

The Impact of Oral Health Conditions on Quality of Life among 13-14 Year Old Children in Bangalore City, India

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ABSTRACT

Background: Oral diseases have a significant impact on physical, social, and psychological well-being of children. The aim of this study was to assess the impact of oral health conditions on quality of life among children in Bangalore city.

Material and methods: A cross-sectional study was conducted among 800 children aged 13-14 years from government and private schools in Bangalore. The children were clinically examined using modified WHO Oral Health Assessment Form (1997). Oral health related quality of life (OHRQoL) was assessed using shorter version of Child Perceptions Questionnaire (CPQ₁₁₋₁₄). Children were asked about information on self-perception of oral health. Chi-square, Mann-Whitney U and Kruskal-Wallis tests were used to analyze data.

Results: Dental caries experience was significantly more in government schools (50.3%) as compared to private schools (38%). Only few children reported dental trauma in government (10.3%) and private (7%) schools. Calculus was reported more in government school children (58.3%) as compared to private school children (44.5%). Malocclusion was found more in private schools (23.1%) as compared to government schools (20.2%). Majority of children did not report enamel defects and dental fluorosis. In government schools, children who experienced dental caries, dental trauma and periodontal disease reported negative impact on quality of life. Dental trauma, enamel defects and malocclusion affected OHRQoL in private school children.

Conclusion: It is important to reconsider the current biomedical and restricted paradigm on oral diseases and emphasize greater clinical focus on improving quality of life as a major objective of dental care in children.

Key words: children, impact, oral health, quality of life.

INTRODUCTION

School age is an influential stage in people's lives, a time when lifelong sustainable oral health related behaviours as well as beliefs and attitudes are being developed. [1-3] According to child developmental psychology, by the age of 11 or 12, children view health as a multidimensional concept organized around

the following constructs: being functional, adhering to good lifestyle behaviours, a general sense of well-being and relationships with others. [4-6]

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. [7,8] For example, dental caries, the major public health problem affecting children, causes impaired chewing, decreased appetite, weight loss, sleep problems, behavioural changes, and low school performance. [9-12] 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. [13-15] In addition, numerous epidemiological studies have reported that many children experience some form of periodontal disease, malocclusion, dental trauma, dental fluorosis and defects of enamel which leads to negative dental appearance in childhood and may be an object of teasing by other children. [11,15-16]

In recent decades, an exponential growth of scientific literature on Oral health-related quality of life (OHRQoL) has been observed. [17] It can be defined as "the absence of negative impacts of oral conditions on social life and a positive sense of dentofacial self-confidence". [2,3] Until recently, children's health-related quality of life was measured using parents as informants because of limitations in children's cognitive capacities and communication skills. However, a number of recently developed instruments have demonstrated that with appropriate questionnaire techniques, it is possible to obtain valid and reliable information from children concerning their health-related quality of life. [8,9,17]

The Child Perceptions Questionnaire (CPQ₁₁₋₁₄) developed by Jokovic et al., which evaluates the following subjective aspects: Oral Symptoms (OS), functional limitations (FL), emotional well-being (EWB), and social well-being (SWB) is an important characteristic of this study. [18-22] OHRQoL measures provide essential information when assessing the treatment needs of individuals and populations, for making clinical decisions, and when evaluating interventions, services, and programs. Thus, the aim of this study was to

assess the impact of oral health conditions on quality of life among 13-14 year old school children in Bangalore city.

MATERIALS AND METHODS

Study settings and Sample size

This cross-sectional study was conducted among 13-14 year old children of government and private schools from November 2013 to April 2014 in Bangalore city, India. According to the purview of Deputy Director of Public Instructions (DDPI), schools in Bangalore are divided into North, South and Rural zone. North zone was selected randomly by lottery method for the purpose of the study. Schools and school children not willing to participate, children diagnosed with fever and other systemic illness on the day of examination, children undergoing orthodontic treatment or reporting a history of previous orthodontic treatment were excluded from the study.

As per the list of schools in North zone under DDPI, there are around 88,000 school children in the age group of 13-14 years. Thus, 3 government schools and 3 private schools were selected for the purpose of our study. Based on this figure, sample size was estimated to be of 763 participants using confidence level of 95%. Final sample size was taken as 800 participants after considering 10% non-response rates. Thus, 400 participants were included in each government as well as private schools respectively.

The approval was obtained from the Head of the Deputy Director of Public Instructions to proceed with the study. Permission from the principals of respective selected schools was taken and ethical clearance to conduct the study was obtained from the Institutional Review Board. Prior to the study, aims and objectives of the study were clearly explained to the study subjects and an informed assent was obtained. A written informed consent was also obtained from the parents/guardian of the respective child willing to participate.

Study Tools

A study specific Performa was used to record the data. It had four parts. Part one consisted of informed consent and socio demographic information such as name, age, gender and type of school. Part two consisted questionnaire on Oral health-related quality of life (OHRQoL). A shorter version of Child Perception Questionnaire (CPQ₁₁₋₁₄) developed by Jokovic et al. [8] was used in this study. The (CPQ₁₁₋₁₄) instrument was a self administered questionnaire consisting of 16 items grouped into 4 domains; Oral symptoms (OS), Functional limitation (FL), Emotional well being (EWB) and social well being (SWB). Each item asks about the frequency of events, as applied to the teeth/ mouth, in the previous 3 months. The responses were scored using a 4- point Likert scale with 0= never, 1= once or twice, 2 = sometimes, 3 = often and 4 = everyday/almost every day. Additive scale and sub scale scores for the (CPQ₁₁₋₁₄) were calculated by summing the item response codes. Thus, the overall score and a separate score for each subscale was generated. Higher scores signify worse OHRQoL. The validity, reliability and responsiveness of this measure have been established in various settings. [8] Part three consisted of a single question on children's self perception about their oral health status. In the fourth part, a modified WHO Oral Health Assessment Form (1997) was used to record the Dentition status, dental trauma, Periodontal status, enamel defects, dental fluorosis, and Dentofacial anomalies. [23]

A pilot study was undertaken on 80 school children before the commencement of the study. It served as a preliminary study to identify any organizational and technical problems, to check the feasibility and relevance of the questionnaire, to have prior idea regarding the appropriate estimate of the time taken to fill the questionnaire as well as clinical examination of each subject. Based on the problems faced during pilot study in administering questionnaire, corresponding changes were made and the questionnaire was tested for its reliability by

Cronbach's alpha which came out as $\alpha = 0.71$, suggesting an acceptable reliability. Pilot study changes were utilized for proper planning and execution of the main study. These school children were excluded from the main study.

The questionnaire was translated from English to Kannada for the convenience and feasibility of the study and then translated back to English by an expert and was checked for any distortion of the information to ensure that the meaning of the questions remains the same. In order to ensure intra-examiner consistency, a randomly selected 20 subjects were examined and the kappa coefficient value for intra-examiner reliability for dentition status (0.78), dental trauma (0.83), Community Periodontal Index (CPI) (0.78), Dean's criteria for dental fluorosis (0.73), DDE index for enamel defects (0.76) and Dental Aesthetic Index for dentofacial anomalies (0.86) was obtained. These values reflected high degree of reliability in observations. An assistant who was trained in the recording procedure helped the examiner in the study. Clear instructions were given to the assistant by the examiner about recording the data.

Statistical analysis

Statistical analyses were performed using SPSS version 22. Descriptive statistics, Chi-square test for comparing categorical variables and Mann-Whitney U or Kruskal- Wallis tests as appropriate for comparing the means of continuous variables (where these were not normally distributed) were used. Level of statistical significance was set at $P < 0.05$.

RESULTS

Out of 800 school children who were approached to participate in the study, 400 (50%) were included in each government and private schools respectively. 50.5% and 47.5% of children in government and private schools were males whereas 49.5% and 52.7% were females respectively.

In permanent teeth, caries experience was significantly more in

government school children (50.3%) as compared to private school children (38%). Majority of children's primary teeth were caries free in government (94.8%) and private (86.8%) schools. Only 10.3% and 7% of children had experienced dental trauma in government and private schools. In relation to periodontal disease, more number of children in the private schools were healthy (45.5%) whereas calculus was found to be more in government school children (58.3%) showing highly significant difference. (Table 1)

With respect to enamel defects, majority of children had normal teeth in both governments (99%) and private (96.5%) schools whereas only few children

reported demarcated and diffuse opacity. In relation to dental fluorosis, majority of children reported normal teeth in government (80.5%) and private (87%) schools whereas mild fluorosis was reported with only 10% and 9.3% respectively showing significant difference. (Table 1)

Majority of children had no abnormality/minor malocclusion in both government (79.8%) and private (76.9%) schools. Definite and very severe malocclusion was reported more in private school children (16.3% and 4.3%) whereas severe malocclusion was more in government schools (7.8%). Chi-square test showed highly significant difference between both the schools. (Table 1)

Table 1: Distribution of Government school children according to their according to their oral health conditions

Oral health conditions	School type		P value
	Government n (%)	Private n (%)	
DENTAL CARIES			
For permanent teeth			
DMFT= 0	199 (49.8)	248 (62)	<0.001**
DMFT>0	201 (50.3)	152 (38)	
For primary teeth			
deft =0	379 (94.8)	347 (86.8)	<0.001**
deft >0	21 (5.3)	53 (13.3)	
DENTAL TRAUMA			
Present	41 (10.3)	28 (7)	0.10
Absent	359 (89.8)	372 (93)	
PERIODONTAL DISEASE			
Healthy	120 (30)	182 (45.5)	
Bleeding	47 (11.8)	40 (10)	<0.001**
Calculus	233 (58.3)	178 (44.5)	
ENAMEL DEFECTS			
Normal	396 (99)	386 (96.5)	
Demarcated opacity	01(0.3)	10 (2.5)	0.02*
Diffuse opacity	03 (0.8)	04 (1)	
DENTAL FLUOROSIS			
Normal	322 (80.5)	348 (87)	
Questionable	05 (1.3)	0 (0)	
Very mild	10 (2.5)	05 (1.3)	0.02*
Mild	40 (10)	37 (9.3)	
Moderate	22 (5.5)	09 (2.3)	
Severe	01 (0.3)	01 (0.3)	
MALOCCLUSION			
No abnormality/ minor malocclusion	319 (79.8)	306 (76.9)	
Definite malocclusion	39 (9.8)	65 (16.3)	<0.001**
Severe malocclusion	31 (7.8)	10 (2.5)	
Very severe/ handicapping malocclusion	11 (2.8)	17 (4.3)	

*P<0.05 significant, ** P< 0.001 highly significant using chi- square test

Table 2: Distribution of Government and Private school children according to their self -perception of oral health status

Self- perception of oral health	School type		P- value
	Government n (%)	Private n (%)	
Excellent	79 (19.8)	111 (27.8)	
Very good	129 (32.3)	139 (34.8)	0.004*
Good	169 (42.3)	123 (30.8)	
Poor	23 (5.8)	27 (6.8)	

*P <0.05 significant using chi- square test

There were more number of children in private schools who reported their oral health status as excellent and very good (27.8% and 34.8%) whereas most of the children from the government schools reported their oral health status as good (42.3%). Very few children considered their

oral health as poor in both the schools. The results showed statistically significant difference ($p=0.004$). (Table 2)

The mean scores were highest for OS domain in both government (4.65 ± 2.94) and private school (4.47 ± 2.68) children

whereas it was lowest with SWB domain, i.e., government (1.90 ± 2.48) and private (2.10 ± 3.16) respectively. FL and EWB domain was affected more in private school children as compared to government schools. (Table 3)

Table 3: Distribution of mean scores for each domain of Child Perception Questionnaire (CPQ₁₁₋₁₄) and overall score among Government and Private school children.

CPQ ₁₁₋₁₄ Domains	School type		P value
	Government Mean (SD)	Private Mean (SD)	
Oral symptom (OS)	4.65 ±2.94	4.47 ±2.68	0.36
Functional limitation (FL)	2.98 ±2.74	3.15 ±2.89	0.39
Emotional well being (EWB)	2.47 ±2.69	3.07 ±2.73	0.001*
Social well being (SWB)	1.90 ±2.48	2.10 ±3.16	0.31
Overall CPQ ₁₁₋₁₄	12.0 ±8.78	12.8 ±8.62	0.19

SD- Standard deviation, *P <0.05 significant using student t-test

Table 4: Association between oral health conditions and oral health related quality of life [for each domain of Child Perception Questionnaire (CPQ₁₁₋₁₄) and overall score] among Government school children.(n=400)

Oral health conditions	No. of children (n)	CPQ ₁₁₋₁₄ Domains Mean± SD				Overall CPQ ₁₁₋₁₄ Mean± SD
		Oral symptom(OS)	Functional limitation (FL)	Emotional well being (EWB)	Social well being (SWB)	
DENTAL CARIES						
For permanent teeth						
DMFT= 0	199	4.40±2.91	2.59±2.46	2.30 ±2.77	1.84 ±2.40	11.2 ±8.44
DMFT>0	201	4.89±2.95	3.36±2.95	2.65 ±2.60	1.96 ±2.56	12.7 ±9.06
*P value		0.08	0.01	0.08	0.89	0.10
For primary teeth						
deft =0	379	4.47±3.65	2.76±3.17	1.80 ±2.13	1.52 ±2.08	10.6 ±8.77
deft >0	21	4.65±2.90	2.99±2.72	2.51 ±2.71	1.92 ±2.50	12.1 ±8.78
*P value		0.73	0.45	0.25	0.47	0.44
DENTAL TRAUMA						
Present	41	5.02±3.34	3.43±3.55	3.19 ±2.67	2.24 ±2.47	13.9 ±9.99
Absent	359	4.60±2.89	2.92±2.64	2.39 ±2.68	1.86 ±2.48	11.8 ±8.62
*P value		0.45	0.74	0.04	0.22	0.25
PERIODONT-AL DISEASE						
Healthy	120	3.58±2.83	2.0±2.37	1.88 ±2.89	1.34 ±2.12	8.82 ±8.06
Bleeding	47	4.95±2.47	3.31±2.40	2.72 ±2.12	2.06 ±2.37	13.1 ±7.48
Calculus	233	5.13±2.94	3.40±2.87	2.73 ±2.64	2.16 ±2.63	13.4 ±8.98
¶P value		0.001	0.001	0.002	0.004	0.001
ENAMEL DEFECTS						
Normal	396	4.63±2.94	2.66±3.78	2.47 ±2.69	1.90 ±2.48	12.0 ±8.76
Demarcated opacity	01	6.0 ±0	0	0	0	6.0
Diffuse opacity	03	6.33±3.51	2.98±2.74	3.66 ±3.51	2.33 ±2.51	15.0 ±13.1
¶P value		0.55	0.38	0.37	0.54	0.70
DENTAL FLUOROSIS						
Normal	322	4.63±2.96	2.99±2.79	2.45 ±2.73	1.91 ±2.47	11.9 ±8.78
Questionable	05	2.60±1.67	3.20±1.64	2.0 ±1.22	2.0 ±1.41	9.8 ±4.14
Very mild	10	4.90±1.85	1.40±1.77	1.5 ±1.58	1.0 ±1.69	8.8 ±5.09
Mild	40	4.55±2.97	3.02±2.71	2.60 ±2.84	1.85 ±2.66	12.0 ±9.70
Moderate	22	5.22±2.99	3.18±2.51	3.13 ±2.43	1.95 ±2.62	13.5 ±8.80
Severe	01	9.0 ±0	8.0 ±0	3.0 ±0	8.0 ±0	28.0 ±0
¶P value		0.33	0.22	0.54	0.36	0.48
MALOCCLUS-ION						
No abnormality/ minor malocclusion	319	4.62 ±2.95	3.0 ±2.78	2.47 ±2.67	1.90 ±2.46	12.0 ±8.70
Definite malocclusion	39	4.61 ±3.40	2.76±3.09	2.53 ±3.05	1.84 ±2.36	11.8 ±10.23
Severe malocclusion	31	4.64 ±2.40	2.58±1.52	1.80 ±2.03	1.35 ±2.33	10.4 ±6.54
Very severe/ handicapping malocclusion	11	5.63 ±2.06	4.18±3.15	4.18 ±2.92	3.72 ±3.28	17.7 ±9.94
¶P value		0.62	0.42	0.10	0.08	0.20

SD- Standard deviation, p <0.05 significant using *Mann Whitney U and ¶Kruskal -Wallis test. DMFT- Decayed, Missing, Filled Teeth, deft- decayed, indicated for extraction, filled teeth

Table 5: Association between oral health conditions and oral health related quality of life [for each domain of Child Perception Questionnaire (CPQ₁₁₋₁₄) and overall score] among Private school children.(n=400)

Oral health conditions	No. of children (n)	CPQ ₁₁₋₁₄ Domains				Overall CPQ ₁₁₋₁₄ Mean± SD
		Oral symptom(OS)	Functional limitation (FL)	Emotional well being (EWB)	Social well being (SWB)	
DENTAL CARIES						
For permanent teeth						
DMFT= 0	248	4.31 ±2.53	3.09±2.85	2.98 ±2.66	2.03 ±3.27	12.3 ±8.47
DMFT>0	152	4.56 ±2.77	3.18±2.92	3.20 ±2.85	2.21 ±2.98	12.9 ±8.88
*P value		0.32	0.84	0.55	0.16	0.90
For primary teeth						
deft =0	347	4.39 ±2.63	3.10±2.91	3.02 ±2.74	2.09 ±3.24	12.6 ±8.79
deft >0	53	4.98 ±2.97	3.47±2.77	3.35 ±2.70	2.15 ±2.60	13.9 ±7.36
*P value		0.06	0.25	0.28	0.56	0.07
DENTAL TRAUMA						
Present	28	4.60 ±2.46	3.17±2.89	4.82 ±3.32	4.75 ±4.53	17.1 ±11.3
Absent	372	4.46 ±2.70	2.89±2.92	2.93 ±2.64	1.90 ±2.95	12.5 ±8.30
*P value		0.61	0.64	0.005	0.001	0.02
PERIODONT-AL DISEASE						
Healthy	182	4.22 ±3.23	2.87 ±2.65	2.88 ±2.69	1.78 ±2.93	11.9 ±8.98
Bleeding	40	4.32 ±2.53	2.97 ±3.24	2.97 ±2.88	2.60 ±3.24	12.8 ±7.48
Calculus	178	4.67 ±2.71	3.46 ±3.02	3.27 ±2.74	2.30 ±3.34	13.7 ±8.06
¶P value		0.26	0.17	0.30	0.11	0.10
ENAMEL DEFECTS						
Normal	386	4.44 ±2.65	3.06 ±2.84	3.03 ±2.74	2.00 ±3.02	12.5 ±9.57
Demarcated Opacity	10	7.10 ±2.13	7.50 ±0.52	4.40 ±2.79	5.80 ±6.14	24.8 ±4.0
Diffuse opacity	04	0.75 ±1.50	0.75 ±1.50	3.50 ±1.0	2.00 ±0	7.0 ±8.62
¶P value		0.001	0.001	0.19	0.23	0.001
DENTAL FLUOROSIS						
Normal	348	3.44 ±2.78	0.6 ±1.32	2.97 ±2.67	2.0 ±3.15	12.7 ±8.63
Questionable	0	0	0	0	0	0
Very mild	05	4.80 ±2.16	0.8 ±0.44	2.40 ±2.19	2.4 ±2.19	10.4 ±6.54
Mild	37	5.13 ±2.2	3.16 ±3.31	3.86 ±3.01	2.37 ±2.68	14.5 ±8.78
Moderate	09	4.43 ±2.72	3.26 ±2.86	4.0 ±3.8	4.66 ±5.07	12.8 ±8.81
Severe	01	2.0 ±0	0	1.0 ±0	3.0 ±0	6.0 ±0
¶P value		0.20	0.06	0.36	0.22	0.67
MALOCCLUS-ION						
No abnormality/ minor malocclusion	306	4.44 ±2.60	3.12 ±2.96	2.93 ±2.58	1.95 ±2.88	12.5 ±8.35
Definite malocclusion	65	4.01 ±2.70	3.07 ±2.30	3.0 ±3.28	2.15 ±3.62	12.2 ±8.91
Severe malocclusion	10	6.80 ±3.15	3.82 ±3.32	5.40 ±2.75	4.0 ±2.74	19.6 ±8.78
Very severe/ handicapping malocclusion	17	5.05 ±3.05	3.40 ±4.0	4.35 ±2.37	3.58 ±5.44	16.8 ±10.6
¶P value		0.03	0.80	0.006	0.03	0.02

SD- Standard deviation , P<0.05 significant using *Mann Whitney U and ¶Kruskal -Wallis test.DMFT- Decayed, Missing, Filled Teeth, deft- decayed, indicated for extraction, filled teeth

In both government and private school children, the mean score for all the domains of CPQ₁₁₋₁₄ as well as overall score was more in children with DMFT/deft >0 as compared to those with DMFT/deft=0. Caries in permanent teeth of government school children significantly affected FL domain. Children who experienced dental trauma showed higher mean scores for all the domains as well as overall score as compared to those without trauma in both government and private schools,. Statistically significant difference was found with only EWB in government schools whereas private schools reported

EWB, SWB and overall CPQ₁₁₋₁₄ scores to be affected. In both government and private schools, the mean CPQ₁₁₋₁₄ score for all the domains as well as overall score was highest in children with calculus followed by bleeding and it was lowest in children with healthy teeth. However, only government school children showed statistically significant differences. (Table 4 and Table5)

Only in private schools, enamel defects significantly affected OS, FL and overall CPQ₁₁₋₁₄ scores. Dental fluorosis did not significantly affected any of the CPQ₁₁₋₁₄ domains in both government and private school children. In private school children,

the mean scores for all the domains and overall CPQ₁₁₋₁₄ was highest in children having severe malocclusion followed by very severe malocclusion whereas government school children reported highest CPQ₁₁₋₁₄ scores for very severe malocclusion. Statistically significant difference was found with all the domains and overall CPQ₁₁₋₁₄ scores except FL in private school children. (Table 4 and Table 5)

DISCUSSION

Oral health is intrinsically linked to general health and quality of life. There is an increasing recognition that children are affected by numerous oral disorders, all of which can have a significant impact on physical, social, and psychological well-being. [10,11] This has resulted in greater clinical focus on improving quality of life as a major objective of dental care for dental conditions that are not life threatening.

In the present study, government school children reported higher impact on oral health related quality of life than private school children. These findings are in line with the studies done by Foster Page LA et al, [18] Nurelhuda et al [24] and Paula et al [25] This may be attributed to socio-economic condition and less frequent use of dental services in government schools. Majority of children in government schools rated their oral health status as good whereas in the private schools, most of the children considered their oral health as very good. Similar findings were reported in the studies done by Paula et al [25] and Weyant RJ et al [26] where 67.8% evaluated oral health as excellent, very good or good. Such perception may be influenced by cultural and environmental characteristics, as well as by norms for dental attractiveness and individual psychological characteristics. [27,28]

In our study, children in the government schools had higher DMFT as compared to those in private schools. This may be due to lack of accessibility, affordability and availability of dental care

in government school children. Dental caries also showed a negative influence on functional limitation domain. Similar findings were observed in the studies done by Feu et al, [10] Nurelhuda et al, [24] Paula et al, [25] Sudaduang K et al [29] and Biazevic MGH et al. [30] However in the studies done by Krisdapong S et al, [31] Kuposova N et al [32] significant differences were found for both emotional-and social well-being domains. This indicates that dental caries could deleteriously affect children's quality of life through dental pain leading to limitations in oral functioning and effects on emotional state as well as social roles. However, deft had no influence on OHRQOL domains. This may be due to low prevalence of dental caries in primary teeth, as by the age 13-14 years, majority of children would have lost their primary teeth.

In government school children, dental trauma had a negative impact only on EWB domain whereas in private schools, EWB, SWB and overall scores were also affected. These findings are consistent with the studies done by Nurelhuda et al, [24] Traebert J et al, [18] Bendo CB, [20] and Ramos-Jorge et al [33] which also showed a greater social impact on daily living. This indicates that health and quality of life experienced by an individual are not determined only by the nature and severity of TDIs (traumatic dental injuries), the social environment and relationships pertaining to a group of friends is of greater importance to the occurrence of TDIs in children.

The periodontal conditions in children of private schools were slightly better than those attending government schools. There was a strong association between the presence of bleeding and calculus negatively affecting all the domains of CPQ₁₁₋₁₄ in government schools. These findings are in line with the studies done by Paula de JS et al, [34] Paula et al [25] and López R et al. [35] However, studies done by Krisdapong S et al [31] showed no impact on OS and FL domains but there was a statistically significant association of the

presence of bleeding and calculus with emotional well-being (feelings about yourself and what others think about you) and social well-being (difficulty at school, in activities, avoiding smiling, difficulties in relationships with other children) domains of the CPQ₁₁₋₁₄. Further studies using OHRQoL measures are recommended, particularly in relation to periodontal disease, in order to ascertain the degree or extent and form of disease and define the focus of dental public health interventions.

Enamel defects reported a higher impact on the OS, FL and overall scores of CPQ₁₁₋₁₄ in private schools whereas no impact was seen in government school children. Similar findings have been reported in the studies done by Ferreira FV et al [36] and Marshaman Z et al. [37] It is important to consider such defects of enamel, as abnormal discoloration and tooth morphology associated with it may compromise the esthetics and predispose the affected teeth to dental caries. It is possible that, taken together the low prevalence of enamel defects found in both the schools, further studies with a higher level of prevalence are needed to confirm these findings.

Dental fluorosis showed no significant impact on CPQ₁₁₋₁₄ in both government and private school children. Similar findings were reported in the studies done by Michel-Crosato E et al [14] and Biazevic MGH et al. [30] Probably this finding is due to the low prevalence of the disease in the studied population and may be attributed to the differences in geographical region, mainly in relation to the amount of fluoride in drinking water. However, studies done by Nurelhuda et al, [24] Do LG et al, [38] McGrady et al [39] and Chankanka O et al [40] suggest that dental fluorosis was deemed to be perceived as a potential aesthetic problem. The mildest presentations of fluorosis may not be associated with aesthetic concerns, but as fluorosis severity increases, the esthetic concerns increase the rating. However, cut off level of fluorosis severity that is

considered to be an aesthetic problem needs future research considerations.

The association between increased malocclusion and CPQ₁₁₋₁₄ scores was significant mainly for the domains of functional limitation, social and emotional well-being as well as overall scores in private schools. These results are similar to studies done by Feu et al. [10] Sardenberg F et al, [16] Annarosa S et al, [22] Foster Page LA et al [41] Kok YV et al [42] which observed that malocclusion showed a negative effect only on the emotional and social well-being domain scores in children. These results are not surprising, since it has been shown that deviant dental appearance is a reason for teasing by peers at school and in other social situations. Also, children in the private schools may be more concerned of self-image enhancement and this might have influenced their esthetics self-perceptions. However, in the government school children, malocclusion was not significantly associated with OHRQoL. It is possible that children from government schools are more emotionally resilient to the challenges caused by their condition. Hence, accurate interpretation of OHRQoL measures requires an understanding of not only their psychometric properties, but also the contextual factors that might influence their assessments of health and well-being.

The data of this research should be interpreted within the context of some limitations. As the self-administered questionnaires were used in the study, the answers may have been subject to information bias. However, a number of measures were taken to diminish the occurrence of such bias, such as the use of a validated questionnaire and the execution of a pilot study. Longitudinal studies are needed to clarify the relationship of causality and allow establishment of public policies aimed at reducing the impact of oral health conditions on children's OHRQoL.

CONCLUSION

This research shows that, although oral diseases exerted a negative impact on

quality of life, the impacts of some levels of oral diseases can be insignificant and sometimes affects only particular domains of OHRQoL showing variation in government and private school children. In assessing OHRQoL in children, it is appropriate to use an instrument developed for their particular age group. Children are not independent beings, family and friends play important roles on children's relationships and feelings, affecting markedly on children's perception of quality of life. Therefore, it is important to reconsider the current biomedical and restricted paradigm on oral diseases and emphasize greater clinical focus on improving quality of life as a major objective of dental care in children.

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