Original Article

Translation, cross-cultural adaptation, reliability, validation of King's Health Questionnaire in the Marathi language

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ABSTRACT

Introduction: Outcome measurement is a crucial component of contemporary professional practice. Many Indian rehabilitation facilities employ the King's Health Questionnaire (KHQ), but there has never been an official Marathi translation with its reliability and validity.

Materials and Methods: As per the recommendations for cross-cultural validation of an outcome assessment, KHQ was translated into the Marathi language at a tertiary hospital in Pune, India. A study was conducted to assess the dependability of 123 patients from tertiary hospitals in India. The reliability of the study was assessed by two competent physiotherapists. The interrater reliability of the KHQ total scores and each item was evaluated using Cronbach's alpha coefficient. To compare the interrater dependability with the findings of other investigations, the intraclass correlation (ICC) coefficient was determined.

Results: When evaluated by domain, the KHQ's standardized Cronbach's alpha ranged from 0.49–0.92. All domains had reliability that was rated as moderate to strong by ICC, and the severity rating scale varied from 0.53 to 0.81. The Pearson correlation coefficient between KHQ and short form-36 (SF-36) in the majority of related areas was found to be weak to moderate, with values ranging from –0.27 to –0.53.

Conclusions: The Marathi version of the KHQ was translated and adapted for use in Marathi language-speaking Indian women with urinary incontinence complaints. It represents an important instrument for the evaluation of incontinent women in clinical research with good interrater reliability and validity with SF-36 quality-of-life measure.

INTRODUCTION

Urinary incontinence (UI) is a common but often underreported medical condition that has a significant impact in one's quality of life (QoL). The International Continence Society (ICS) defined UI as "the complaint of any involuntary leakage of urine and which is a social or hygienic problem.[1] According to Singh *et al.*, the prevalence of UI in India, is 21.8% of females are affected by UI, which affects 7% of those between the ages of 20 and 39, 17% between the ages of 40 and 59, 23% between the ages of 60 and 79, and 32% of those over the age of 80.[2]

The QoL (King's Health Questionnaire [KHQ]) in terms of physical, psychological, social, and sexual health is significantly and negatively impacted by UI. Since it affects more than 5% of the general population, the World Health Organization designated UI as a social illness. According to estimates, between 30% and 60% of perimenopausal and postmenopausal women experience urine incontinence at

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some point in their lives, whereas between 50% and 60% of women experience symptoms during 5th–8th decades of their life.[3,4]

The focus of numerous extensive investigations has been on the risk factors for urine incontinence in elderly people. Middle-aged women are also found to be suffering from this problem; hence, it is required to investigate risk factors for incontinence in younger women. Primary risk factors for incontinence may change over a woman's life span.[5]

A person's level of enjoyment of significant life prospects is referred to as their "QoL," which includes both subjective and objective measures. It reflects a sense of well-being and a level of satisfaction with life. The King's Health-related QoL Questionnaire has a variable number of sections (domains) that collect data on a variety of health-related topics, including physical function, role performance, emotional factors, social role, self-esteem, sleep, energy, and disease-specific symptoms such as pain perception, activity limitations, and mental stress.

According to the information published on the website, 126.3 million people reside in the Maharashtra state of India, out of which 83 million speak only Marathi as a language of communication, especially in the remote areas where the literacy level is low.[6] King's QoL in the Marathi regional language will be helpful for both patients and therapists and it will be a step toward standardizing outcome measures.

There are viewpoints outside the medical description of the problem, and the ICS strongly advocates standardization of the outcome measures with respect to QoL in treatment trials involving urine incontinence.[7] In a cross-cultural adaptation of this instrument, the King's QoL was translated into the Marathi language to evaluate interrater reliability in an Indian Marathi-speaking population. Reliability is a statistical indicator of how regularly and dependably an instrument measures the thing it is designed to measure, as well as how repeatable its findings are. A patient may be evaluated by multiple physiotherapists during rehabilitation; hence, it is crucial to have excellent interrater reliability.

This study aims to translate the questionnaire into Marathi and evaluate the condition-specific QoL using the KHQ for female UI.

MATERIALS AND METHODS

The reliability test was part of this cross-cultural adaptation study. Institutional subethical committee DPPV/EC/205/2019 examined and authorized the project Patient participants gave their written informed consent to take part in the study.

Instrument: the Marathi version of KHQ was formed to assess both the general and specific effects of UI on QoL. In 21 items with Likert scale response alternatives (ranging from 1–4 to 1–5), it addresses nine different domains. Incontinence impact, role restrictions, physical and social limitations, interpersonal relationships, emotions, sleep/energy, and severity coping mechanisms are the domains. The perception of symptom severity was assessed using a separate independent scale with nine questions.[8] A complicated algorithm that manages missing values is used to determine each domain's ratings, which range from 0 to 100, with higher scores indicating a worsening QoL.

Phase-1 cross-cultural translation

Following the recommendations of Beaton *et al*, which is a recognized approach for translating a measure, the translation was completed.[9] Using purposeful sampling, the principal author assembled an expert team of medical professionals and linguists. Table 1 lists the individuals involved in each stage of translation.

Forward translation

Two versions of KHQ translated into Marathi language were prepared, one by a certified translator (nonmedical) and the other by a researcher who was proficient in both Marathi and English. The translator's usage of a dialect that is often used by the general public was advantageous because he was not aware of the clinical perspective.

Synthesis of translation

The members of the committee discussed the two translated versions. Discussions between experienced professionals at a renowned tertiary center hospital were shared through E-mail with the original author. They settled the differences and agreed.

Backward translation

An authorized translator who was not involved in the first two steps completed this. A second translator who is

Table 1: Members involved in the process of translation and synthesis stage

Stage	Participant
Forward translation	Researcher (RJ), who is fluent in both Marathi and English and has no academic connection with the research and MA (English) faculty from a Public university in the India Registered as translator for research purpose (nonmedical background)
Synthesis of translation	Professor of community physiotherapy from a physiotherapy college and professor of community physiotherapy from physiotherapy college were involved in synthesis of translation
Backward translation	Registered translator (nonmedical background) not involved in the first step professor from an Indian school (nonmedical background), fluent in both Marathi and English

*Translation and synthesis

proficient in both languages likewise translated it, and the two translated versions were then contrasted. The expert committee reconciled the differences between the original and translated versions and combined them into one prefinal edition. This step was crucial for validity verification so that it could be ensured that the translated version accurately matched the original version's content.

Phase 2 consisted of testing the reliability of the King's quality of life questionnaire

Procedure for reliability testing

Two experienced physiotherapists who previously employed KHQ in their clinical practice conducted reliability testing. Because the conditions would have varied if the two raters had examined the patients independently, they were only tested once. A single rater administered the commands, observed, and provided a separate rating for each patient participant. KHQ is a patient-administered self-report that comprises three parts and 21 items. Raters determined who would issue commands and switched from one patient to the next.

Sample size calculation

To calculate the sample size, a minimum correlation of –0.30 between the two instruments was assumed, with an α (Type I error) of 5% and a β (Type II error) of 0.10. A sample of 123 patients was estimated.

Participants for reliability testing

In this cross-sectional study, 156 123 women aged 25 years and above who visited the outpatient department of a tertiary hospital in Pune, India and were diagnosed with urine incontinence. All the females were explained about the study procedure and confidentiality of their information. Participants provided written informed consent. They were asked about demographic details such as age, height, weight, marital status, socioeconomic status, working status, and duration of complaint.

To assess the test–retest reliability, the KHQ was administered twice with an interval of 15 days from the first evaluation to assess the reproducibility of the KHQ. In cases of illiteracy or low literacy, the questionnaire items were read to the patient during an interview with the researcher. In all other cases, KHQ was self-administered. During this period, these patients were asked for no changes in the course of medication or treatment for UI.

The assessment of construct validity involved examining the association between the outcomes derived from the KHQ and short form-36 (SF-36) domains, which were administered during the initial interview with a sample of 123 patients. The assessment of concurrent validity involved establishing associations between the domains of the KHQ and specific clinical variables.

The study also examined the correlation between greater severity of some clinical indicators, such as the type and length of the complaint, as well as the use and number of sanitary pads, and a lower QoL.

RESULTS

In the statistical analysis, 123 women with a mean age of 48.53 years (standard deviation ± 9.16) and a median of 51 years (ranging from 25 to 80 years) were interviewed with complaints of UI.

Two groups were considered: 67% lived with a husband. In terms of the level of education, 33.7% of this population sample consisted of patients with no education, whereas 43.18% were educated until higher secondary, and the remaining 23.12% had completed primary education. In terms of profession, the family was cultivator in 33.67%, office worker in 27.5%, and homemaker in 38.83% of cases, respectively. Sociodemographic and clinical characteristics are shown in Table 2.

A normality test was done on the data, and it was found that the data were distributed normally ($P > 0.005$); hence, it was considered ordinal data. Therefore, Cronbach's alpha was used to assess interrater reliability for the total scores and each item of KHQ. This is done to distinguish serious disagreement between the examiners and to find out the weight of their disagreement. A value of >0.75 indicates excellent agreement, 0.4–0.75 is fair to good agreement, and <0.4 is suggested as poor agreement. Cronbach's alpha was calculated with MedCalc.[10]

The intraclass correlation (ICC) coefficient was calculated using SPSS 22 (IBM, Armonk, NY, USA) to make comparisons of the interrater reliability with the results of other studies. An ICC of 0.80 or above reflects high reliability, 0.60–0.79 is moderate reliability, and < 0.60 is indicated as poor reliability. Test–retest reliability was tested in a test–retest design and was evaluated using the ICC. In table 3 the ICC was interpreted as follows: 0.90, excellent reliability. The internal consistency was evaluated by Cronbach's α coefficient, which is considered statistically significant when between 0.70 and 0.95.

Table 2: Sociodemographic and clinical characteristics of the patients with urinary incontinence

Subjects (n=123)	Mean±SD
Age (years)	48.53±9.16
BMI (kg/m^2)	31.62±3.70
Type of complaint	**Frequency (%)**
Urge	26 (21.13)
Stress	52 (42.27)
Mixed	45 (36.58)

BMI: Body mass index, SD: Standard deviation

To assess test–retest reliability

The general standardized Cronbach's α coefficient (overall the eight classical domains, in addition to the scale of urinary symptoms scale) was 0.87. Considering the domains individually, their scores varied between 0.49 (sleep/disposition) and 0.92 (emotions). The ICCs, which assess the test–retest as well as the Cronbach's α values for each domain, are shown in Table 4. The domains of general health perception and impact of UI, composed of single items, did not have internal consistency.

To assess validity

Concurrent validity was tested to find the association of the average of the values of scores obtained for each domain of the KHQ and SF-36 and of the categories "yes" and "no" of the variable "use of sanitary napkins" in Table 5. A multidimensional questionnaire, the SF-36, has 36 items divided into physical and mental components. Each component consists of four domains filled with items that evaluate the same aspect of patients' lives. The physical component includes functional capacity (10 items), physical aspects (4 items), pain (2 items), general health status (5 items), and the mental component includes vitality (4 items), social aspects (2 items), emotional aspects (3 items), and mental health (5 items). Consider comparing present health situations to those from a year ago. The response options are displayed on a Likert scale.

Table 3: Evaluation of mean (standard deviation) and median (range) for each domain of the King's Health Questionnaire

KHQ	Mean±SD	Median	Minimum–Maximum
General health perception	46.2±9.3	50	0–100
Impact of incontinence	74.0±14.8	100	0–100
Limitations of daily activities	57.7±21.7	66.7	0–100
Physical limitations	56.7±20.3	66.7	0–100
Social limitations	34.6±26.02	33.3	0–100
Personal relationships	28.5±10.2	0	0–100
Emotions	67.7±9.7	77.8	0–100
Sleep/disposition	52.9±13.1	50	0–100
Urinary symptoms	58.8±8.7	66.7	0–100

KHQ: King's Health Questionnaire, SD: Standard deviation

Table 4: Internal consistency (Cronbach's α) and test–retest reliability (interclass correlation coefficient 95% - minimum–maximum) for the King's Health Questionnaire domains

KHQ domain	Alpha Cronbach	ICC	CI (95%)
General health perception	-	0.53	0.38–0.66
Impact of incontinence	-	0.70	0.60–0.79
Limitations of daily activities	0.83	0.77	0.66–0.82
Physical limitations	0.77	0.69	0.58–0.78
Social limitations	0.68	0.74	0.65–0.82
Personal relationships	0.86	0.65	0.53–0.77
Emotions	0.91	0.71	0.62–0.80
Sleep/disposition	0.48	0.65	0.53–0.75
Severity measures	0.78	0.80	0.74–0.87
Severity of symptoms	0.73	-	–

CI: Confidence interval, KHQ: King's Health Questionnaire, ICC: Intra-class correlation, QoL: Quality of life. ICC values suggests less than 0.5 are indicative of poor reliability, values between 0.5 and 0.75 indicate moderate reliability, values between 0.75 and 0.9 indicate good reliability, and values greater than 0.90 indicate excellent reliability

DISCUSSION

The demographic sample, which was primarily taken from low- and middle-class families, was one of the study's shortcomings.[11] Patients who presented to the out patient department, and who were then referred to the researcher, were chosen for this study. The KHQ's internal consistency, as determined by the standardized Cronbach's alpha coefficient, was good, with an overall index of 0.87 above the minimum value often used as a reference in clinical trials of 0.7. The values for the internal consistency of the various domains ranged from 0.49 (sleep/disposition) to 0.92 (emotions). Although Cronbach's alpha in the sleep/disposition domain was lower than the other values, when this domain was deleted, there was no change in the standardized general Cronbach's alpha value, even though its value dropped to 0.86. The symptom scale's internal consistency could not be determined because patients were not anticipated to experience all symptoms simultaneously. Nevertheless, a Cronbach's alpha value of 0.73 was noted, and similar results were reported by Tamanini *et al.* (2003).[12,13]

As per the study published in the Spanish version ranged from 0.65 (gravity measurements) to 0.92 (personal relationships), while the internal consistency of the original English version 12 ranged from 0.72 (physical constraints) to 0.89 (personal relationships). The ICC examined the reliability of test–retest. The correlation indices found in each specific category, which ranged from 0.53 (overall health perception) to 0.81 (gravity measurements), were regarded as moderate to strong. The only domain to have a moderate correlation coefficient (0.53) was the general perception of health. Since the patients were not being treated, this outcome was already anticipated because it was the only one that could experience some spontaneous change.[14]

In all domains of KHQ areas except general health perception, intermittent mixed urinary incidence was associated with lower QoL, which is corroborated by global research. When patients used sanitary pads (difference in all KHQ domains, except general perception of health and sleep/disposition) or increased the number of pads used daily, QoL was worse.

The assessment of construct validity involved examining the correlation between the two questionnaires administered during the initial consultation. Concurrent validity was evaluated by examining the association between the KHQ and certain clinical measures that are relevant to urine incontinence. There was a moderate degree of correlation

Table 5: Testing validity as per average of the values of the scores obtained for each domain of the King's Health Domain and short form-36

KHQ	*P*	SF-36	*P*
General health perception	0.5518	General health status	0.6233
Impact of incontinence	<0.0001***	Functional capacity	0.074
Limitations of daily activities	<0.0001***	Physical aspects	0.0002***
Physical limitations	<0.0001***	Emotional aspects	0.3855
Social limitations	<0.0001***	Pain	0.8077
Personal relationships	0.63	Vitality	0.2709
Emotions	0.0076	Mental health	0.834
Sleep/disposition	0.9	Social aspects	0.42
Severity symptoms			

KHQ: King's Health Questionnaire, SF-36: Short form-36. (In bold, correlation values between related domains) ***$P<0.001$

observed between the analyzed areas that were connected. It is important to note that the observed associations were negative as a result of the inherent scoring criteria associated with each questionnaire. Overall, it was shown that the QoL was perceived to be lower when the type of complaint was noncontinuous mixed urine incidence. This was evident across all domains of the KHQ, except for the domain of overall health perception.

The study findings indicated that the SF-36 instrument had limited sensitivity in discerning disparities between the "yes" and "no" groups in relation to the variable "use of tampons." Nevertheless, in this particular context, it was not anticipated to be as such. The majority of KHQ domains exhibited a notable disparity in relation to the proposed categories, except for the domains of general health perception and sleep/disposition. On the other hand, the SF-36 was only able to indicate significant differences in one of its eight domains, specifically the physical aspects domain. The likely cause of the inadequate content validity shown in SF-36 for UI is the substandard quality of its content.

CONCLUSIONS

Marathi version of KHQs measured a person's vitality, physical functionality, body pain, general perceptions of health, and physical role functioning.It helped to assess other aspects of life, such as interpersonal and sexual relationships, professions, and psychological welfare, were not projected, though. These instruments were further divided into "generic" and "disease-specific" categories. Hence, it can be advised for use in standard clinical practice among Marathi-speaking patients because it is simple to administer.

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