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Original Article

Translation and Validation of the Persian Version of the Wisconsin Quality of Life Questionnaire (Persian WISQOL) for Kidney Stone Patients

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Abstract

Background: Kidney stone diseases are among the important diseases of the urinary system that can affect the quality of life of patients. Assessing and measuring this impact with relevant and standardized tools is necessary to provide care. This study aimed to translate the Wisconsin Quality of Life (WISQOL) questionnaire into Persian and assess its validity and reliability.

Methods: The Persian version of the WISQOL questionnaire was developed through a multi-phase process. Persian WISQOL questionnaire and also the validated Persian version of the 36-Item Short Form Survey (SF-36) were completed by patients. Then, the internal consistency of the questionnaire was evaluated, the interdomain correlation of the Persian WISQOL was done, and its convergent validity with the SF-36 was compared.

Results: A total of 187 patients with kidney stones completed the Persian WISQOL and SF-36. The overall internal consistency of the Persian WISQOL was high (Cronbach's alpha: 0.972), and this was consistent across all domains (Cronbach's alpha: 0.898 to 0.958). The interdomain correlation was also high among most domains ($r = 0.585$ to 0.90). The convergent validity of the Persian WISQOL was confirmed by a good overall correlation with the SF-36 ($r = 0.782$).

Conclusion: The Persian WISQOL is a valid and reliable instrument for evaluating the quality of life in patients with kidney stones.

Keywords: Kidney calculi, Quality of life, Psychometrics, Surveys and questionnaires, Validation study

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Introduction

Urinary stones are common health problems (1). In recent times, the incidence of the disease has increased considerably (2). Based on classifications by the Urological Association of Asia, kidney stones are more prevalent in North West and South East Asia, regions known as the "stone belt" (3). Iran is among the countries situated in the kidney stone belt, and the highest frequency of kidney stones has been reported in the western and southwestern provinces of Iran (4). In a study conducted in 2022, the prevalence of urinary stones in Iran was estimated to be 6.6%, with a reported prevalence of 6% in Hamadan province (5). In addition to the high prevalence rate, this disease also leads to substantial costs (4).

On the other hand, despite successful treatment of urinary stones, their recurrence rate remains high within a ten-year period, approximately half of patients with kidney stones are prone to forming new stones (6). The combination of these factors makes urinary stones an important public health issue (7). Kidney stones can be associated with a variety of problems and symptoms (6). Colic pain caused by kidney stones is among the most intense physical pains a person can endure. This condition may also be accompanied by other symptoms, including fever, nausea, heartburn, and hematuria (8). Kidney stones not only have an effect on physical health but also

have a significant impact on mental health, especially the quality of life (9). They affect various aspects of patients' quality of life, including work, finances, and lifestyle (10). Patients with urinary stones experience lower health-related quality of life (HRQOL) (11).

The HRQOL outcomes in patients with urolithiasis have been mainly assessed through quantitative research using the general SF-36 questionnaire (12). However, unique characteristics of specific diseases can influence how HRQOL is evaluated (10). Consequently, a disease-specific approach to measuring HRQOL provides a more accurate assessment. The Wisconsin Stone Quality of Life (WISQOL) questionnaire, comprising 28 items across 4 domains, was developed and validated specifically for evaluating HRQOL in patients with kidney stones. The tool has been shown to more effectively evaluate HRQOL related to kidney stones than the SF-36 (13,14). The WISQOL has been translated into multiple languages, but a Persian version is not yet available. Therefore, our objectives were to translate WISQOL into Persian and assess its validity and reliability.

Materials and Methods

The Original WISQOL

The WISQOL questionnaire consists of 28 items covering seven topics, organized into four domains: social impact, emotional impact, disease impact, and impact on vitality. Patients are asked to assess how kidney stones have affected their lives over the past 4 weeks, with each item being evaluated on a scale of 1 to 5. Additionally, six extra Yes or No questions cover general health aspects related to kidney stones or their effects, but their scores are not included in the total score. The total WISQOL score ranges from 28 to 140, where higher scores indicate a better quality of life.

Translation Process

Prior to beginning the study, the authors reached out to the author of the original WISQOL to request permission. It involved a multi-step process that included translating the questionnaire from English to Persian by two bilingual translators. Their translations were then merged into a single Persian version. Subsequently, the Persian translation was reverted back to English. The resulting pre-final version was reviewed by faculty members of the university and urologists to ensure alignment with the original version. Content validity was evaluated, and final adjustments were made to prepare the finalized version for the current study.

Patient Selection and Data Collection

The sample size was calculated based on five participants per item of the 34-item questionnaire with an additional 10% to account for potential dropouts, resulting in a total of 187 participants. Participants were selected from Beheshti Hospital in Hamadan city between May and August 2024 using a simple random sampling method. Written consent was obtained from the patients. Inclusion criteria were willingness to participate, age between 18 and 65, a confirmed diagnosis of stones by ultrasound, absence of other urinary tract diseases, and the ability to read and write. Patients who did not complete the questionnaires or answered them incompletely were excluded from the study. All participants completed the Persian version of the WISQOL questionnaire and the standardized Persian version of the 36-Item Short Form Survey (SF-36). Baseline characteristics, including gender, age, education level, and stone size were also collected.

Statistical Analysis

The raw WISQOL scores were utilized. All items on the WISQOL were scored on a 1-5 scale. The total score ranged between 28 and 140 points. The score ranges for the subdomains varied based on the number of items included in each subdomain. Patient characteristics were described in terms of frequency. The internal reliability of the Persian version of the WISQOL was assessed using Cronbach's alpha coefficient. Generally, a Cronbach's alpha of 0.7 or higher is considered acceptable, indicating that the instrument has good internal consistency. Pearson's correlation was used to test the correlations between different domains of the WISQOL and to evaluate convergent validity by assessing the relationship between the domains of the WISQOL and the corresponding domains of the SF-36. Data were analyzed with IBM SPSS version 22.0, and P value < 0.05 was considered statistically significant.

Results

All 187 patients completed the Persian WISQOL and SF-36 without any missing data. The mean age of the patients was 50.43 ± 8.35 years, and the majority of patients were male (54%). Most of them had Junior high school education (40.1%). The mean size of kidney stones in patients was 18.36 ± 7.19. The mean total score of Persian

Table 1. Demographic Characteristics of Patients

Parameters		Results
Age (Mean ± SD)		50.43 ± 8.35
Stone size (mm), (Mean ± SD)		18.36 ± 7.19
Gender	Male, n (%)	101 (54)
	Female, n (%)	86 (46)
Education	Elementary, n (%)	13 (7)
	Junior high school, n (%)	75 (40.1)
	High school, n (%)	58 (31)
	Bachelor, n (%)	26 (13.9)
	Master, n (%)	15 (8)
Scale score	Overall Persian WISQOL score (Mean ± SD)	80.01 ± 11.85
	Social impact (Mean ± SD)	25.14 ± 3.73
	Emotional impact (Mean ± SD)	18.70 ± 3.53
	Disease impact (symptoms) (Mean ± SD)	27.42 ± 4.72
	Impact on vitality (Mean ± SD)	8.73 ± 1.39

WISQOL was 80.01 ± 11.85 (Table 1).

The overall internal consistency of the Persian WISQOL was high (Cronbach's alpha: 0.972), and this was consistent across all domains (Cronbach's alpha: 0.898 to 0.958) (Table 2). The interdomain correlation was also high among most domains (r = 0.585 to 0.90) (Table 3). The convergent validity of the Persian WISQOL was confirmed by a good overall correlation with the SF-36 (r = 0.782). More specifically, the Emotional, Disease, and Vitality domains showed a good correlation with the corresponding domains of the Persian SF-36 (r = 0.811, 0.879, and 0.782, respectively $P < 0.05$). However, a moderate correlation was found in the social domain (r = 0.524, $P < 0.05$) (Table 4).

Discussion

Quality of life plays a significant role as one of the important aspects of evaluating the health of patients, especially in patients with chronic and recurring diseases such as kidney stone diseases. Tools for measuring quality of life, such as the WISQOL questionnaire, can provide comprehensive information about the effects of different diseases and treatments on different aspects of patients' lives. This study was conducted with the aim of investigating the psychometric properties of the Persian version of the WISQOL questionnaire in patients with kidney stones. Penniston et al introduced the Wisconsin questionnaire for the first time in 2013. Then, it was evaluated along with the SF-36 in 1609 patients with kidney stones in 2016 (13,14). They showed that this questionnaire has high internal consistency (overall Cronbach's alpha: 0.97) and higher convergent validity compared to the SF-36.

In the present study, researchers translated the WISQOL into Persian and validated it in a group of 187 patients with kidney stone. The internal consistency was high across all domains, indicating the high reliability of this translated version (Cronbach's alpha 0.972). Additionally, the interdomain correlation was at acceptable levels. The Persian version of WISQOL demonstrated good convergent validity (i.e., a good correlation between the domains of the Persian WISQOL and those of the SF-36 questionnaire).

Similarly, another study evaluated the Thai version of the questionnaire, which reported a Cronbach's alpha coefficient of 0.945 (9). Similar results were also obtained in a study by Martinez et al in 2020, who examined the Spanish version of this tool (10). Additionally, Atalay et al validated the Turkish version of this tool and reported good internal consistency with a Cronbach's alpha coefficient of 0.78 (15). The German version of this questionnaire was developed and validated in a study conducted by Gutstein et al in 2021, reporting acceptable reliability (16). Okada et al in 2021 translated and psychometrically analyzed this instrument in Japan and reported good internal consistency with a Cronbach's alpha of 0.96 (17). Similar results have been reported for Chinese (18), Slovak (19), Korean (20), and French (21) versions of this instrument.

According to the results of our study, the Persian version of the WISQOL questionnaire has a high internal reliability, which is consistent with similar studies in other languages. This high level of reliability indicates that the translated tool has maintained its original conceptual structure and adapts well to Persian culture and language.

Table 2. Internal Consistency of the Persian WISQOL

Domain	Cronbach's alpha
Overall score	0.972
Social impact	0.898
Emotional impact	0.958
Disease impact (symptoms)	0.958
Impact on vitality	0.956

Table 3. Interdomain Correlation of Persian WISQOL

Domain		Social Impact	Emotional Impact	Disease Impact (Symptoms)	Impact on Vitality
Social impact	*r*	-			
	P value	-			
Emotional impact	*r*	0.656			
	P value	<0.001			
Disease impact (symptoms)	*r*	0.90	0.661		
	P value	<0.001	<0.001		
Impact on vitality	*r*	0.585	0.397	0.663	-
	P value	<0.001	<0.001	<0.001	-

Table 4. Convergent Validity of Persian WISQOL vs. SF-36

Domain	*r*	*P* Value
Persian WISQOL emotion impact vs. SF-36 role emotional	0.811	<0.001
Persian WISQOL social impact vs. SF-36 social functioning	0.524	<0.001
Persian WISQOL disease impact vs. SF-36 bodily pain	0.879	<0.001
Persian WISQOL vitality impact vs. SF-36 physical functioning, role physical, fatigue	0.782	<0.001

This high reliability suggests that this questionnaire can be used as a valid tool for evaluating the quality of life of patients with kidney stones in Iranian society. These findings are an important step towards the development and localization of standard quality of life assessment tools in Iran, allowing researchers to obtain reliable data for future analyses and clinical interventions.

Conclusion

The Persian version of the WISQOL questionnaire outperformed the SF-36 in terms of internal consistency and convergent validity. The Persian WISQOL is a valid and reliable instrument for evaluating the quality of life in Persian patients with kidney stones.

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Authors' Contributions

Study Design: Amirhosein Sharifi Kelarijan, Ali Safdari, Arezou Karampourian
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Competing Interests

The authors declare no conflict of interests.

Ethical Approval

This study was approved by the Ethics Committee of Hamadan University of Medical Sciences, Hamadan, Iran (IR.UMSHA.REC.1402.354). Written consent was obtained from all patients.

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