Original Article

TRANSLATION AND CROSS-CULTURAL ADAPTATION OF ORTHOGNATHIC QUALITY OF LIFE INSTRUMENT TO ARABIC LANGUAGE

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ABSTRACT

Orthognathic Quality of Life Questionnaire (OQOLQ) is a validated tool designed to assess the multifaceted impacts of these deformities and their correction. This study focuses on translating and culturally adapting the OQOLQ into Arabic. The translation process followed rigorous cross-cultural adaptation guidelines set forth by the European Group for Health Management and Quality of Life, including forward and backward translation, expert panel review, and pilot testing on 30 patients with dentofacial deformities. The questionnaire items were categorized into four sections: Oral function (5 Questions), facial aesthetics (5 Questions), the social domain (8 Questions), and awareness of facial deformity (4 Questions). Participants reported no difficulty in understanding the meaning of any questions. The average scores and standard deviations for the categories are as follows: oral function (6.47, 3.93); facial Aesthetics (12.47, 6.42); social domain (17.25, 10.44); awareness of facial deformity (9.41, 4.96); global score (45.59, 23.63). There were no statistically significant associations between demographic variables and the responses in each of the categories (p-values > 0.05). Arabic OQOL was developed and tested in 30 patients. There was no difficulty in understanding it. The QOL of patients requiring orthognathic surgery is affected in all the domains examined in the OQOL.

Key words: Arabic, Dentofacial deformity, Orthognathic, Quality of life, Cultural adaptation.

Introduction

Quality of life is a fundamental measure of an individual's overall well-being, encompassing various dimensions of physical, emotional, and social health. Within the realm of healthcare, dentofacial deformities can affect an individual's quality of life, extending beyond mere aesthetic concerns. These deformities, which include a wide range of conditions affecting the alignment and structure of the jaw and facial bones, can significantly influence an individual's self-esteem, psychological state, and functional abilities. Challenges such as impaired speech, difficulty in chewing, and altered facial appearance due to dentofacial deformities can lead to feelings of social stigma, reduced self-confidence, and even hindered interactions in both personal and professional spheres. Consequently, evaluating and addressing the impact of dentofacial deformities on quality of life has become an essential aspect of comprehensive patient care, emphasizing the need for instruments that can accurately assess the multifaceted effects of these conditions on an individual's overall well-being.

A variety of assessment tools have been developed to comprehensively evaluate the oral quality of life (QOL) across diverse dimensions, with the Oral Health Impact Profile (OHIP) being just one example. Orthognathic surgery, aimed at correcting facial and jaw irregularities, can significantly impact a person's life. In 2000, Cunningham developed the Orthognathic QOL Questionnaire (OQOLQ), focusing on the impact of dentofacial deformity and orthognathic surgery **(Table 1)** [1]. This condition-specific instrument examined quality of life in social, aesthetic, functional, and awareness domains. The validity of this tool was further evaluated and established [2]. By quantifying the Orthognathic QOL, healthcare professionals gain valuable insights into the patient experience, aiding in treatment planning, counseling, and improving outcomes.

Table 1. The English Orthognathic Quality of Life (OQOL) instrument.

	Not applicable	Bothers a little +	++	+++	bothers a lot ++++
1- I am ashamed of the way my teeth look.					
2- I have problems biting					
3- I have problems chewing					
4 -There are some foods I avoid eating because the way my teeth meet makes it difficult					

5- I don't like eating in public places
6- I get pains in my face or jaw
7- I don't like seeing a side view of my face (profile)
8- I spend a lot of time studying my face in the mirror
9- I spend a lot of time studying my teeth in the mirror
10- I dislike having my photograph taken
11- I dislike being seen on video
12- I often stare at other people's teeth
13- I often stare at other people's faces
14- I am self-conscious about my facial appearance
15- I try to cover my mouth when I meet people for the first time
16- I worry about meeting people for the first time
17- I worry that people will make hurtful comments about my appearance
18- I lack confidence when I am out socially
19- I do not like smiling when I meet people
20- I sometimes get depressed about my appearance
21- I sometimes think that people are staring at me
22- Comments about my appearance really upset me, even when I know people are only joking

Quality of life assessments are critical in healthcare as they provide a comprehensive understanding of the impact of medical conditions on patients' physical, emotional, and social well-being. However, the perception of quality of life is inherently influenced by cultural factors, which can affect how patients experience and report their symptoms and challenges. Cultural differences can shape individuals' attitudes towards health, illness, and medical interventions, as well as their expectations and coping strategies. Therefore, using a quality of life instrument that is not culturally adapted may lead to inaccurate or incomplete assessments, as it might not fully capture the nuances of the patients' experiences in different cultural contexts .

The translation and cultural adaptation of surveys is an intricate and essential process that aims to make research instruments accessible and meaningful across different linguistic and cultural contexts. This process ensures that the survey retains its reliability and validity, enabling researchers to gather accurate data and insights from diverse populations while respecting cultural sensitivities and linguistic diversity. The OQOLO has been translated and culturally adapted to develop different versions suitable for different populations [3-5]. This study aims to translate and culturally adapt the OQOLQ to Arabic and test it in a pilot of patients with pronounced dentofacial deformities.

Materials and Methods

The adaptation of the Orthognathic Quality of Life Questionnaire (OQOLQ) into the Arabic language adhered to the established guidelines set forth by the European Group for Health Management and Quality of Life, as outlined by Beaton *et al*. (2000) [6]. This meticulous process comprised several key steps: Step 1 involved the initial translation by two independent translators. Step 2 focused on synthesizing their translations. Following this, in Step 3, two different translators independently back-translated the questionnaire to ensure linguistic integrity. Step 4 featured an analysis phase conducted by a panel of experts, while Step 5 involved a pre-test to assess the survey's clarity and relevance. The process culminated in Step 6 with an evaluation by a committee of experts. Additionally, an extra section for collecting demographic information was added to the questionnaire. The Research Ethics Committee at King Abdulaziz University Dental School approved this study. All patients (or guardians if younger than 18 years old) signed an informed consent prior to participating in this study. The adapted survey **(Table 2)** was administered to a sample of patients with dentofacial deformities, currently undergoing orthodontic preparation for orthognathic surgery at King Abdulaziz University Dental School. Thirty patients (15 males, 15 females) were consecutively selected for participation in November and December 2022, with exclusions for syndromic and cleft lip and palate patients. Respondents completed the survey digitally during their routine orthodontic visits. The questionnaire items were categorized into four sections as per Cunningham's classification: Oral function (Questions 2-6), facial aesthetics (Questions 1, 7, 10, 11, 14), the social domain (Questions 15-22), and awareness of facial deformity

(Questions 8, 9, 12, 13) [1]. Descriptive statistics were employed for data analysis, and the Chi-square test was used to compare the association of age, gender, and marital status to participants 'answers (p=0.05).

Table 2. The Arabic translation for the OQOL instrument used in the research.

لا ينطبق	قليلاً تزعجك +	++	+++	تزعجك كثيرا ++++
١- اشعر بالخجل من مظهر أسناني				
٢- لدي مشاكل في العض(قطع الطعام)				
٣- لدي مشاكل في المضغ (طحن الطعام)				
٤- هناك بعض الأطعمة التي أتجنب تناولها لأن الطريقة التي تلتقي بها أسناني تجعل تناولها صعبا				
٥- لا احب تناول الطعام في الاماكن العامة				
٦- أشعر بآلام في وجهي أو فكي				
٧- لا أحب رؤية المنظر الجانبي لوجهي				
٨- أقضي الكثير من الوقت في تحليل مظهر وجهي في المرآة				
٩- أقضي الكثير من الوقت في تحليل مظهر أسناني في المرآة				
١٠- لا أحب التقاط الصور لي				
١١- لا أحب أن يراني الناس في مقاطع الفيديو				
١٢- كثيرا ما ادقق في أسنان الآخرين				
١٣- كثيرا ما أدقق في وجوه الآخرين				
١٤- أشعر بالخجل من مظهر وجهي				
١٥- أحاول تغطية فمي عندما اقابل أشخاص للمرة الأولى				
١٦- أنا قلق بشأن مقابلة الناس لأول مرة				
١٧- أخشى أن يدلي الناس بتعليقات مؤذية حول مظهري				
١٨- أفتقر إلى الثقة في المناسبات الاجتماعية				
١٩- أنا لا أحب الابتسام عندما أقابل الناس				
٢٠- يصيبني أحيانًا الاكتئاب بسبب مظهري				
٢١- أعتقد أحيانًا أن الناس يحدقون بي				
٢٢- تزعجني التعليقات حول مظهري جدا حتى لو كانت على سبيل المزح				

Results and Discussion

A total of 30 patients completed the entire Arabic version of the OQOLO questionnaire. No difficulty in understanding the meaning of any questions was reported by participants. The average age among the participants was 26 years, with ages ranging from 17 to 41 years and a standard deviation of 5.5 years. Among the respondents, eleven individuals were single, accounting for 36.7% of the sample, while 19 patients were married, making up the remaining 63.3%. The absolute and relative frequency of responses to each question is summarized in **Table 3**.

Table 3. Absolute and relative frequencies of the responses (n=30).

	Not applicable		+		++		+++		+ +++	
	N	%	N	%	N	%	N	%	N	%
Q1	2	6. 7	4	13.3	6	20	10	33.3	8	26. 7
Q2	9	30	4	13.3	8	26. 7	3	10	6	20
Q3	11	36. 7	3	10	8	26. 7	3	10	5	16. 7
Q4	12	40	2	6. 7	4	13.3	8	26. 7	4	13.3
Q5	15	50	3	10	7	23.3	5	16. 7	0	0

Q6	4	13.3	4	13.3	3	10	9	30	10	33.3
Q7	4	13.3	7	23.3	5	16. 7	6	20	8	26. 7
Q8	3	10	6	20	7	23.3	6	20	8	26. 7
Q9	6	20	1	3.3	5	16.7	8	26.7	10	33.3
Q10	5	16.7	1	3.3	6	20	7	23.3	11	36.7
Q11	3	10	4	13.3	7	23.3	7	23.3	9	30
Q12	2	6. 7	4	13.3	7	23.3	4	13.3	13	43.3
Q13	4	13.3	2	6.7	9	30	6	20	9	30
Q14	10	33.3	5	16. 7	7	23.3	3	10	5	16. 7
Q15	9	30	6	20	5	16. 7	5	16. 7	5	16. 7
Q16	6	20	7	23.3	8	26. 7	5	16. 7	4	13.3
Q17	7	23.3	2	6. 7	7	23.3	3	10	11	36. 7
Q18	4	13.3	3	10	7	23.3	5	16. 7	11	36. 7
Q19	5	16.7	2	6. 7	5	16. 7	8	26. 7	10	33.3
Q20	7	23.3	2	6.7	3	10	5	16. 7	13	43.3
Q21	5	16.7	6	20	5	16. 7	2	6.7	12	40
Q22	7	23.3	1	3.3	3	10	2	6.7	17	56. 7

Data analysis of the questionnaire revealed distinct patterns across the four categories described by Cunningham *et al*. For oral function (questions 2 to 6), the average score was 6.47 with a standard deviation of 3.93. In the facial aesthetics category (questions 1, 7, 10, 11, and 14), a higher average score of 12.47 was observed, with a standard deviation of 6.42. The social domain category (questions 15 to 22) showed the highest average score of 17.25 with a standard deviation of 10.44. The awareness of facial deformity category (questions 8, 9, 12, and 13) had an average score of 9.41 and a standard deviation of 4.96. Finally, the global score, representing the sum of scores across all questions (1 to 22), yielded an average of 45.59 with a standard deviation of 23.63 **(Table 4)**. There were no statistically significant associations between these demographic variables (Sex, Marital Status, Age Group) and the responses in each of the four categories (Oral Function, Facial Aesthetics, Social Domain, and Awareness of Facial Deformity), as all p-values were > 0.05 **(Table 5)**.

Table 4. The mean and standard deviation for each category of the OQOL.

Category	Mean	Standard Deviation
Oral Function (Q2-6)	6.47	3.93
Facial Aesthetics (Q1, 7, 10, 11, 14)	12.47	6.42
Social Domain (Q15-22)	17.25	10.44
Awareness of Facial Deformity (Q8, 9, 12, 13)	9.41	4.96
Global Score (Q1-22)	45.59	23.63

Table 5. Chi-square test for the relationship of demographics with participants 'answers for different categories of the OQOL.

Category	Demographic	P-Value
Awareness of Deformity	Sex	0.4614
	Marital Status	0.8232
	Age Group	0.8338
Facial Aesthetics	Sex	0.1253
	Marital Status	0.3525

	Age Group	0.3618
Oral Function	Sex	0.2538
	Marital Status	0.7281
	Age Group	0.7009
Social Domain	Sex	0.28
	Marital Status	0.328
	Age Group	0.4162

Orthognathic surgery, aimed at correcting dentofacial deformities, often falls under elective procedures within numerous healthcare systems [7, 8]. The frequency of this surgical intervention hinges on factors such as the accessibility of skilled surgical and orthodontic professionals, patient awareness and willingness, the availability of necessary resources, and the cost of the surgery. Despite its substantial functional benefits for the majority of patients, many insurance companies tend to exclude it from coverage primarily due to its perceived cosmetic nature. However, functional impairments, including challenges with chewing, speech, breathing, and temporomandibular joint dysfunction, frequently underscore the necessity for this procedure [9-14].

The translation and cultural adaptation of the Orthognathic Quality of Life Questionnaire (OQOLQ) into Arabic holds significant implications for clinical practice and future research within Arabic-speaking populations. Clinically, the availability of a validated Arabic version of the OQOLQ enables healthcare providers to accurately assess the impact of dentofacial deformities on patients' quality of life, facilitating more personalized and culturally sensitive treatment plans [15-18]. This tool allows for better communication between patients and practitioners, ensuring that the psychosocial and functional challenges faced by patients are adequately addressed. Furthermore, the standardized assessment provided by the OQOLQ can improve preoperative and postoperative evaluations, aiding in the measurement of surgical outcomes and patient satisfaction. For future research, this adaptation opens avenues for large-scale studies that can explore the prevalence and impact of dentofacial deformities across different Arabic-speaking regions, contributing to a broader understanding of cultural variations in quality-of-life perceptions [19, 20].

The findings of this study shed light on the impacts of dentofacial deformities on various aspects of quality of life, as measured by the OQOL, including oral function, facial aesthetics, social domain, and awareness of facial deformity. The highest impact in this study was on the social domain, followed by facial aesthetics. Shaw *et al.* explored the social impact of dentofacial deformities, revealing that patients who did not receive treatment experienced reduced self-esteem and encountered negative social interactions, such as mockery and teasing [21]. In a questionnaire-based survey of 100 patients, it was found that the mood, self-confidence, and social interactions had significantly improved after orthognathic surgery [22]. Araujo *et al.* conducted a systematic review and meta-analysis to evaluate the impact of orthodontic-surgical management of dentofacial deformities. They concluded that orthognathic surgery improves QOL in regards to aesthetic, functional, psychological, and social aspects [23].

Translation and cultural adaptation are a critical and thorough process to allow the use of existing validated tools from a different language. It is different from simple translation, where the original aim of the tool might get lost in translation. This multi-step process includes translation, back-translation, and evaluation by a group of experts who are knowledgeable about the aim of the original questionnaire. We followed the detailed process described by Beaton *et al.* [6] and then tested it in a pilot of patients. This process was used to translate and culturally adapt the OQOL into different languages, such as Brazilian Portuguese and German.

Abdullah conducted a study to evaluate the change in quality of life after orthognathic surgery in Saudi patients [24-28]. They used an Arabic translated version of the OQOL tool in 17 patients and reported improvement in quality of life across all domains of OQOL. However, the translation process involved consensus translation by three bilingual experts and validation of the translation in 15 volunteers (10 dental students and 5 dental faculty members) [29-31]. Their process was a simple translation and was validated in volunteers from the dental field, not the general public. In contrast, we followed the multi-step process for translation and cultural adaptation of the OQOL tool to maintain its validity.

The Arabic OQOL was developed and tested in 30 patients. There was no difficulty in understanding it. The QOL of patients with dentofacial deformities requiring orthognathic surgery is affected in all the domains examined in the OQOL. The Limitations of the study include a relatively small sample size and the use of patients from one city in Saudi Arabia. Future studies may explore using this validated tool to quantify improvement in quality of life after different orthognathic procedures and different severities of the initial dentofacial deformity.

Conclusion

The OQOL was translated and culturally adapted to the Arabic language using the guidelines set forth by the European Group for Health Management and Quality of Life, including forward and backward translation, expert panel review, and pilot testing on 30 patients with dentofacial deformities. This tool is valuable in assessing QOL in relation to orthognahtic surgery and its impact in the management of facial deformities in Arabic speaking patients.

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