

# Oral health-related quality of life in children: Conceptual issues

## Avaliação da qualidade de vida relacionada à saúde bucal em crianças: aspectos conceituais

### Abstract

Oral health-related quality of life (OHRQoL) instruments have been widely used in oral health studies. However, most OHRQoL measures are designed to assess the adult population, mainly due to the difficulties for developing such measures for children and their validation. The aim of this review was to describe the impact of oral health on children's quality of life and its importance for this specific age group. The use of indicators of OHRQoL in children is necessary since they are based on self-perception and oral health impact, which is essential for planning of actions for health promotion considering biological and psychosocial aspects. It is also suggested the need of studies using quali-quantitative methods as an alternative approach to the use of OHRQoL instruments in children.

**Key words:** Oral health; child health; quality of life

### Resumo

O uso de instrumentos que relacionam saúde bucal com a qualidade de vida tem sido freqüente em pesquisas odontológicas. Porém, a maioria desses estudos refere-se à população adulta, principalmente devido às dificuldades de desenvolvimento e validação dessas medidas para a população infantil. O objetivo deste trabalho é descrever, através de uma revisão na literatura, o impacto das doenças bucais na qualidade de vida de crianças e a importância dos métodos de mensuração para as mesmas. Observou-se que a utilização de indicadores que associam saúde bucal e qualidade de vida em crianças é fundamental, uma vez que são baseados na auto-percepção e no impacto odontológico e possibilitam condições para o planejamento de ações para promoção de saúde considerando aspectos biológicos e psicossociais. Também pôde-se perceber a necessidade de mais estudos de desenho quanti-qualitativo como uma alternativa complementar à utilização destes indicadores na população infantil.

**Palavras-chave:** Saúde bucal; saúde da criança; qualidade de vida

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## Introduction

The World Health Organization (WHO) defined health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (1). Because health definition is complex, concepts such as those proposed by WHO may not be able to capture the full meaning of “health”. The present concept of health requires the inclusion of psychosocial aspects, such as issues related to quality of life, which is closely related to the human relationships in the contemporary society (2). The idea of “quality of life” has been expanded recently, and its improvement has also become a goal of the good practices for health promotion and prevention of disease (3). Oral health cannot be dissociated from general health and it is essential to quality of life (4).

Traditional methods to measure oral health are based on clinical standards and are limited because they do not consider psychosocial and functional aspects of oral health, showing a poor relationship with the individual perceptions on oral health-related quality of life (OHRQoL) (5). Many self-perception measurement instruments have been developed and include psychological and social aspects. However, most indicators of oral health have been developed for adults and generally consider a single disorder. Few studies have been conducted to verify the impact of different dental injuries on self-perception and quality of life in children and adolescents, considering their relationship with lifestyle and social environment. Some instruments previously used for this purpose are the Oral Health Impact Profile (OHIP) (6), Oral Impact on Daily Performance (OIDP) (7), Child Perceptions Questionnaire (CPQ 11-14) (8), Early Childhood Oral Health Impact Scale (ECOHIS) (9) and Child Oral Health Quality of Life (COHQoL) (10). The aim of this review was to describe the impact of oral health on children’s quality of life and the importance of these measurements for this specific age group.

## Impact of oral health on quality of life

Oral health problems have been increasingly recognized as important factors causing a negative impact on daily performance and quality of life because influence how people grow, enjoy life, speak, chew, taste food, and socialize (11). A report by the World Health Organization (WHO) acknowledged that oral diseases cause pain, suffering, psychological constraints, and social deprivation, leading to individual and society loss (12). For example, Feitosa et al. (13) found that dental caries, the major public health problem affecting children, causes impaired chewing, decreased appetite, weight loss, sleep problems, behavioral changes, and low school performance. Additionally, poor oral health of children may compromise the family welfare because the parents feel guilty for their children’s problems and have work absence and expenditures associated with dental treatment (14). In Brazil, Cortes et al. (15) showed that schoolchildren

with untreated fractured anterior teeth experienced a higher socio-dental impact on their daily living than children with no traumatic dental injury. Children with fractured teeth were more likely to report a negative impact for ‘eating and enjoying food’, ‘cleaning teeth’, ‘smiling, laughing and showing teeth without embarrassment’, ‘maintaining usual emotional state without being irritable’, and ‘enjoying contact with people’ compared to children without any traumatic injury. Soft tissue lesions, malocclusion, and dental fluorosis also are examples of common oral problems, but few studies focused on their functional, social, and emotional effects in children (15,16).

## Importance of quality of life measurement

Most studies that evaluate changes in the oral health status of individual subjects and populations have been based on clinical indicators of disease; there are relatively few evaluation studies on health and welfare from the subject’s perception (17). Over the last 30 years, the use of socio-dental indicators in oral epidemiology has been widely advocated (18-21), because single measures of clinical disease do not document the full impact of oral disorders (22). These indicators were constructed and tested in epidemiological studies on different populations to build a more concrete relationship between subjective and objective oral health measures, which would help to estimate the real population needs (23).

Several methods have been developed to minimize the complexity and social and cultural relative aspects of quality of life, as well as to provide indexes capable to capture data beyond the biological and pathological disease process. In general, health-related quality of life can be determined by two approaches: The first includes an interpretative and qualitative explanatory method, and the second, which is the most common approach, is usually based on questionnaires that emphasize the subject’s perception on physical and psychological health and functional capacity (24).

The results obtained by using these instruments are usually reported as a score system, which indicates the severity of the outcome measures or oral diseases (25). Information on quality of life allows the evaluation of feelings and perceptions in the individual level, increasing the possibility of effective communication between professionals and patients, better understanding of the impact of oral health on the lives of the subject and family, and measuring the clinical results of services provided (26).

In public health, quality of life measurement is a useful tool to plan welfare policies because it is possible to determine the population needs, priority of care, and evaluation of adopted treatment strategies, thus helping in the decision making process (3). Regarding research, these measurement tools help to assess the outcomes of treatments or actions and further develop guidelines for evidence-based clinical practice (24).

## Indicators of oral health-related quality of life (OHRQoL)

Ideal instruments should be able to encompass social and psychological aspects through self-perception of the impact of oral health on quality of life with consistent validation (27,28). Most methods to measure self-perceived oral health were developed in English-speaking countries, and the health outcome measures can be influenced by cultural and conceptual differences. Thus, the application of an instrument for measuring health in different social environments requires a preliminary process of cross-cultural validation (23,29).

Among the instruments used in Dentistry, the Oral Health Impact Profile (OHIP) is considered a consistent tool to identify the OHRQoL dimensions and is widely used in cross-sectional and longitudinal studies (30). The OHIP questionnaire consists of 49 items divided into seven dimensions: functional limitation, physical pain, psychological discomfort, physical disability, mental disability, social disability, and social disadvantage. As the questionnaire was developed for adult populations, Broder et al. (31) developed an adapted version of the OHIP for children (Child Oral Health Impact Profile) (COHIP). This questionnaire is intended for parents and children and has questions that evaluate both the positive and negative aspects of OHRQoL, being considered a breakthrough in assessing children's quality of life. The COHIP has already valid versions in Spanish and French languages with good performance and success (32).

Another popular questionnaire is the Oral Impact on Daily Performance (OIDP), which was developed in Thailand and includes physical, psychological, and social dimensions. This instrument consists of eight items to evaluate the impact of oral health on the subject's ability to perform daily activities. Guerunpong (33) adapted the OIDP for Thai children aged 11-12 years-old, developing the CHILD-OIDP, which was shown to be a valid and reliable instrument.

Other instruments cited in the literature include the Child Oral Health Quality of Life (COHQoL) and the Early

Childhood Oral Health Impact Scale (ECOHIS), which aim to assess the impact of oral conditions on children and adolescents daily lives. Both the COHQoL and the ECOHIS are based on the conceptual model proposed by Locker (34), in which sickness, disability, functional limitation, and social disadvantage are linearly connected but can be modified by heterogeneous psychological and social conditions. The COHQoL is a validated questionnaire for children aged between 6 and 14 years-old and aims to measure the children perception on their own oral health (Child Perception Questionnaire – CPQ) and the parental perception in relation to the impact caused by oral health disorders on the daily life of children and the family (PPQ). The Child Perceptions Questionnaire (CPQ 11-14) measures the extent of the oral health impact on quality of life reported by children. It is composed of 37 items distributed among 4 domains: oral symptoms, functional limitation, emotional well-being, and social well-being (8). However, to facilitate its use in population-based studies, some versions were developed with only 16 and 8 items (35). The ECOHIS includes items originally from the COHQoL that had been tested and found to be important in assessing the quality of life for children aged between 2 and 5 years-old. This instrument has a scale for children and another for the family and was designed to assess both the impact of oral health on children daily life and the impact on dental treatment that the children might have had.

The COHIP, CHILD-OIDP, COHQoL, CPQ11-14, and ECOHIS were developed specifically for children [Table 1 – modified from Tesch et al., 2007 (36)] because the perception of adults and children about the impact of oral health on quality of life is different. Children and adolescents have a peculiar view of themselves and the world due to their phase of physical and emotional development (37,38). However, when measuring the child OHRQoL, it may be necessary to obtain information from the parents. A child may be unable to fill the OHRQoL instrument and provide complete information, so the parents are included as respondents. Even when the child's answers are available, the mother has an important influence on her child health decisions.

**Table 1.** Characteristics of some instruments to assess the impact of oral health on children's quality of life – adapted from Tesch et al., 2007 (37).

Study	Country	Instrument	Age (years)	Instrument's composition	Outcomes
Broder et al., 2005 (32).	USA	COHIP	8-14	34 items	Oral symptoms, functional well-being, emotional, self-esteem, and expectations
Guerunpong et al., 2004 (34)	Thailand	Child-OIDP	11-12	8 items	Daily activities related to the psycho-physical-social performance
Jokovic et al., 2002 (10)	Canada	COHQoL	6-14	Family Impact Scale (14 items)	Family activities, finances, conflicts in the family, and emotions of parents
Foster Page et al., 2005 (8)	New Zealand	CPQ11-14	11-14	37 itens (version with 8 and 16)	Oral symptoms, functional limitations, emotional well-being, social well-being
Talekar et al., 2005 (9)	USA	ECOHIS	2-5	Parents (4 items)/ children (9 items)	Functional, psychological, and social conditions

Therefore, it is recommended that OHRQoL questionnaires include the mother-child pair (39). Depending on the type of information sought in the questionnaire, the reports of parents tend to be more or less accurate than the children reports. Parents seem to be able to better assess the areas related to function and physical symptoms than those related to emotional and social functions (40).

The selection of an instrument should take into account its validity and reliability (41) and the research specific aims. Another important aspect is the form of the instrument, interview, or questionnaire, because it can influence the psychometric properties of the indicators used to collect the OHRQoL outcomes. The use of questionnaires in surveys has some advantages such as low cost, less required time to collect data, ability to maintain the anonymity of the participants and reach a large audience. However, questionnaires may have a lower response rate than interviews, and bias may occur if patients with compromised language and visual communication skills are excluded (42).

## Qualitative methods

Several authors criticize quantitative measures to assess HRQoL because they reflect the values and concerns of physicians and social scientists rather than of patients (43,44). Leplege and Hunt (43) reported the risk of misunderstanding when questionnaires are answered by patients but do not address their concerns, which is not unusual. Another method is the use of qualitative interviews to probe patients' perceptions and opinions. According to Gill and Feinstein (45), the incorporation of patients' values and preferences makes quality of life different from all other measures of health.

Although qualitative studies can be a first step to know the subject's view of what is important, the single use of this method can be difficult especially when it is necessary to assess the impact of oral diseases on quality of life of major populations in epidemiological surveys. Moreover, qualitative interviews may also provide information which may or may not be important to a large number of people (46).

OHRQoL issues require interventions that not only reduces the impact of immediate illness but also improves overall life. Most indicators in the literature that document the functional

and psychosocial impact of oral health do not clearly establish its importance and significance. Consequently, the dental problems that affect quality of life were demonstrated by using qualitative studies and concurrent quantitative measures of OHRQoL (46). However, up to date no studies assessed the use of quantitative-qualitative methods to evaluate COHRQoL, especially in population-based studies, in which the use of qualitative measures could save time and high costs.

## Conclusions

Despite the progress in assessing the impact of oral health on children's quality of life, its measurement and evaluation remains a challenge for researchers and clinicians. Children have a unique vision of reality, and young children are often unable to complete a OHRQoL questionnaire by themselves. Therefore, it is important to obtain the reports from their parents or guardians (39). Several instruments have been proposed to measure children's quality of life and should be selected depending on the desired outcome and characteristics of the target population. These instruments should be easy to understand, have questions that are short, clear, simple, relevant to the objectives of the study, and previously validated (41).

It is suggested that qualitative research can be preliminary used before quantitative research to validate the latter and offer a different perspective on the same phenomena (47). One negative aspect of qualitative research refers to the in-depth probing of a small group, which may be expensive and time-consuming; this limits the application of the method for large samples and the generalizations or inferences (48). It should be noted that quality of life is a construct and cannot be directly measured (41).

Contemporary concepts suggest that the evaluation of health needs should focus on clinical standards and socio-dental indicators that measure the impact of health/disease on the individual quality of life. Thus, the use COHRQoL indicators is fundamental and should be expanded. The use of instruments based on self-perception of OHRQoL for planning and providing dental services may provide basis for changes from emphasis on purely biological aspects to integration with psychological and social issues (49).

## References

1. World Health Organization (WHO). Official records of the World Health Organization. Geneva, Interim Commission; 1948. p.100.
2. Minayo MC, Hartz ZM, Buss PM. Qualidade de vida e saúde: um debate necessário. *Cienc Saúde Colet* 2000;5:7-18.
3. Seidl EM, Zannon CM. Qualidade de vida e saúde: aspectos conceituais e metodológicos. *Cad Saúde Pública* 2004;20: 580-8.
4. Petersen PE. The world oral health report 2003: continuous improvement of oral health in the 21 century – the approach of the WHO Global Oral Health Programme. *Community Dent Oral Epidemiol* 2003;31:3-24
5. Slade GD, Strauss RP, Atchison KA, Kressin NR, Locker D, Reisine ST. Conference summary: assessing oral health outcomes – measuring health status and quality of life. *Community Dent Health* 1998;15:3-7.
6. Slade GD, Spencer AJ. Development and evolution of the Oral Health Impact Profile. *Community Dent Health* 1994;11:3-11.
7. Adulyanon S, Sheiham A. Oral Impacts on Daily Performances. In: *Measuring oral health and quality of life*. Chapel Hill: University of North Carolina Ed. Slade GD; 1997. p. 151-60.
8. Foster Page LA, Thomson WM, Jokovic A, Locker D. Validation of the Child Perceptions Questionnaire (CPQ 11-14). *J Dent Res* 2005;84:649-52.

9. Talekar BS, Rozier RG, Slade GD. Development of an OHRQoL instrument for preschool children. *J Dent Res* 2004;83(Special Issue A):686.
10. Jokovic A, Locker D, Stephens M, Kenny D, Tompson B, Guyatt G. Validity and reliability of a questionnaire for measuring child oral-health-related quality of life. *J Dent Res* 2002;81:459-63.
11. Locker D. Concepts of oral health, disease and the quality of life. In: Slade GD, editor. *Measuring oral health and quality of life*. Chapel Hill: University of North Carolina; 1997. p.11-23.
12. Gomes AS, Abegg C. The impact of oral health on daily performance of municipal waste disposal workers in Porto Alegre, Rio Grande do Sul State, Brazil. *Cad Saúde Pública* 2007;23:1707-14.
13. Feitosa S, Colares V, Pinkham J. The psychosocial effects of severe caries in 4-year-old children in Recife, Pernambuco, Brazil. *Cad Saúde Pública* 2005; 21:1550-6.
14. Anderson HK, Drummond BK, Thomson WM. Changes in aspects of children's oral-health-related quality of life following dental treatment under general anaesthesia. *Int J Paediatr Dent* 2004;14: 317-25.
15. Cortes MI, Marcenes W, Sheiham A. Impacto of traumatic injuries to the permanent teeth on the oral health-related quality of life in 12-14-year-old children. *Community Dent Oral Epidemiol* 2002;30:193-8.
16. Peres KG, Latorre MR, Peres MA, Traebert J, Panizzi M. Impacto da cárie e da fluorese dentária na satisfação com a aparência e com a mastigação de crianças de 12 anos de idade. *Cad Saúde Pública* 2003;19:323-30.
17. Locker D, Jokovic A. Three-year changes in selfperceived oral health status in an older Canadian population. *J Dent Res* 1997;76:1292-7.
18. Cohen I, Jago J. Toward the formulation of socio-dental indicators. *Int J Health Serv* 1976;6:681-7.
19. Smith JM, Sheiham A. How dental conditions handicap the edery. *Community Dent Oral Epidemiol* 1979;7:305-310.
20. Locker D. *An introduction to behavioural science e dentidtry*. London: Tavistock; 1989.
21. Slade G. *Measuring oral health and quality of life*. Chapel Hill: University of North Carolina, Dental Ecology; 1997.
22. Antunes JL, Peres MA. *Epidemiologia da Saúde Bucal*. Rio de Janeiro: Guanabara Koogan; 2006. p. 260-8.
23. Leão AT, Locker D. Impacto das condições de saúde bucal na qualidade de vida. In: Antunes JL, Peres MA. *Epidemiologia da saúde bucal*. Rio de Janeiro: Guanabara Koogan; 2006. p.260-8.
24. McGrath C, Broder H, Wilson-Genderson M. Assessing the impact of oral health on the quality of life children: implications for research and practice. *Community Dent Oral Epidemiol* 2004;32:81-5.
25. Slade GD, Spencer AJ. Development and evaluation of the Oral Health Impact Profile. *Community Dent Health* 1994;11:3-11.
26. Minayo MC, Hartz ZM, Buss PM. Qualidade de vida e saúde: um debate necessário. *Cienc Saúde Colet* 2000;5:7-18.
27. Cushing AM, Sheiham A, Maizels J. Developing socio-dental indicators-the social impact of dental disease. *Community Dent Health* 1986;3:3-17.
28. Srisilapanan P, Sheiham A. Assessing the difference between sociodental and normative approaches to assessing prosthetic dental treatment needs in dentate older people. *Gerodontology* 2001;18:25-34.
29. Herdman M, Fox-Rushby J, Badia X. A model of equivalence in the cultural adaptation of HRQoL instruments: the universalist approach. *Qual Life Res* 1998;7:323-35.
30. John MT, Hujoel P, Miglioretti DL, LeResche L, Koepsell TD, Micheelis W. Dimensions of oral health-related quality of life. *J Dent Res* 2004;83:956-60.
31. Broder HL, Janal M, Wilson-Genderson M, Reisine ST, Phillips C. Reliability and validity of the Child Oral Health Impact Profile. *J Dent Res* 2005;83(Special Issue A):2652.
32. Slade GD, Reisine ST. The child oral health impact profile: current status and future directions. *Community Dent Oral Epidemiol* 2007;35(Suppl 1):50-3.
33. Guerunpong S, Tsakos G, Sheiham A. Developing and evaluating na oral health-related quality of life index for children; the CHILD ODP. *Community Dent Health* 2004;21:161-9.
34. Locker D. *Measuring oral health: socio-dental indicators*. In: Locker D, editor. *An introduction to behavioral science & dentistry*. New York/London: Routledge; 1989. p.73-101.
35. Jokovic A, Locker D, Guyatt G. Short forms of the Child Perceptions Questionnaire for 11-14-year-old children (CPQ11-14): development and initial evaluation. *Health Qual Life Outcomes* 2006;4:4.
36. Tesch FC, Oliveira BH, Leão A. Measuring the impact of oral heath problems on children's quality of life: conceptual and methodological issues. *Cad Saúde Pública* 2007;23:2555-64.
37. Pal DK. Quality of life assessment in children: a review of conceptual and methodological issues in multidimensional health status measures. *J Epidemiol Community Health* 1996;50: 391-6.
38. Kuczynski E, Assumpção JR. Definições atuais sobre o conceito de qualidade de vida na infância e adolescência. *Pediatr Mod* 1999;35:73-8.
39. Jokovic A, Locker D, Guyatt G. How well do parents know their children? Implications for proxy reporting of child health-related quality of life. *Qual Life Res* 2004;13:1297-307.
40. Wallander JL, Schmitt M, Koot HM. Quality of life measurement in children and adolescents: issues, instruments, and applications. *J Clin Psychol* 2001;57:571-85.
41. Freire MC, Silva AS. Impacto das condições de saúde bucal na qualidade de vida. In: Antunes JL, Peres MA. *Epidemiologia da saúde bucal*. Rio de Janeiro: Guanabara Koogan; 2006. p.375-83.
42. Robinson PG, Gibson B, Khan FA, Birnbaum W. Vality of two oral health related quality of life measures. *Community Dent Oral Epidemiol* 2003;31:90-9.
43. Lepelge A, Hunt S. The problem of quality of life in medicine. *JAMA* 1997;278:47-50.
44. Bowling A. What things are important in people's live? A survey of the public's judgements to inform scales of health-related quality of life. *Soc Sci Med* 1995;41:1447-62.
45. Gill TM, Feinstein AR. A critical appraisal of the quality of quality-of-life measurements. *JAMA* 1994;272:619-26.
46. Locker D, Allen F. What do measures of 'oral health-related quality of life' measure? *Community Dent Oral Epidemiol* 2007;35: 401-11.
47. Pope C, Mays N. *Pesquisa qualitativa na atenção à saúde*. 2.ed. Porto Alegre: Artmed; 2005. p.11-9.
48. Victora CG, Knauth DR, Hassen MN. *Pesquisa qualitativa em saúde*. Porto Alegre: Tomo Editorial; 2000. p.31-44.
49. Sheiham A, Watt RG. The common risk factor approach: a rational basis for promoting oral health. *Community Dent Oral Epidemiol* 2000;28:399-406.