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Research Article

Persian version of the University of Washington Quality of Life Questionnaire (UW-QOL): Reliability and Validity Study

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ABSTRACT

Background: The University of Washington quality of life questionnaire (UW-QOL) is widely used to evaluate the quality of life for head and neck cancer patients. The purpose of this study is translation of the UW-QOL questionnaire's into Persian.
Methods: After translation and cultural adaptation of the UW-QOL, the questionnaire was distributed among 100 head and neck cancer patients. Internal reliability of the translated UW-QOL was determined using Cronbach's alpha coefficient. The validity was determined by Spearman correlation coefficient between UW-QOL and 12-Item Short Form Survey (SF-12). The test – retest reliability was measured by Intraclass Correlation Coefficient (ICC) after one week.
Results: Cronbach's alpha coefficient was more than 0.75 and ICC coefficient was more than 0.80 in all variables. The UW-QOL questionnaire composite score had a positive significant association with SF-12 questionnaire total score (Spearman's Correlation Coefficient= 0.70, P< 0.0001).
Conclusion: In conclusion Persian translation of the UW-QOL questionnaire has acceptable reliability and validity and is as valid as the original English version in evaluating the quality of life for patients with head and neck cancer.

Introduction

Head and neck cancers are one of the main causes of self-dissatisfaction and the sixth cause of cancer-related deaths among societies [1]. Several clinical symptoms have been reported in these patients, including: taste disorders, dry mouth, dysphagia, restriction in eating, fatigue, pain and physical defects that result from the disease itself or treatments adopted for it, and affect the patient's quality of life in an unpleasant way [1]. Also, surgical treatment in head and neck cancer patients is associated with a significant reduction in quality of life due to adverse effects on appearance. Therefore, the evaluation of the patient's quality of life can help to create appropriate treatment options, facilitate the doctor- patient relationship by highlighting the patient's concerns and improving the patient's understanding and expectations of the aggressive treatment consequences [2-4].

University of Washington Quality of Life Questionnaire (UW-QOL) is the best and most reliable instrument for quality of life assessment in head and neck cancer patients [5]. Brief and automatic implementation,

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multifactoriality and the possibility of identifying subtle changes, providing questions related to head and neck cancer and showing the patient's quality of life in real terms due to the lack of involvement of health service providers in the evaluation are the advantages of this questionnaire [6]. UW-QOL consisted from two main parts, specific questions (12 questions) and general questions (3 questions). This questionnaire investigates patient's satiation during past 7 days.

In the specific part appearance, pain, recreation, activity, shoulder function, saliva, swallowing, taste, chewing, speech, anxiety and mood are evaluated. Each dimension has a question. Patients are ranked on a score from 0 (worst) to 100 (best).

Three different cumulative scores will be derived from specific part three (Physical subscale, Social-Emotional subscale, and Total scale). The Physical function subscale score is calculated by taking the simple average of 6 domain scores: chewing, swallowing, speech, taste, saliva, and appearance. Similarly, the Social-Emotional Function subscale score is obtained by averaging the scores of 6 domains: anxiety, mood, pain, activity, recreation, and shoulder function. The Total scale score is the average of all 12 specific part questions. Additionally, the general part assesses global health-related quality of life compared to the month before cancer development, the past 7 days' general health-related quality of life, and overall quality of life (not just health-related quality of life). Each of these aspects is evaluated through a single question (G1, G2, and G3, respectively). Currently, the Persian version of the UW-QOL questionnaire is unavailable. Therefore, in this study, we translated this important questionnaire into Persian and evaluated its validity and reliability in head and neck cancer patients.

Methods

UW-QOL translation process

The adaptation and translation strategies followed the Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures [7]. Two native Persian otolaryngologists independently translated the UW-QOL questionnaire version 4 into Persian. After resolving discrepancies through discussion, an initial translation of UW-QOL was synthesized. Two bilingual translators performed back-translation. After minor modifications, a pre-final version of the Persian UW-QOL was established.

Patients' recruitment

This is a cross-sectional study that was conducted during February and March of 2023 on 100 patients (63 men and 37 women) with head and neck cancers who underwent surgery due to their cancers in Amir Alam Hospital in Tehran, Iran. The criteria for entering the study include patients aged 20-40 years with head and neck cancers, willingness to participate in the study and completion of the written informed consent form. Also, non-cooperation to continue the research and withdrawal from the study for any reason, including change of location, death, etc. were considered as exclusion criteria.

Reliability and Validity

The questionnaire internal and test-retest reliability was determined using Cronbach's alpha coefficient and Intraclass Correlation Coefficient (ICC). Patients filled out the UW-QOL questionnaire twice, one week apart. A physician familiar with the UW-QOL questionnaire was available to help patients fill out the questionnaire whenever they needed assistance.

Translated and validated 12-Item Short Form Survey (SF-12) questionnaire was used for validation of the translated UW-QOL questionnaire [8]. From SF-12, physical health (sum of questions 1,2,3,4,5and 8) and mental health (sum of questions 6,7,9,10,11 and 12) and total score extracted. For validity Spearman's rank correlation coefficient and p value measured between each of questionnaires.

This research was conducted considering the following ethical issues: Obtaining a license and ethics code from the Ethics Committee of Tehran University of Medical Sciences as ID: IR.TUMS.MEDICINE.REC.1400.1047.

Statistical analysis

Statistical analysis was performed using SPSS version 22 software. In the descriptive part, quantitative variables were reported with mean and standard deviation and qualitative variables with number and percentage. In the analytical part, internal reliability was assessed using Cronbach's alpha coefficient and repeatability before and after in the UW-QOL questionnaire was evaluated using ICC. Validity of the translate UW-QOL compared with SF-12 by Spearman's correlation coefficient.

Results

Demographic characteristics

Qualitative variables are expressed by number (percentage) and quantitative variables are expressed as mean and standard deviation. The patients' average age was 55.88 ± 12.34. Most of the patients were male (63 versus 37) and most of them were operated by total laryngectomy (Table 1).

Internal Reliability of the UW-QOL

The reliability of the UW-QOL questionnaire was evaluated by Cronbach's alpha test. The value of alpha at the beginning of the evaluation was determined as 0.749 and after one week as 0.722, which indicates the good and acceptable reliability of the questionnaire.

Reproducibility of the UW-QOL questionnaire

Reproducibility of the Washington questionnaire measured using ICC. Except G3 which showed moderate test-retest reliability all other domains shoed good reliability (Table 2).

Association between the UW-QOL questionnaire and the SF-12 questionnaire

The association between the UW-QOL questionnaire and the SF-12 questionnaire was investigated to determine the validity of the UW-QOL questionnaire. Additionally, the association between the SF-12 questionnaire and the three global (G) factors, namely G1, G2, and G3, was assessed using Spearman's rank correlation coefficient (Table 3).

Table 1- Demographic characteristics of patients

Variable		Mean± Standard deviation/number (percentage)
Age	-	50.88 ± 12.34
Gender	Female	37 (37)
	Male	63 (63)
Marital Status	Married	84 (84)
	Single	16 (16)
Job	Retired	13 (13)
	Unemployed	15 (15)
	Housewife	22 (22)
	Freelance Job	31 (31)
	Employee	18 (18)
	Farmer	1 (1)
Number of Children	0	29 (29)
	1	12 (12)
	2	25 (25)
	3	16 (16)
	4	9 (9)
	5	7 (7)
	6	2 (2)
Site of cancer	Aleoral	2 (2)
	Buccal	1 (1)
	Lip	1 (1)
	Palate	1 (1)
	Parotid	3 (3)
	Thyroid	27 (27)
	Tongue	23 (23)
	Larynx	42 (42)
Neck Dissection	No	42 (42)
	Yes	58 (58)

Table 2- Investigating the association between the Washington questionnaire and the SF-12 questionnaire by Spearman's rank correlation coefficient.

mental health 12-SF	Physical health 12-SF	SF-12 Total	Composite	Physical	Social emotional	G3	G2	G1	
									G1
								0.599 < 0.0001	G2
							0.790 < 0.0001	0.533 < 0.0001	G3
						0.375 < 0.0001	0.437 < 0.0001	0.527 < 0.0001	Social emotional
					0.219 0.028	0.257 0.011	0.240 < 0.0001	0.152 0.133	Physical
				0.698 < 0.0001	0.817 < 0.0001	0.397 < 0.0001	0.425 < 0.0001	0.441 < 0.0001	Composite
			0.604 < 0.0001	0.369 < 0.0001	0.593 < 0.0001	0.532 < 0.0001	0.637 < 0.0001	0.440 < 0.0001	SF-12 Total

		0.926 < 0.0001	0.649 < 0.0001	0.378 < 0.0001	0.635 < 0.0001	0.367 < 0.0001	0.475 < 0.0001	0.387 < 0.0001	Physical -health SF 12
	0.635 < 0.0001	0.926 < 0.0001	0.463 < 0.0001	0.300 < 0.0001	0.449 < 0.0001	0.588 < 0.0001	0.662 < 0.0001	0.425 < 0.0001	mental -health SF 12

Spearman correlation. P_ value less than 0.05 is considered statistically significant. G1= Global scale 1, G2= Global scale 2 and G3= Global scale3, SF-12= 12-Item Short Form Survey

Table 3- The reliability and correlation between the quality-of-life components before and after one week

Variable	Before			After			ICC
	Mean± Standard deviation	Minimum	Maximum	Mean± Standard deviation	Minimum	Maximum	
G1	52.50 ± 22.05	0	100	53.25 ± 23.48	0	100	0.874
G2	63.40 ± 17.99	20	100	64.20 ± 17.82	20	100	0.837
G3	66.80 ± 17.80	20	100	69 ± 20.96	0	100	0.776
Pain	84.50 ± 16.58	50	100	84.50 ± 16.58	50	100	0.839
Appearance changes	71 ± 14.96	0	100	73.75 ± 15.23	25	100	0.865
Activity	78.25 ± 23.75	0	100	81.25 ± 22.23	25	100	0.915
Recreation	84.75 ± 19.10	0	100	85.75 ± 19.55	25	100	0.931
Swallow	83.80 ± 19.89	30	100	84.85 ± 18.06	30	100	0.965
Chew	95 ± 16.67	0	100	95 ± 15.89	0	100	0.935
Talking	54.50 ± 30.23	0	100	57.55 ± 29.10	0	100	0.953
Shoulder	91.30 ± 17.73	0	100	93.20 ± 15.08	25	100	0.934
Taste	87.25 ± 23.70	0	100	82.80 ± 29.06	25	100	0.918
Saliva	86.10 ± 22.55	0	100	89 ± 16.78	25	100	0.912
Mood	63.85 ± 24.82	0	100	71.30 ± 21.28	25	100	0.802
Anxiety and worry	64.40 ± 26.61	0	100	70.20 ± 25.30	25	100	0.918

ICC: Intraclass Correlation Coefficient.

Discussion

Health-related quality of life is a special concept that pays special attention to the clinical impact of the disease and its treatment in patients. Quality of life assessment allows healthcare professionals to understand patients' experience of the disease and its management, and consider related concerns [9]. In the absence of objective parameters, assessment of health-related quality of life is usually performed using instruments such as the UW-QOL questionnaire developed by Hassan and Weymuller in 1993 [10]. This questionnaire has been translated and approved in more than 30 languages, including Brazilian, Chinese, Hindi, Marathi, Portuguese, Korean, and Turkish [11]. However, according to our information, this questionnaire has not been translated into Farsi and subsequently not approved. Therefore, in this study, for the first time, the reliability and validity of the UW-QOL questionnaire in patients with head and neck cancers in Iran have been investigated, and the factors predicting the quality of life and their relationship with the patient's sleep quality have been measured.

Validity refers to the accuracy of a measurement instrument, while reliability is concerned with the consistency and repeatability of the instrument [12]. The Cronbach's alpha coefficient of the questionnaire is below 0.7, indicating weak internal consistency [13]. Our study found that the translated UW-QOL questionnaire demonstrated good reliability (> 0.7). These results are in line with the findings of other researchers who have translated the UW-QOL questionnaire into different languages. For example, in the Filipino translation by Dominguez et al., Cronbach's alpha coefficient exceeded 0.8 [14]. Similarly, in the Spanish translation by Nazar et al., it was reported as 0.84 [15]. In the Brazilian Orange translation by Vartanian et al., it was 0.74 [16]. The Turkish translation by Şenkal et al. reported a value of 0.76 [13], and the Moroccan translation by Adnane et al. reported a value of 0.83 [17]. Also, in our study, the value of Spearman's rank correlation coefficient for items was more than 0.80. It was observed that the parameters in appearance variations, activity, swallowing, speaking, shoulder, taste, saliva, mood, anxiety alter easily in people after a week, and the most variations were in the mood and anxiety of patients. The reliability results in our study are consistent with other studies and show that the UW-QOL is a reliable instrument to use in patients with head and neck cancer [13, 14, 16, 18-21].

Different demographic and clinical characteristics and problems faced by patients have different effects on

patients' quality of life. Therefore, it is important to identify features that have a significant impact and implement measures focused on the most relevant problems to improve the quality of life after treatment [22]. In this study, based on the UW-QOL questionnaire, the evaluation of the factors predicting health-related quality of life in cancer patients showed that G1, G2, and G3 parameters have the greatest impact on mental health-related quality of life, and pain has the greatest impact on physical health-related quality of life. In conclusion, the Persian translation of the UW-QOL questionnaire, which was assessed in this study, was culturally compatible and had good reliability. This questionnaire is as reliable as the original English version in evaluating health-related quality of life in patients with head and neck cancers.

Conclusion

In conclusion, the findings of the present study showed that in the case of evaluating the quality of life for patients with head and neck, the Persian translation of the UW-QOL questionnaire has acceptable reliability and validity and is as valid as the original English version in cancer.

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