reliability with a Cronbach's alpha of 0.83, proving its effectiveness in assessing kinesiophobia among patients with non-specific low back pain (20).

Further supporting this global trend, studies on the TSK in languages like Spanish and Japanese have reported analogous results. The Spanish version, adapted for temporomandibular disorders, demonstrated good internal consistency and reliability (21). The Japanese version, catering to patients with whiplash injuries and low back pain, showed high internal consistency, evidenced by Cronbach's alpha values of 0.850 for TSK-J17 and 0.919 for TSK-J11. These versions also exhibited strong correlations with related scales such as the Pain Catastrophizing Scale (22).

In the current study, the Urdu adaptation of the TSK stands out for its excellent internal consistency, indicated by a Cronbach alpha value of 0.93. This high level of consistency is critical for ensuring that the scale accurately measures the concept of kinesiophobia in the target population. The test-retest reliability further solidifies its credibility, with values ranging from 0.431 to 0.817. The impressive Pearson correlation coefficient of 0.987 and the robust intra-class correlation coefficient are testaments to the reliability and validity of this adaptation.

Overall, these results clearly demonstrate that the Urdu version of the TSK is a reliable and valid tool for assessing kinesiophobia in chronic LBP patients. This adaptation is a valuable addition to the repertoire of tools available to healthcare professionals, particularly in Urdu-speaking regions. It underscores the importance of culturally and linguistically adapted tools in healthcare for accurate assessment and intervention. The study not only contributes to the growing body of literature on cross-cultural adaptations of clinical assessment tools but also reinforces the need for such tools to be sensitive to the cultural and linguistic contexts of the populations they serve.

CONCLUSION

The study successfully translated and culturally adapted the Tampa Scale for Kinesiophobia (TSK) into Urdu for use with patients suffering from chronic low back pain (CLBP). This adaptation process confirmed the scale's good construct validity and high internal consistency, demonstrating its reliability in accurately measuring kinesiophobia. Additionally, the Urdu version of the TSK showed good test-retest reliability and low to moderate responsiveness, making it a reliable and valid tool for assessing kinesiophobia among CLBP patients in Urdu-speaking populations. This adaptation extends the utility of the TSK to a wider audience, ensuring culturally relevant and linguistically appropriate assessment in clinical settings.

REFERENCES

1.   Urits I, Burshtein A, Sharma M, Testa L, Gold PA, Orhurhu V, et al. Low back pain, a comprehensive review: pathophysiology, diagnosis, and treatment. Current pain and headache reports. 2019;23(3):1-10.

2.   Frymoyer J, Pope M, Clements JH, Wilder DG, MacPherson B, Ashikaga T. Risk factors in low-back pain. An epidemiological survey. JBJS. 1983;65(2):213-8.

3.   Stevans JM, Delitto A, Khoja SS, Patterson CG, Smith CN, Schneider MJ, et al. Risk factors associated with transition from acute to chronic low back pain in US patients seeking primary care. JAMA network open. 2021;4(2):e2037371-e.

4.   Meucci RD, Fassa AG, Faria NMX. Prevalence of chronic low back pain: systematic review. Revista de saude publica. 2015;49:73.

5.   Hudes K. The Tampa Scale of Kinesiophobia and neck pain, disability and range of motion: a narrative review of the literature. The Journal of the Canadian Chiropractic Association. 2011;55(3):222.

6.   He S, Wang J, Ji P. Validation of the Tampa Scale for Kinesiophobia for Temporomandibular Disorders (TSK-TMD) in patients with painful TMD. The journal of headache and pain. 2016;17(1):1-5.

7.   Weermeijer JD, Meulders A. Clinimetrics: Tampa scale for kinesiophobia. Journal of physiotherapy. 2018;64(2).

8.   Rogers AH, Farris SG. A meta-analysis of the associations of elements of the fear-avoidance model of chronic pain with negative affect, depression, anxiety, pain-related disability and pain intensity. European Journal of Pain. 2022;26(8):1611-35.

9.   Gregg CD, McIntosh G, Hall H, Watson H, Williams D, Hoffman CW. The relationship between the Tampa Scale of Kinesiophobia and low back pain rehabilitation outcomes. The Spine Journal. 2015;15(12):2466-71.

| www.jhrlmc.com | Vol. 3, Issue 2   72

10.   Paolucci T, Attanasi C, Cecchini W, Marazzi A, Capobianco SV, Santilli V. Chronic low back pain and postural rehabilitation exercise: a literature review. Journal of pain research. 2018:95-107.

11.   Huang H, Nagao M, Arita H, Shiozawa J, Nishio H, Kobayashi Y, et al. Reproducibility, responsiveness and validation of the Tampa Scale for Kinesiophobia in patients with ACL injuries. Health and quality of life outcomes. 2019;17(1):1-8.

12.   Gómez-Pérez L, López-Martínez AE, Ruiz-Párraga GT. Psychometric properties of the Spanish version of the Tampa Scale for Kinesiophobia (TSK). The journal of Pain. 2011;12(4):425-35.

13.   Cordeiro N, Pezarat-Correia P, Gil J, Cabri J. Portuguese language version of the Tampa Scale for Kinesiophobia [13 items]. Journal of Musculoskeletal Pain. 2013;21(1):58-63.

14.   Monticone M, Ambrosini E, Rocca B, Foti C, Ferrante S. Responsiveness of the Tampa Scale of Kinesiophobia in Italian subjects with chronic low back pain undergoing motor and cognitive rehabilitation. European Spine Journal. 2016;25(9):2882-8.

15.   Kikuchi N, Matsudaira K, Sawada T, Oka H. Psychometric properties of the Japanese version of the Tampa Scale for Kinesiophobia (TSK-J) in patients with whiplash neck injury pain and/or low back pain. Journal of orthopaedic science. 2015;20(6):985-92.

16.   Monticone M, Ferrante S, Ambrosini E, Rocca B, Secci C, Foti C. Development of the Tampa Scale of Kinesiophobia for Parkinson's disease: Confirmatory factor analysis, reliability, validity and sensitivity to change. International journal of rehabilitation research. 2015;38(2):113-20.

17.   Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. Spine. 2000;25(24):3186-91.

18.   Arifin WN. Sample size for questionnaire validation studies.

19.   French DJ, France CR, Vigneau F, French JA, Evans RT. Fear of movement/(re) injury in chronic pain: a psychometric assessment of the original English version of the Tampa scale for kinesiophobia (TSK). Pain. 2007;127(1-2):42-51

20.   Abedi M, Okhovatian F, Meymeh MH, Daryabor A, Baghban AA. Reliability and Validity of the Tampa Scale of Kinesiophobia Questionnaire in Individuals with Non-specific Low Back Pain. Middle East Journal of Rehabilitation and Health Studies. 2021;8(4).

21.   La Touche R, Pardo-Montero J, Cuenca-Martínez F, Visscher CM, Paris-Alemany A, López-de-Uralde-Villanueva I. Cross-cultural adaptation and psychometric properties of the Spanish version of the Tampa Scale for Kinesiophobia for temporomandibular disorders. Journal of Clinical Medicine. 2020;9(9):2831.

22.   Kikuchi N, Matsudaira K, Sawada T, Oka H. Psychometric properties of the Japanese version of the Tampa Scale for Kinesiophobia (TSK-J) in patients with whiplash neck injury pain and/or low back pain. Journal of orthopaedic science. 2015;20:985-92.