

Methodological Approaches to Assessing Oral Health-Related Quality of Life in Adolescents Using the CPQ11–14 Questionnaire

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Abstract

Assessing the impact of dental caries on adolescents' quality of life requires a combination of standardised clinical indices and validated patient-reported instruments. The aim of this study was to systematise the methodological approaches to assessing the dental status and oral health-related quality of life (OHRQoL) of adolescents, with emphasis on the Child Perceptions Questionnaire for 11–14-year-olds (CPQ11–14). An analytical review of the literature on clinical dental indices, the development and validation of the CPQ11–14 and the cross-cultural adaptation of self-report questionnaires was carried out. The analysis showed that the dental status of adolescents should be assessed using the prevalence of caries, the DMFT index and the Simplified Oral Hygiene Index (OHI-S) according to WHO criteria, while OHRQoL should be assessed using the CPQ11–14 or its 16-item short form, which covers four domains: oral symptoms, functional limitations, emotional and social well-being. Use of the questionnaire in a new linguistic setting requires a five-stage cross-cultural adaptation. To evaluate the effect of treatment, repeated measurement before treatment, immediately after oral sanitation and three months later is recommended. These approaches provide a methodological basis for studying the OHRQoL of adolescents in Uzbekistan.

Keywords: oral health-related quality of life; adolescents; CPQ11–14; dental caries; DMFT; OHI-S; cross-cultural adaptation; questionnaire.

INTRODUCTION

Untreated dental caries of permanent teeth is the most prevalent condition worldwide [1], and oral health is recognised by WHO as an integral part of general health and quality of life [2]. Caries and its complications affect not only the condition of the teeth but also the daily life of adolescents: their ability to eat, sleep, speak, study and communicate with peers. Clinical indices alone do not reflect these consequences, which led to the development of a conceptual framework for measuring oral health [3] and of the concept of oral health-related quality of life (OHRQoL) as an essential outcome in dental practice and research [4]. Most of the early OHRQoL measures were designed for adults [5]. Among the instruments intended for children and adolescents, the most widely used is the Child Perceptions Questionnaire for 11–14-year-olds (CPQ11–14), developed by Canadian researchers [6]; questionnaires have also been developed for younger children [7] and an index of oral impacts on children's daily performances, the Child-OIDP, has been proposed [8].

For the results of such studies to be valid and comparable, clinical examination and questionnaire surveys must be carried out according to standardised methods, and questionnaires developed in another language must undergo cross-cultural adaptation. In Uzbekistan, studies of the quality of life associated with oral health have been conducted mainly in adults, and methodological approaches to such studies in adolescents have not been systematised.

The aim of this study was to systematise the methodological approaches to assessing the dental status and oral health-related quality of life of adolescents, with emphasis on the CPQ11–14 questionnaire.

MATERIALS AND METHODS

The study was conducted as an analytical review of publications on standardised methods of dental epidemiological examination, the Simplified Oral Hygiene Index, the development and validation of the CPQ11–14 and its short forms, and guidelines for the cross-cultural adaptation of self-report measures. The methods of comparative analysis, generalisation and systematisation of scientific data were used.

RESULTS

Assessment of dental status

The dental examination is performed in a dental office under artificial lighting using a standard set of instruments, and the data are recorded in a chart based on WHO recommendations [9]. The prevalence of caries is defined as the proportion of examined persons with caries:

Prevalence of caries (%) = (number of persons with caries / total number examined) × 100

The intensity of caries is assessed by the DMFT index, the sum of decayed (D), missing due to caries (M) and filled (F) permanent teeth in one person; a tooth with both a carious cavity and a filling is recorded as decayed. The mean value for a group is calculated by summing the individual values and dividing by the number of persons examined [9].

Oral hygiene is assessed using the Simplified Oral Hygiene Index (OHI-S) of J.C. Greene and J.R. Vermillion, which quantifies soft and hard dental deposits on six index teeth: the buccal surfaces of teeth 16, 11, 26 and 31 and the lingual surfaces of teeth 36 and 46. Soft deposits are detected after staining, and hard supra- and subgingival deposits visually and with a dental probe. The debris and calculus scores are each divided by the number of surfaces examined, and the two values are summed [10].

Structure of the CPQ11–14 questionnaire

The original CPQ11–14 contains 37 questions [6]; its short forms, including a 16-item version, have demonstrated good criterion and construct validity [11] and are widely used in epidemiological surveys, including among younger children [12]. The questions cover four domains (Table 1).

Table 1. Domains of the CPQ11–14 questionnaire

CPQ11–14 domain	Content of the questions
Oral symptoms	Pain in the teeth or mouth, bad breath, bleeding gums, sores, food sticking between teeth, difficulty chewing
Functional limitations	Difficulty eating hot, cold or hard foods, difficulty pronouncing words, sleep disturbance due to dental problems
Emotional well-being	Feeling upset or irritable because of the teeth, shyness about the teeth, concern about what others think of them
Social well-being	Being teased, avoiding smiling, reluctance to answer at the blackboard or read aloud, others discussing the child's teeth

Source: compiled by the author from [6, 11].

Each question has graded response options that are coded with points, and the scores are summed; a higher total score indicates a greater negative impact of oral conditions on the adolescent's quality of life. Adolescents complete the questionnaire on their own.

Cross-cultural adaptation

Since the CPQ11–14 was developed in English, its use in another language requires cross-cultural adaptation according to internationally accepted guidelines [13, 14]. This process includes five stages (Table 2), and the adaptation team should include a dentist, a psychologist, translators and representatives of the target age group. After adaptation, the validity and reliability of the national version must be confirmed, as has been done, for example, for the Brazilian version of the questionnaire [15].

Table 2. Stages of cross-cultural adaptation of the CPQ11–14

Stage	Content
1. Forward translation	Two independent translations of the original questionnaire into the target language
2. Synthesis	A preliminary version is created on the basis of the two forward translations
3. Back translation	Two independent back translations of the preliminary version into the original language
4. Expert committee review	Comparison of all versions, assessment of semantic and conceptual equivalence, editing; creation of a test version
5. Pre-testing	Survey of adolescents to assess the clarity of the questions and their suggestions for more accurate wording

Source: compiled by the author based on [13, 14].

Study design

In epidemiological studies, the questionnaire is administered once, simultaneously with the dental examination. To evaluate the effect of dental treatment on quality of life, a repeated-measures design is recommended, with the survey conducted at three time points: at the first visit before treatment, immediately after oral sanitation, and three months later. Patients can be divided into subgroups according to the clinical situation, for example uncomplicated caries versus caries with complications, and caries of posterior teeth only versus caries of both anterior and posterior teeth, which makes it possible to assess how the nature and location of lesions influence changes in quality of life.

DISCUSSION

Combining standardised clinical indices with a validated patient-reported instrument makes it possible to relate the objective dental status of adolescents to their perception of its consequences. The CPQ11–14 has shown high internal consistency and test-retest reliability in its original version [6], and its short forms retain good measurement properties while reducing the time needed to complete them [11]. The domain structure of the questionnaire is particularly relevant for adolescents, for whom emotional and social consequences of dental problems, such as embarrassment when smiling or answering in class, may be as important as pain.

The main methodological requirement for using the CPQ11–14 in Uzbekistan is a complete cross-cultural adaptation into Uzbek, followed by confirmation of the validity and reliability of the national version [14, 15]; results obtained with an unadapted translation cannot be compared with international data. The repeated-measures design makes it possible to evaluate not only the immediate but also the medium-term effect of treatment on quality of life. The limitation of self-report instruments is their dependence on the adolescent's understanding of the questions, which is why the pre-testing stage is essential.

CONCLUSION

A methodologically sound assessment of the oral health-related quality of life of adolescents should combine the WHO-standardised clinical indicators of dental status (prevalence of caries, DMFT and OHI-S) with the CPQ11–14 questionnaire or its short form, covering oral symptoms, functional limitations, and emotional and social well-being. Use of the questionnaire in Uzbekistan requires a five-stage cross-cultural adaptation and validation of the national version, and evaluation of treatment effectiveness requires repeated surveys before treatment, immediately after oral sanitation and three months later. These approaches provide a basis for future studies of the oral health-related quality of life of adolescents in Uzbekistan.

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