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The Relationship between Quality of Life Related to Oral Health Status in 8-10-year-old students in Shiraz during 2016-2017

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ABSTRACT

Introduction: Oral health affects not only the oral cavity but also the physical, mental and physical condition of children. Untreated dental caries in children gives us a rational view of how a child's growth, and quality of life are. Given the high prevalence of oral problems in children, this study aimed to evaluate the quality of life associated with oral health in 8-10-year-old children in Shiraz.

Methods: The present study is a descriptive-analytical and cross-sectional one. For this study, 315 students from 8 to 10 years old in the city of Shiraz in the year 2017 from the 4 regions were selected using stratified and cluster sampling - . After obtaining written consent from parents, children were interviewed about demographic characteristics and the impact of oral problems on daily activities (child-OIDP = Oral impact on daily performance). Then PUFA/pufa (pulp-ulcer-fistula-abscess) index was determined. Data were analyzed using SPSS v.22 and Pearson correlation test, independent sample t-test, one-way ANOVA and linear regression at a significant level of 0.05.

Results: 315 students were studied, including 154 boys (48.9%) and 161 girls (51.1%). 69.8% of children had experienced at least one oral problem in their daily activities during the past three months. The biggest problem for children was eating (30.7%). Most of the problems were due to pain and bleeding from the gums (34.8%). The child-OIDP quality of life index had no significant relationship with the age of the children studied ($p = 0.43$). There was a significant relationship between mean child-OIDP index and untreated caries index (pufa) ($p = 0.001$) and the total untreated caries index (PUFA + pufa) ($p = 0.001$).

Conclusion: The present study showed the significant impact of oral diseases on reducing the quality of life in children. To improve the quality of life associated with oral health in children, measures should be taken to prevent oral diseases and to improve their access to health care.

Keywords: Quality of Life, Students' Oral Health Status, Shiraz City

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Introduction

Oral diseases are one of the most common chronic diseases and because of their prevalence and impact on people, as well as the cost of their treatment, are important issues for public health (1). The mouth contains the health of the oral cavity and associated tissues that prepare the person for eating, talking and favorable social relationships without illness, discomfort, and feeling dissatisfied (2). Oral health is an essential part of public health and oral health is more than having healthy teeth (3). In addition to the oral cavity, oral health affects the physical, mental condition of children, as well as their growth, enjoyment of life, appearance, speaking, chewing, tasting and socializing. Their sense of social satisfaction is affected (4). According to the WHO definition, quality of life is, in fact, the understanding that people have of their place in life in all their cultural dimensions, goals, expectations, standards and priorities. Therefore, quality of life is a subjective matter and depends on the understanding of different aspects of life (5). Evaluation of oral health status and its impact on the quality of life is one of the dimensions of public health assessment. The concept of quality of life related to oral health is a multidimensional concept (physical, social and mental) (5). The quality of life associated with oral health is the same as any person's perception of oral health status and symptoms, and cultural dimensions, past health, and illness experiences, mental, psychological and social status can also be affected. Quality of life correlates with oral health (6). The evolving and complex physical system of children makes the effects of a seemingly insignificant disease very effective in their quality of life. It should be noted that in the early years of life, the dental system of children is changing and requires special attention (7). Severe caries reduces the quality of life for children because of their pain, discomfort, inappropriate appearance, acute and chronic infections, increased need for hospitalization, high costs of treatment, absenteeism and staying away from school, and experience a decline in learning ability (4). Several studies showed that different factors on oral health-related quality of life (Oral health-related quality of life - OHRQoL) are effective in children, including family socioeconomic status, parental education, oral health status, and parents' perceptions of their children's oral health (8-11). Therefore, the goal of this study was to evaluate the quality of life related to oral health in 8-10-year-old children in Shiraz.

Methods

This was a cross-sectional descriptive-analytical study. For this study, 315 students aged 8-10 years in S*hirazz* were selected from 4 districts in the year 2016-2017. The sampling method was stratified-cluster. The classification was comprised of 4 education areas. and clusters of 8 boys and girls centers were randomly selected from each floor. After collecting data about 315 students were statistically analyzed. The field data collection method was through observation, examination, and interview. The sample size was determined to be at least 300 according to the relationship $n = \frac{z^2(1-\frac{\alpha}{2}).s^2}{d^2}$.

The z-factor of 95% is 1.96. S-Estimation of the standard deviation of health-related quality of life score of 8-10-year-old students in Shiraz. The standard deviation of 1.08 was obtained with the amount of Shahrzad Javadi et al (12).d-The accuracy is considered to be 0.12 s. Inclusion criteria were elementary students, 8 to 10 years old, boys and girls, from all 4 educational areas. Exclusion criteria included generalized developmental dental defects, and chronic disease. The data collection tools were clinical examination form, mirror, and disposable catheter, and lamp headlight. For data normality, Kolmogorov-Smirnov test was used, but the test was greater than 0.05 and the distribution of data was normal .The CHILD-OIDP (Oral Impact on Daily Performance) questionnaire is one of the most common tools used to assess the quality of life related to oral health that has a good reliability and validity (Cronbach's alpha = 0.79) (12).The questionnaire consists of two parts, the first part of

the child's oral and dental problems over the past 3 months (out of 20 questionnaire options) identified by children. In the second phase, the child-OIDP (Oral Impact on Daily Performance) index table was completed by face-to-face interviews. The index questions 8 daily activities including eating, talking, brushing teeth, sleeping, keeping calm, smiling without embarrassment, doing homework, and socializing. Finally, the causative agent of the disorder was coded as given to the dental problems given in the table. To determine the score of this index, the sum of the scores of the various functions (8 functions) were divided into the maximum possible score. The score for each performance was also calculated by dividing the frequency score (numeric 1 to 3) by the intensity score (1: low 2: medium 3: high) (13). The child-OIDP number for each daily function was calculated by multiplying the severity score in frequency, which can be in the range of 0 to 9 for each function. The total child-OIDP number was calculated by summing the number of daily functions (range from 0 to 72) and dividing it by 72 and multiplying by 100 (14). PUFA /pufa (pulp-ulcer-fistula-abscess) index was used to record the clinical status of an individual's mouth. To determine the PUFA index, an accurate eye examination with adequate light (preferable headlamps in this study) was sufficient. To determine the index, uppercase letters for permanent teeth (PUFA) and lowercase letters for primary teeth (pufa) were used. If both the tooth and the permanent tooth were present in the mouth and both had dental infection, both teeth were scored. The PUFA / pufa score is similar to the cumulative DMFT / dmft score. PUFA for permanent teeth and pufa for primary teeth were calculated separately, so each pufa was scored between 0 and 20 and PUFA was scored between 0 and 32 (15). Since the present study subjects were of mixed dental ages, the sum of PUFA and pufa (PUFA + pufa) indices was calculated and reported as an indicator of total untreated decayed teeth in the individual. The SPSS-V20 software was used. Pearson correlation coefficient, independent t-test, ANOVA, and linear regression were at the significant level of 0.05.

Results

The total number of students studied was 315 students, including 154 boys (48.9%) and 161 girls (51.1%). The mean age of the students was 8.99 ± 0.79. The highest age was 10 years and the youngest was 8 years. The highest number of students was in the 9-year-old age group (115 people and 36.5%). In the study of pufa (primary teeth), 93.71% were related to pulp involvement and in the study of PUFA (permanent teeth), 100% were reported to be pulp involvement. Daily activities and oral problems show that 26% (82 people) of the students did not eat snacks or eat once every few days, 40% (126 people) of them once a day, 22.2% (70 people) of students 2 times and 11.7% (36 people) of them ate snacks three times a day. 52.2% (165 people) of the students did not brush or brush once a day, 34.4% (108 people) brushed once a day, 7% (22 people) brushed twice a day, and 6.7% (21 people) brushed 3 times a day. The most common problem reported by the children studied during the last 3 months was permanent tooth eruption, decayed or perforated tooth and toothache, and the least reported complaints of permanent tooth loss, oral habits. The teeth have been the abnormal shape of the mouth or face and the permanent tooth is broken. 69.8% (220 people) of children had experienced at least one oral problem in their daily activities during the past three months. The children reported the most severe problem with an eating disorder and then resting and the least difficulty communicating with others. The children most frequently reported eating disorders (3 times a day or more) and then mouth problems (3 times a day), with most children having difficulty communicating throughout the day. The studied children reported the presence of toothache as the most common cause of eating disorder, oral hygiene and sleep disturbance. Analysis of data using ANOVA showed that there was no statistically significant difference in the quality of life related to oral health among the studied age groups ($p = 0.43$).

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Table 1. Descriptive quality of life by children's age

Age	Frequency (%)	Mean	SD
8 years	101 (32%)	12.78	15.76
9 years	115(36.5%)	10.41	11.50
10 years	99(31.5%)	11.19	13.35
Total	315(100%)	11.41	13.55

Table 2. Indices of untreated caries by age of the studied children

Age	Frequency	Percent	pufa		PUFA		Tooth 6		PUFA+pufa	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD
8 years old	101	32.1	1.83	2.12	0.05	0.26	1.83	2.12	0.05	0.26
9 years old	115	36.5	1.80	2.21	0.03	0.23	1.80	2.21	0.03	0.23
10 years old	99	34.4	1.47	1.93	0.20	0.86	1.47	1.93	0.20	0.86
p *			0.40		0.04		0.04		0.51	

* One way ANOVA

Table 2 shows that there is no significant difference between different age groups of untreated dental caries (pufa) and untreated total dental caries (PUFA + pufa) ($p > 0.05$) using analysis of variance test (ANOVA). This index is higher in permanent teeth and primary teeth in 10-year-old children than in other age groups.

Table 3. Index of untreated caries by sex of the studied children

Gender	Frequency	Percentage	pufa		PUFA		Tooth 6			PUFA+pufa
			Mean	SD	Mean	SD				Mean
Male	154	48.9	1.96	2.17	0.11	0.61	Male	154	48.9	1.96
Female	161	51.1	1.47	2.0	0.07	0.43	Female	161	51.1	1.47
p *			0.03		0.54		0.54		0.03	

*(independent t-test)

Table 3 shows the differences between boys and girls using independent t-test that there is no significant difference in boys and girls compared to PUFA and 6 related tooth decay index. ($p > 0.05$). This index is higher in boys than in girls and the sum of teeth in permanent and permanent teeth.

Table 4. Quality of life index relation with oral health

	Title	pufa	PUFA	Tooth 6	PUFA+pufa
Child OIDP Index	Pearson's coefficient	0.24	0.1	0.1	0.25
	p	0.001	0.06	0.06	0.001
	Number	315	315	315	315

Table 4 indicates that there is a significant relationship between the quality of life index associated with oral health and the index of untreated caries (pufa) in the studied children, with the increase in untreated caries (pufa), The quality of life index with the oral health of these children increased. There was a significant relationship between the score of quality of life index related to oral health and the index of untreated total dental caries in primary and permanent teeth (PUFA + pufa) in the studied children. Not all teeth in the mouth, including permanent and primary teeth, also showed an increase in the score of quality of life related to oral health in children.

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Table 5. Relationship between the quality of life index of oral health related to oral health indexes by sex

Title			pufa	PUFA	Tooth 6	PUFA+pufa
Child OIDP Index	Male	Pearson's coefficient	0.21	0.11	0.11	0.22
		p	0.008	0.16	0.16	0.005
		Number	154	154	154	154
	Female	Pearson's coefficient	0.27	0.09	0.09	0.28
		p	0.001	0.23	0.23	0.001
		Number	161	161	161	161

In Table 5, both in boys and girls, the quality of life index was significantly correlated with the index of untreated primary dental caries (pufa). Therefore, in both girls and boys, the quality of life index score was not significantly correlated with PUFA. PUFA + pufa has also increased with increasing the quality of life index.

Discussion

Oral diseases are one of the most common chronic diseases that are very important among public health problems due to their high prevalence and adverse effects on individuals and communities as well as high medical costs. Oral conditions significantly affect oral health-related quality of life (16). As can be seen, the index of untreated caries in primary teeth is higher than permanent teeth. The reason for this may be related to the time of this study, which was done a shorter time after permanent teeth eruption in the sample population and permanent teeth were less exposed to etiologic caries than the primary teeth. Permanent dental caries has not yet had much opportunity to develop pulpitis and ulceration, fistula or abscess. This study is similar to the study by Razi and Ramadan in which the mean of untreated caries in primary teeth (Pufa) was higher than the average index of untreated caries in permanent teeth (PUFA) (17, 18). In this study, there was no significant difference between the mean decay untreated tooth and mean total decay of untreated both primary teeth and permanent between the boys and girls studied, therefore mean Pufa and PUFA + pufa in boys were more than the girls, but the mean of untreated permanent dental caries (PUFA) was not significantly different in boys and girls. Finding a reason for this finding requires further studies in the future. However, it is likely that more girls complain of untreated dental complications, their greater involvement in dental treatment sessions, and more attention to the consequences of not having their teeth treated in their social interactions, which may lead to seek more treatment for these teeth and reduce caries. Untreated primary teeth and the index of total caries in the mouth in girls. While boys and their parents treat as much permanent teeth as girls do. These findings were similar to the findings of a consensus study showing that new permanent teeth have a high potential for progression of caries and pulp involvement, and our community needs to pay more attention to primary dental caries in students. In this study, there was a significant relationship between untreated and permanent caries and the frequency of snack consumption. Mean PUFA and pufa scores increased with an increasing number of snacks. Nutrition plays a very important role in the caries process; most snacks have a large number of carbohydrates. Carbohydrates help the growth of acidic bacteria in the oral environment, which eventually leads to the development of caries in the mouth. In this study, there was a statistically significant difference between the index of untreated caries and the number of toothbrushes per day, as a decrease in the frequency of toothbrushing in children was observed. The lower number of toothbrushes in children at the same time as untreated tooth decay can lead to the idea that pain and tenderness during tooth brushing may reduce the frequency of toothbrushing, which may further worsen tooth decay and its complications. There was also an inverse relationship between the index of permanent untreated caries and the frequency of tooth brushing, but this relationship was not significant. Children with untreated permanent tooth decay (including tooth 6) will only brush their teeth ahead of the painful area, unconsciously, to avoid the pain

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of a toothache. Although they report high brushing frequency throughout the day, they do not perform this brushing effectively and with good quality. In this study, the mean child-OIDP index was not significantly different between the boys and girls. Similar to the potting study, the mean score of quality of life related to oral health was not significantly correlated with the gender of the child (19). The findings of this study suggest that there is no difference between male and female children in this study since gender differences in the studied children have not yet affected their reporting on different aspects of health. In the present study, the most common problem that the children reported was difficulty eating and then resting and the least problem related to electrocution and the most reported cause was gum pain and bleeding. In Cavend's study, the most common disorder in teeth cleaning and eating was the least related to electrocution and the most reported cause of gum bleeding, tooth pain and tooth sensitivity (20). In this study, having at least one effect of oral problems on daily activities performance in 69.8% of the children, this high percentage indicates the importance of oral health and its effect on the quality of life of children. The evolving and complex physical system of children makes the effects of a seemingly limited illness very effective on their quality of life. In this study, there was a significant and direct relationship between the mean child-OIDP index and the index of untreated caries (pufa) and the total index of untreated caries (PUFA + pufa). This means that the child-OIDP score also increased and the quality of life of children was lower with untreated caries index. There was no significant relationship between the child-OIDP index and the index of untreated permanent dental caries. Examination of the relationship between PUFA / pufa index components and the child-OIDP index revealed that pulp involvement had the most influence on the child-OIDP index in both primary and permanent teeth. Given that the children in the study reported toothache as the most common cause of their discomfort, this association is reasonable.

Conclusion

Based on the results of this study, the mean ± SD of the score of the child-OIDP index of 8-10-year-old students in Shiraz was 13.55 ± 11.42 which indicates a significant impact of oral diseases on impaired quality of life of children. 69.8% of the population had at least one effect of oral problems on daily activities. The most common problems children reported were eating, resting and cleaning their mouths, respectively, and the most common cause of oral problems reported by children was pain and bleeding from the gums, respectively. The mean score of the child-OIDP index had a significant and direct relationship with the mean of PUFA and total PUFA + pufa.

Study limitations and suggestions

1-It is recommended that a study similar to the present study be conducted on other age groups of children to determine the impact of oral health factors on the quality of life of children of different ages.

2- Considering the importance of oral health and its impact on the quality of life of children, it is suggested to design and implement interventions to improve the oral health and quality of life of children.

3. Since dentists usually do not pay much attention to patients' self-reported problems and aspects of mental and social health and pay more attention to the physical aspects of oral problems, according to the findings of the present study, the relationship between quality of life and oral health was suggested. More attention should be paid to oral health-related quality of life during examination and treatment sessions.

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Conflict of interest

There is no conflict of interest.

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