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Systematic Literature Review

Pediatric Quality of Life Instruments in Oral Health Research: A Systematic Review

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ABSTRACT

Objective: To identify the generic or disease-specific pediatric quality of life (QoL) instruments used in oral health research among children and adolescents and to provide an overview of these QoL instruments. **Methods:** A systematic literature search was performed with multiple databases to identify the pediatric QoL instruments used in oral health research. **Results:** The literature search yielded 872 records; from these, 16 pediatric QoL instruments were identified that had been used among children and adolescents in oral health research. Of these, 11 were oral health–specific QoL instruments and five were generic instruments. Of the 11 oral health–specific QoL instruments, none were multiattribute utility instruments (MAUI), whereas of the five generic instruments, two (Child Health Utility 9D index and EuroQoL-5D youth) were classified as an MAUI. Except for one, all pediatric QoL instruments were published after the year 2000 and the majority originated from the USA ($n = 8$). Of the 11 oral health–specific QoL instruments, five instruments are designed for the respondent to be a child (i.e., self-report), one uses proxy responses from a parent or guardian, and five instruments have both self and proxy versions. Of the five generic QoL instruments, one uses proxy responses and the other four instruments have both self and proxy versions. **Conclusions:** This review identified a wide variety of pediatric oral health–specific and generic QoL instruments used in oral health research among children and adolescents. The availability of these QoL instruments provides researchers with the opportunity to select the instrument most suited to address their research question.

Introduction

Oral health–related quality of life (OHRQoL) among children and adolescents is an important area of research with growing attention within both research and clinical practice [1]. Sischo and Broder reported a marked increase in OHRQoL research in pediatric and orthodontics from 2006 to 2010 compared to other disease areas, such as geriatrics and oral medicine and surgery [1]. Oral health problems have considerable impact on quality of life (QoL) of the children [2,3] and adolescents [4]. Dental caries is the most common chronic childhood disease and has negative impacts on eating, sleep, school performance, smiling patterns, and social interactions [2]. Children with traumatic injuries to teeth [4], malocclusion (i.e., imperfect positioning of the teeth when the jaws are closed [5]), and dental fluorosis (i.e., developmental defect of tooth enamel [6] caused by excessive intake of fluorides, characterized by discoloration and pitting of teeth) also have negative impacts on children's QoL and their day-to-day living. As oral disorders cause significant impact on an individual's physical, social, and emotional well-being, the psychological impact of oral diseases can disrupt the QoL [7], self-esteem [7], and positive social interactions [8].

Children and adolescents have a different perception about QoL issues compared with adults. Young children are the prime target group of oral health care services in many countries [9], and assessment of QoL of children and adolescents provides useful information on the impact of oral health [10]. In clinical settings, measuring QoL will facilitate prioritizing health problems for individual patients and monitoring responses to treatment [11]. These will also guide policymakers, researchers, program evaluators, and clinicians to assess health care interventions and the prioritization of health care resource allocation [11]. As a result of the growing research interest in QoL among children and adolescents, a considerable number of pediatric QoL instruments

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have now been developed [12] despite the great difficulties associated with development and validation of pediatric QoL instruments.

There are different types of QoL instruments. Generic QoL instruments are designed for different types of disease and different patient populations [13]. These are comprehensive measures of QoL that are widely used and have established validity and reliability across different disease conditions and patient populations. Disease-specific QoL instruments are designed to assess the QoL concerning specific diseases, medical conditions, or patient populations [13,14]. The generic and disease-specific QoL instruments that are developed based on classification system and preferences weights are known as preference-based or multiattribute utility instruments (MAUI) [13]. These preference-based instruments are extensively used in cost-utility analysis [13].

In many areas of health, QoL instruments specifically developed for children and adolescents have been comprehensively reviewed [15–17]. Nevertheless, in oral health there is a great paucity of research. The assessment of the methodological quality of child oral health-related QoL measures reported by Gilchrist et al. [12] was confined to the most frequently used three child oral health-related QoL measures: Child Perceptions Questionnaire (CPQ), the Child Oral Impacts on Daily Performances (C-OIDP), and the Child Oral Health Impact Profile (COHIP). Hence, a comprehensive review of the QoL instruments used among children and adolescents in oral health is warranted and will facilitate researchers to use instruments that are more appropriate in oral health research. Therefore, the present review was conducted to identify generic or disease-specific and preference-based or non–preference-based pediatric QoL instruments used in oral health research among children and adolescents and to provide an overview of these QoL instruments.

Methods

The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analysis strategy (see Appendix Fig. 1 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2018.06.019), which allows systematic selection of articles [18]. The Population, Intervention, Comparator and Outcome (PICO) for this review was as follows: Population: children and adolescents with oral health issues; Intervention/comparator: any oral health condition; and Outcome: QoL assessed using any pediatrics QoL instrument. To identify the QoL instruments used in oral health studies among children and adolescents, a systematic literature search was performed with multiple databases, including MEDLINE, Dentistry & Oral Sciences Source, Cumulative Index to Nursing and Allied Health Literature (CINAHL Plus), Econlit through EBSCohost, Cochrane Database of Systematic Reviews, and PubMed. Literature was searched up to February 2017 with search terms built around "oral health" AND "Children or adolescents" AND "quality of life" with appropriate truncation and adjacency settings. Full search terms are available in Appendix Text Box 1 (see Appendix Text Box 1 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2018.06.019).

Any study or systematic review that included a pediatric QoL instrument or questionnaire to measure QoL related to any oral health condition in children or adolescents was included in the review. Inclusion was restricted to the studies published in English language and human studies. Letters, commentaries, editorials, conference abstracts and proceedings, guidelines, surveys, and case reports were excluded from the review. Studies that used instruments that indirectly measured QoL (e.g., shame and stigma scale, pain scales, disease symptom inventories, jaw function limitation scale), did not use separate QoL instruments but instead incorporated a few QoL-based questions into knowledge and practices questionnaires, used QoL instruments in languages other than English where an English version was not available, used QoL instruments specifically designed for a defined geographical region or specific ethnic group (e.g., COHRQoL-25 for Indonesia and OH-ECQoL for North Indian population), and used QoL instruments developed for adults to assess OHRQoL among children and adolescents were also excluded from the review.

A list of QoL instruments used in oral health studies among children and adolescents was prepared from the information on the included studies and systematic reviews. After this, a specific search was done to obtain the information regarding each instrument in the list by searching the specific Web page for the instrument or identifying the original development and validation study of the instrument. Characteristics of each instrument were then extracted into an Excel table, including generic or disease-specific instrument, country of origin, specified age group, number of items and domains, proxy or self-reported, time to complete the instrument, and whether validity and reliability were established or not.

Results

The literature search yielded 872 records, and after removing duplicates 574 records were selected for the title and abstract review. In the next step, 267 studies were excluded based on the exclusion criteria, and 307 were eligible for the full text reading. This resulted in a total of 228 articles included in the review (27 development or validation of QoL instruments, 188 studies that used QoL instruments to assess OHRQoL among children and adolescents, and 12 systematic reviews) with 16 pediatric QoL instruments used in oral health research. Of these 16 instruments, 11 were oral health–specific QoL instruments and five were generic instruments. Of the 11 oral health–specific QoL instruments, none were MAUI, whereas out of five generic instruments, two (Child Health Utility 9D index [CHU9D], and EuroQoL-5D youth [EQ-5D–Y]) were classified as MAUI.

Oral Health-Specific QoL Instruments for Children and Adolescents

All oral health–specific QoL instruments were published after the year 2000. Child Oral Health Impact Profile (COHIP) [19], Child Oral Health Quality of Life Questionnaire (COHQoL), (C-OIDP) [9], and Early Childhood Oral Health Impact Scale [20] were the most common instruments used among the assessment of OHRQoL among children and adolescents. Of these 11 oral health–specific QoL instruments, the majority originated from the USA ($n = 6$), followed by the UK ($n = 3$), Canada ($n = 1$), and Thailand ($n = 1$). Among these instruments, the COHIP and the C-OIDP have corresponding adult measures. Development of the C-OIDP [9] was based on the original adult OIDP index, whereas others were developed based on the items derived from the literature review and focus group discussions with experts, parents, children, and adolescents. The applicable age groups for these instruments ranged from 3 to 18 years.

COHIP, COHQoL, C-OIDP, Paediatric Oral Health-related Quality of life Questionnaire [21], and Teen Oral Health-Related Quality of Life instrument [22] were developed to assess OHRQoL across various oral health problems. COHIP [19,23], COHQoL [24–26], and Paediatric Oral Health-related Quality of life Questionnaire [21] are available in different formats, such as long and short versions and self-reported and proxy versions. Moreover, COHQoL consists of different measures, namely, Child Perceptions Questionnaire for children aged 11 to 14 years (CPQ 11–14), Child Perceptions Questionnaire for children aged 8 to 10 years (CPQ 8–10), Parental perceptions questionnaire (PPQ), and family impact scale.

Paediatric Quality of Life Inventory (PedsQL) Oral Health Scale was designed to be used in combination with the PedsQL 4.0 Generic Core Scales or disease-specific modules, to measure child's general oral health status in patients with acute and chronic health conditions and healthy children, which can then be related to QoL assessed by Generic Core Scale or disease-specific modules of PedsQL [27,28]. The Scale of Oral Health Outcomes for 5-year-old children [29], Early Childhood Oral Health Impact Scale [20], and Michigan Oral Health-Related QoL Scale [30] were designed for the assessment of OHRQoL mainly in early childhood dental caries. Malocclusion Impact Questionnaire [31,32] and OHRQoL Hypodontia [33] are the other condition-specific OHRQoL instruments developed for children and adolescents.

Of the 11 oral health–specific QoL instruments, five instruments were self-report, one used proxy responses, and five instruments had both self and proxy versions. The number of domains included in the instrument ranged from one to five and the number of items included in the instruments ranged from 7 to 37. Except for PedsQL Oral Health Scale, all oral health–specific QoL instruments included non–oral health domains or items such as functional, social, and emotional well-being. These non–oral health domains and items are meant to capture the impact of conditions of teeth, jaws, and face on the child's overall health and emotional and psychosocial consequences of the oral diseases. The recall period for the instruments ranged from "at the moment" to the "entire life span." Table 1 provides a detailed description of the oral health–specific QoL instruments identified.

Except for the Michigan Oral Health-Related QoL scale [30], all oral health QoL instruments reported the assessment of psychometric properties at the initial development and evaluation process. The authors reported face validity and reliability only for the original child version of the Michigan Oral Health-Related QoL scale [30]. Among the instruments that reported psychometric properties, the C-OIDP showed evidence for the concurrent validity and reliability, whereas the other instruments mainly reported evidence for the construct validity and reliability. Nevertheless, authors of the CPQ 8–10 [25] and the Family impact scale [34] of the COHQoL suggested that the discriminative validity of these scales needed to be further evaluated. A detailed description of validity and reliability of the oral health–specific QoL instruments at the initial development and evaluation process is provided in Appendix Table 1 (see Appendix Table 1 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2018.06.019).

Generic QoL Instruments Used Among Children and Adolescents in Oral Health Research

Five generic QoL instruments used among children and adolescents in oral health research were identified from this review: Child Health Questionnaire, Infant and Toddler Child Quality of Life Questionnaire, PedsQL Generic core scale, CHU9D and EQ-5D–Y. Except for PedsQL Generic core scale, all included generic QoL instruments were published after the year 2000. Of the five generic QoL instruments, one uses proxy responses [35] and the other four instruments have both self and proxy versions. The number of domains included in the instrument ranged from 4 to 14 and the number of items included in the instruments ranged from 5 to 97. The characteristics of the generic QoL instruments used among children and adolescents in oral health research are provided in Table 2.

The use of generic QoL instruments in oral health research was mainly for the purpose to use as a tool to evaluate the construct validity of the oral health–specific QoL instruments [22,36,37] and to evaluate the impact of childhood conditions, including dental diseases on the QoL of the children [38]. Nevertheless, except for the CHQ and the EQ-5D-Y, psychometric properties of the other three generic instruments have been evaluated among pediatric population in oral health research and details of these psychometric evaluations are provided in Appendix Table 2 (see Appendix Table 2 in Supplemental Materials found at https://doi.org/10.1016/j.jval.2018.06.019).

Discussion

Our systematic review identified 11 pediatric oral health–specific QoL instruments and five pediatric generic QoL instruments used in oral health research among children and adolescents. Solans et al. [16] reported a marked increase in QoL instruments, especially the disease-specific QoL instruments for children and adolescents over the recent past in all areas of health. They identified 94 QoL instruments in all areas of health (30 generic and 64 disease-specific instruments) published between 1980 and 2006. Of these 94 instruments, 51 were published between 2001 and 2006. Except for one, all pediatric QoL instruments identified from our review also were published after the year 2000. The use of QoL instruments to assess the QoL in children and adolescents has received growing attention within both research and clinical practice over the last decade [16]. "Oral Health in America: A Report of the Surgeon General" and "Face of the Child" meeting held in June 2000 highlighted the importance of research to improve QoL of children and families with oral and craniofacial conditions [39–41]. Further evidence has shown that there was a marked increase in OHRQoL research in pediatric and orthodontics during the recent past compared to other areas of oral health such as geriatrics and oral medicine or surgery [1]. These have facilitated the development and validation of a considerable number of pediatric QoL instruments for children and adolescents in oral health over the recent past as evident in our review.

Many researchers have agreed that the development of child-specific QoL instruments is more complex than the development of adult instrument because of the inherited problems associated with the process, including lack of concept of QoL in children, problems attributable to rapid developmental changes among children, and the appropriateness of using a proxy [10]. Children and adolescents have different perceptions of QoL issues compared to adults, and these perceptions rapidly change with the physical and psychosocial development of a child [10]. Therefore, the instruments specifically developed for them may be more sensitive in capturing the impact of oral disease on their QoL and effectiveness of an oral health intervention than the information obtained using an adult QoL instrument among children and adolescents.

When deciding on the most appropriate measure of oral health–related QoL in children to use for a study, the choice will be dependent on the purpose of the study [10] as well as the nature of the study population such as age range. The present review identified a wide variety of pediatric QoL instruments used in oral health research, including generic and disease-specific QoL instruments. These instruments cover different age groups, such as preschool and school ages, and instruments are available for self-completion by the child or parent proxies. The availability of a wide variety of QoL instruments for children and adolescents will facilitate researchers to choose better instruments for their research. Therefore, reviews of this type are important to assist researchers and program evaluators in being aware of the range of instruments available and understanding the differences between them to help them make the most appropriate choice.

Psychometric properties of an instrument is an important factor to consider during the selection of the best tool to use in both research and clinical practice [42]. A QoL instrument with

Table 1 – Characteristics of the oral health–specific QoL instruments among children and adolescents

Instrument	Country of origin	Available formats	Year*	Age group (Years)	No. of domains	Domains	No. of items	Range of scores	Scoring method	Respondent	Average time to complete	Recall period
1. COHIP	USA	COHIP [19,48]	2007	8–15	5	1. Oral health 2. Functional well-being 3. Social-emotional well-being 4. School environment 5. Self-image	34	0–136	5-point scale (0–4)	Self/ proxy	NM	3 months
		COHIP-SF19 [23]	2011	7–17	3	1. Oral Health 2. Functional well-being 3. Socioemotional well-being	19	0–76	5-point scale (0–4)	Self/ proxy	Less than 10 minutes	3 months
2. COHQoL	Canada	CPQ 8–10 [25]	2004	8–10	4	1. Oral symptoms 2. Functional limitations 3. Emotional well-being 4. Social well-being	25	0–100	5-point scale (0–4)	Self	NM	4 weeks
		CPQ 11–14 [24]	2002	11–14	4	1. Oral symptoms 2. Functional limitations 3. Emotional well-being 4. Social well-being	37	0–148	5-point scale (0–4)	Self	NM	3 months
		CPQ11–14 short (16 items) [26]	2004	11–14	4	1. Oral symptoms 2. Functional limitations 3. Emotional well-being 4. Social well-being	16	0–64	5-point scale (0–4)	Self	NM	3 months
		CPQ11–14 short (8 items) [26]	2004	11–14	4	1. Oral symptoms 2. Functional limitations 3. Emotional well-being 4. Social well-being	8	0–32	5-point scale (0–4)	Self	NM	3 months
		P-CPQ [49]	2003	Parents/ caregiver of 6–14	4	1. Oral symptoms 2. Functional limitations 3. Emotional well-being 4. Social well-being	31	NS	5-point scale (0–4)	Proxy	NM	3 months
		FIS [34]	2001	Parents/ caregiver of 6–14		1. Oral symptoms 2. Functional limitations 3. Emotional well-being 4. Social well-being	14	0–33	5-point scale (0–4)	Proxy	NM	3 months
3. C-OIDP [9]	Thailand		2003	11–12	1	1. Oral impacts on daily activities	8	0–72	4 point scale (0–3)	Self Interview with pictures	10 minutes	3 months
4. ECOHIS [20]	USA		2006	3–5	6	1. Symptoms 2. Function 3. Psychological 4. Self-image/social interaction 5. Parent distress 6. Family function	13	Child section 0–36 family section 0–16	6 point scale	Proxy	NM	Entire life span
5. Michigan OHRQoL scale [30]	USA	Original child version	2002	≥4	3	1. Pain/discomfort 2. Functional 3. Psychological	7	Categorical	Yes/no	Self	NM	At the moment
		Modified child version		≥3	4	1. Pain/discomfort 2. Functional 3. Psychological 4. Social	9	Categorical	Yes/no	Self	NM	At the moment
		Parent version			4	1. Pain/discomfort 2. Functional 3. Psychological 4. Social	10	1–5	5 point scale	Proxy	NM	At the moment
6. MIQ [31,32]	UK		2016	10–16	3 themes	1. Appearance of teeth 2. Effect on social interactions 3. Oral health and function	17	0–34	3 point scale	Self	NM	NM
7. OHRQoL Hypodontia [33,50]	UK		2011	11–18	4 themes	1. Treatment 2. Effect on daily activities 3. Appearance 4. Other peoples' reactions	7		5 point scale	Self	7 min	At the moment
8. PedsQL Oral Health Scale [27]	USA	Toddlers, young child, child, and adolescent versions	2009	2–4, 5–7, 8–12 and 13–18	1	1. Oral Health	5	0–100	5-point scale (0- 4) and 3-point scale (0- 2) for young Child self-report	Self/Proxy	NM	Past one month
9. POQL [21]	USA	Preschool version, school-age and preteen version	2011	Preschool and school-age	4	1. Emotional 2. Physical 3. Role 4. Social	10	0 -100	Likert-scale	Self/proxy	NM	Past 3 months
10. SOHO-5 [29]	UK		2012	5	1	1. Oral impacts on daily activities	7	0–14	3-point scale	Self	5–6 minutes	Life time (ever)
11. TOQOL [22]	USA		2015	13–18	5	1. Physical functioning 2. Role functioning 3. Social functioning 4. Oral problems 5. Emotional functioning	16	1–100	Event (Likert scale 1–4), how bothered (1–5)	Self	NM	Past 3 months

COHIP, Child Oral Health Impact Profile; COHIP-SF 19, Child Oral Health Impact Profile-Reduced; COHQoL, Child Oral Health Quality of Life Questionnaire; CPQ 11–14, Child Perceptions Questionnaire for 11 to 14 years; CPQ 8–10, Child Perceptions Questionnaire for 8 to 10 years; CPQ11–14 short, short forms of CPQ11–14 (16 and 8 items); FIS, Family Impact Scale; P-CPQ, Parental-Caregiver Perceptions Questionnaire; C-OIDP, Child Oral Impacts on Daily Performances; ECOHIS, Early Childhood Oral Health Impact Scale; Michigan OHRQoL scale, Michigan Oral Health-Related QoL scale; MIQ, Malocclusion Impact Questionnaire; NM, not mentioned; OHRQoL hypodontia, oral health-related QoL questionnaire for hypodontia; PedsQL Oral Health Scale, Paediatric Quality of Life Inventory Oral Health Scale; POQL, Paediatric Oral Health-related Quality of life Questionnaire; SOHO-5, Scale of Oral Health Outcomes for 5-year-old children; TOQOL, Teen Oral Health-Related Quality of Life instrument; UK, United Kingdom; US, United States.

* Article received year or year of publication of the development study was considered as the year of development of the instrument.

Table 2 – Characteristics of the generic QoL instruments used among children and adolescents in oral health research

Instrument	Country of origin	Available formats	Year*	Age group (Years)	No. of domains	Domains	No. of items	Range of score	Scoring method	Respondent	Average time to complete	Recall period
1. CHQ	USA	Parent form in 2 lengths CHQ-PF28		5–18		14 physical and psychosocial concepts	28 questions	0–100 Population norms available	Likert scale	Proxy	5–10 min	Vary depending on the subscale (ex. past 4 weeks/ in general)
		CHQ-PF50		5–18		14 physical and psychosocial concepts	50 questions	0–100 Population norms available	Likert scale	Proxy	10–15 min	
		Child (CHQ-CF87)		10–18		14 physical and psychosocial concepts	87 questions	0–100 Population norms available	Likert scale	Self	14 min	
2. CHU9D	UK		2009	7–17	9	1. Worried 2. Sad 3. Pain 4. Tired 5. Annoyed 6. School work/ home work 7. Sleep 8. Daily routine 9. Able to join in activities	9	Health state utility	5 levels	Self/proxy	NM	Today/ last night
3. EQ-5D-Y [47]	UK			4–15	5	1. Mobility 2. Self-care 3. Usual activities 4. Pain or discomfort 5. Anxiety/ depression	5	Health state utility	3 levels	Self/proxy	NM	At the moment
4. ITQOL	Canada	ITQOL full version	2003	2 mon–5 y		10 multi-item scale (7 infant scales and 3 parent scales)	97	0–100 Population norms are available	Usually 5 levels	Proxy	Vary depending on issues such as the setting, context, age, cognitive functioning, language, layout, etc.	Vary depending on the subscale (ex. past 4 weeks/ in general)
		ITQOL-SF47					47					
5.PedsQL 4.0 Generic Core Scales	USA	Toddlers version	1999	2–4	4	1. Physical functioning 2. Emotional functioning 3. Social functioning 4. School functioning	23	0–100	5-point Likert scale (0 to 4)	Proxy	Less than 4 minutes	Past 1 month
		Young child, child, and adolescent versions		5–7, 8–12 and 13–18		1. Physical functioning 2. Emotional functioning 3. Social functioning 4. School functioning	23	0–100	5-point Likert scale (0–4) and 3-point scale (0–2) for young child self-report	Self/ proxy	Less than 4 minutes	Past 1 month

CHQ, Child Health Questionnaire; CHU 9D, Child Health Utility 9D index; EQ -5D -Y, EQ 5D youth version; ITQOL, Infant and Toddler Child Quality of Life Questionnaire; NM, not mentioned; PedsQL, Paediatric Quality of Life Inventory; UK, United Kingdom; US, United States.
* Article received year or year of publication of the development study was considered as the year of development of the instrument.

good psychometric properties will measure what it is really meant to measure (i.e., valid) and be able to reproduce a result consistently (reliable) [42]. Except for the Michigan Oral Health-Related QoL scale, all oral health–specific QoL instruments identified in the present review reported the evaluation of validity and reliability during the initial development and validation process. Nevertheless, the methods and the type of validity established ranged widely, and thus the direct comparison of the psychometric properties of all identified instrument is not possible [12]. Further psychometric properties of the most commonly used oral health–specific QoL instruments such as the COHQoL, C-OIDP, and COHIP are established in different population groups and different cultural settings [12]. Therefore, researchers are encouraged to consider the establishment of psychometric properties in the interested target population when choosing the best suited option for their research.

Economic evaluations have become a vital part of decision making in health care, and cost-utility analysis is the recommended method for many health technology assessment agencies across the world [43,44]. MAUIs are increasingly being used to calculate quality-adjusted life-years in the cost-utility analysis framework [45]. Out of 11 oral health–specific QoL instruments identified in this review, none was MAUIs. Therefore, researchers have to depend on direct methods or other generic MAUIs for the estimation of health-related QoL utility estimates in oral health interventions for use in cost-utility analyses. Chen et al. [45] identified nine generic MAUIs developed for pediatric populations and, as evident in this review, CHU9D and EQ-5D-Y have been used for oral health research among children and adolescents. The assessment of psychometric properties of the CHU9D for oral health research among a pediatric population showed adequate construct and concurrent validity [44] and the researchers concluded that the potential of using CHU9D in oral health research is needed to be further explored [44,46]. The EQ-5D-Y is available in different languages and different modes of administration [47]; however, the use of the EQ-5D-Y in oral health research was confined to using it as a tool to evaluate the convergent validity of the COHIP-SF19 German version [37]. Therefore, whether the CHU9D or the EQ-5D-Y performs best in economic evaluations in pediatric oral health research remains unclear.

The present review did not include pediatric QoL instruments and articles published in languages other than English. This may affect the identification of QoL instruments used in non–English-speaking countries to assess the QoL among children and adolescents in oral health. Therefore, we could not provide an overview of the QoL instruments, which can be used in these different socio-cultural settings. In addition, we excluded the studies that used QoL instruments developed for adults to assess QoL among children and adolescents. Thus, it was not possible to provide an insight into how

common the use of adult measures to assess the QoL among children and adolescents in oral health research.

In conclusion, the present review identified a wide range of pediatric oral health–specific and generic QoL instruments used in oral health research among children and adolescents. The availability of a wide variety of QoL instruments for children and adolescents will facilitate researchers to choose the best-suited QoL instrument for their research.

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Supplementary Materials

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