Impact of Oral and Dental Health on Children's and Parents' Quality of Life Based on Early Childhood Oral Health Impact Scale (ECOHIS) Index

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Abstract Background: Oral and dental health-related quality of life means the physical and psychological satisfaction with oral health status and the appearance of the teeth. The aim of this study was to assess the impact of oral and dental health on children's and parent's quality of life based on Early Childhood Oral Health Impact Scale (ECOHIS) index. **Materials and Methods:** In this cross-sectional study 400 children (2–5 years of age) were selected from the Pediatric Department of Kerman Dental School. A clinical oral examination was performed and their dmft was documented. Then the parents completed the ECOHIS questionnaire. Data were analyzed by chi-squared test, two-sample t-test and Mann–Whitney test. **Results:** The mean of dmft in children was 5.6 ± 3.6 . The mean scores obtained from ECOHIS questionnaire in the child and parent impact section were 4.07 ± 0.79 and 3.28 ± 0.83 , respectively. There was an inverse statistical relationship between the mean of dmft and quality of life in children and parents ($P < 0.05$). **Conclusion:** Children's oral and dental health has a significant impact on children's and parents' quality of life. This impact on children's quality of life is more than that on parents.

Keywords: ECOHIS index, pre-school children, quality of life, oral and dental health, dmft index

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1. Introduction

Health-related quality of life means individual satisfaction with one's body and psychological characteristics based on which the individual achieves the ability to carry out his/her routine activities. [1] Oral health which is part of the individual's body health includes the health of the oral cavity and the relevant tissues' health that provides the individual with the ability to eat, talk and establish suitable social relations. Oral condition is an effective factor in oral health-related quality of life. [2] Also, the assessment of the oral health impact on children's quality of life is very important because oral status can affect children's growth, self-confidence, socialization and learning abilities [3].

Using a standard index can be very useful to identify the effects that oral problems can have on children's quality of life. Numerous methods have been introduced to evaluate the effect of oral health status on individuals' quality of life; some of these have been provided for schoolchildren [4,5].

These methods usually are in the form of interviews with schoolchildren who are able to talk and write or in

the form of questionnaires that are completed by the children or their parents. [6,7,8] However, the assessment of preschool children's oral health condition and its impact on quality of life needs special methods. Preschool children cannot read, write and express their attitudes, feelings and emotions [9,10].

One of the indices designed to evaluate the oral health-related quality of life in preschool children is Early Childhood Oral Health Impact Scale (ECOHIS), which is a successful questionnaire in this field [2].

This questionnaire was first designed in the UK and USA to assess the impact of oral health problems on quality of life in preschool children and their families. [2] Then it was translated into Brazilian, French and Chinese in order to be used in other countries. [11,12,13] In Iran, this questionnaire was translated into Farsi by Jabarifard et al and its validity and reliability have been verified [14].

In addition, Saleki et al in 2011 evaluated the sensitivity and responsiveness of ECOHIS questionnaire to routine dental treatments in Isfahan. They concluded that this questionnaire is properly sensitive and responsive. [15] Pani et al in 2012 performed a study entitled 'Differences in perceptions of early childhood oral health-related quality of life between parents in Saudi Arabia'. The results of this study indicated that fathers had significantly

less awareness about the impact of children's oral health on their life quality compared with mothers [16].

Since life quality has a direct role in children's learning, activities and socialization it is necessary to assess oral health impact on children's quality of life is necessary. Furthermore, since there are different cultures and traditions in different societies the parents may have different attitudes and awareness about the impact of oral health-related quality of life on their children. Therefore the evaluation of this index might yield distinct results in different societies.

The aim of this study was to evaluate the impact of oral and dental health on children's and parents' quality of life based on Early Childhood Oral Health Impact Scale (ECOHIS) index.

2. Materials and Methods

In this cross-sectional, descriptive-analytical study, 400 parents of 2–5-year-old children referring to the Pediatric Department of Kerman Dental School were selected sequentially. The inclusion criteria consisted of parents with 2–5-year-old children from both sexes, without any systemic diseases and no long-term use of drugs. The exclusion criteria consisted of children with any debilitating systemic diseases or congenital syndromes.

Furthermore, the children older or younger than the 2–5-year age group were excluded from the study. The present study was approved by the Ethics Committee of Kerman University of Medical Sciences (K/92/378). After obtaining informed consent from the parents, the questionnaire was hand in.

The ECOHIS questionnaire has two parts. The first part includes demographic information (sex, age, the parent who completed the questionnaire, i.e. the father or mother, parents' level of education).

The second part includes 13 questions in two fields. One field is related to the impact of oral health on the child's life quality with 9 questions that comprises of four subscales: child symptom (1 item), child function (4 items), child psychology (2 items) and child self-image/social interaction (2 items). The second field is related to the impact of oral health on family's life quality with 4 questions that contains two subscales: parental distress (2 items) and family function (2 items). The questions are scored based on Likert scale: Never (score 0); Hardly ever (score 1); Occasionally (score 2); Often

(score 3); Very often (score 4); Don't know (score 5). Item scores are simply added to create a total scale score. Generally the total scores of this index have range of 0-52, that the scores range 0-36 are for child impact section and 0-16 for child impact section. Higher scores indicating grater impacts and/or more problems in children's oral and dental health. [11] Also there were 2 questions at the end of the questionnaire about parental satisfaction (very low to very high) and evaluation (very bad to very good) of their children's oral and dental status.

In addition, to evaluate the relation between children's oral and dental health and their quality of life and that of parents, the child's oral cavity and teeth were examined on a dental unit with an explorer and a mirror. The dmft index (decayed teeth, missing teeth, and filled teeth) of the children was registered according to WHO caries diagnostic criteria to determine the decayed, missing, filled teeth. The acquired numbers are simply added to create a total score for any child. Mean and SD were used to describe continuous variables.

Then, the child's oral and dental status was discussed with their parents and correct principles of oral hygiene were instructed.

After collecting the questionnaires, the data were analyzed by chi-squared test, two-sample t-test and Mann-Whitney test. P value of less than 0.05 was considered to be significant.

3. Results

The results indicated that of 400 children participating in the study, 54% were male and 46% were female. Of those completing the questionnaires 72.2% were mothers and 23.8% were fathers. The majority of fathers (44%) and mothers (57.2%) were high school and college graduates.

The mean of dmft in children was 5.6 ± 3.6 . The linear regression test indicated an inverse relationship between the mean of dmft and children's and parents' life quality ($P < 0.001$).

The mean and standard deviation of the scores achieved in the field of the impact of oral and dental health on child's quality of life was 4.07 ± 0.79 , while the mean and standard deviation of the scores in the field of parents' quality of life was 3.28 ± 0.83 (Table 1 and Table 2).

Table 1. Distribution of parent ECOHIS responses in field of oral and dental health impact in child's quality of life

Child impacts	Never N (%)	Hardly ever N (%)	Occasionally N (%)	Often N (%)	Very often N (%)	Don't know N(%)
Oral/dental pain	25(6.2)	70(17.5)	120(30)	75(18.8)	106(26.5)	4(1)
Difficulty drinking	20(5)	37(9.2)	70(17.5)	104(26)	147(36.8)	22(5.5)
Difficulty eating	26(6.5)	68(17)	68(17)	92(23)	122(30.5)	24(6)
Difficulty pronouncing words	18(4.5)	10(2.5)	12(3)	54(13.5)	273(68.2)	33(8.2)
Missed preschool or school	7(1.8)	19(4.8)	41(10.2)	34(8.5)	281(70.2)	18(4.5)
Trouble sleeping	28(7)	37(9.2)	67(16.8)	88(22)	173(43.2)	7(1.8)
Irritable or frustrated	19(4.8)	74(18.5)	71(17.8)	95(23.8)	131(32.8)	10(2.5)
Avoided smiling or laughing	9(2.2)	23(5.8)	20(5)	85(21.2)	241(60.2)	22(5.5)
Avoided talking	12(3)	16(4)	14(3.5)	77(19.2)	257(64.2)	24(6)

Table 2. Distribution of parent ECOHIS responses in field of oral and dental health impact in family's quality of life

Question	Very low N (%)	Low N (%)	High N (%)	Very high N (%)	Don't know N (%)
Satisfaction from child's oral and dental appearance	107(26.8)	140(35)	80(20)	43(10.8)	30(7.5)
Question	Very bad N (%)	Bad N (%)	Good N (%)	Very good N (%)	Don't know N (%)
Evaluation of child's oral and dental status	60(15)	124(31)	131(32.8)	75(18.7)	10(2.5)

In addition, the results indicated that the oral and dental health impact on children's quality of life had an inverse relation with age. It means that with an increase in age the children's quality of life decreased.

Also parent's satisfaction from child's oral and dental appearance was low in most of parents (35%) and 32.8 % of parents reported that their child's oral and dental status is good (Table 3).

Table 3. Distribution of parent ECOHIS responses about satisfaction and evaluation of children's oral and dental status

Family impacts	Never N (%)	Hardly ever N (%)	Occasionally N (%)	Often N (%)	Very often N (%)	Don't know N(%)
Been upset	61(15.2)	92(23)	75(18.8)	74(18.5)	91(22.8)	7(1.8)
Felt guilty	36(9)	58(14.5)	38(9.5)	94(23.5)	147(36.8)	27(6.8)
Time off from work and home	25(6.2)	93(23.3)	108(27)	154(38.5)	397(99.2)	23(5.7)
Financial impact	36(9)	66(16.5)	60(15)	82(20.5)	142(35.5)	14(3.5)

4. Discussion

The results of this study indicated a significant inverse relationship between the mean of child's dmft and their and their parents' quality of life. In addition, the impact of oral and dental health on child's quality of life was more than that on parents'. There was a significant relationship between the children's quality of life and age and mother's level of education. However, there was no significant relationship between children's quality of life and sex and father's level of education.

It is possible that children under the age of 5 have many oral health problems such as dental pains, early childhood caries (ECC) and dental traumas. Nevertheless, the effect of oral disease and health on social and mental activities of children and their families has not been completely evaluated. To this end, tools are required to evaluate the oral health-related quality of life. [12] In this study, the questionnaire of the Early Childhood Oral Health Impact Scale (ECOHIS) was used, which was translated into Farsi and validated by Jabarifar et al in 2010 [14].

The mean of scores achieved from ECOHIS questionnaire in the field of the impact of oral and dental health on child's quality of life was 4.07 ± 0.79 , while this was 2.6 ± 3.3 in a study by Scarpelli et al. Furthermore, the mean of scores in the family's impact in this study was 3.2 ± 0.83 , while it was 1.4 ± 2.2 in Scarpelli's study [13].

In this study, the impact of oral health in two fields of child and family's life was significantly more than that in a study conducted in Brazil. [13] Furthermore, the mean of ECOHIS scores in a study by Pani et al in Saudi Arabia was 5.5 ± 9.4 , which is more than that the present study. [16] The mean of dmft in this study was 5.6 ± 3.6 , while in a study in Brazil it was 2.1 ± 3.1 , with 54% of children in that study having a dmft value of zero. [13] In addition, in the study by Pani et al the mean of dmft was 2.7 ± 4 . [16] The results indicated that in this study, compared with the two studies mentioned above, the children's oral and dental health status was poorer.

The results indicated that the impact of children's oral and dental problems on child's quality of life was more than that on parents'; the mean of children's score was 4.07 versus 3.2 in parents, consistent with studies carried out by Li and Scarpelli. [12,13] The impact of children's oral and dental health on their quality of life can be revealed by the effects on child's growth, weight, socialization, self-confidence and even learning abilities [14,17].

Children's quality of life did not have a significant relationship with father's level of education ($P=0.7$), while, children's quality of life had a significant relationship with mother's level of education ($P=0.006$). Children's quality of life did not exhibit a significant relationship with sex ($P=0.59$).

In this study, the impact of oral and dental health on children's quality of life exhibited a significant relationship with age, i.e. an increase in age resulted in a decrease in quality of life, consistent with the results of a study by Li et al, in which the quality of life exhibited a significant relationship with age, i.e. an increase in age increased the impact of oral health on quality of life [12].

In fact, the reason is children's inability to report their pain and discomfort when eating. Furthermore, lower social and cognitive growth of younger children makes them less susceptible to the influence of social factors such as not speaking or smiling.

In this study, the impact of oral and dental health on quality of life did not exhibit a significant relationship with sex, consistent with the results reported by Younesian et al [18].

Usually, male and female preschool children do not have a difference in nutrition, hormonal changes, oral hygiene and parental care. However, with aging this difference might be significant in both sexes.

It must be pointed out that responding to ECOHIS questionnaire is completely dependent on parents' understanding of their children's health and disease. Parents may have different attitudes toward their children's health compared with other parents and even their child. [14] Therefore, in addition to social factors, level of education can exert different effects on study results in such a way that in this study, mothers' level of education had a significant effect on children's oral health-related quality of life compared to fathers' level of education, which might be attributed to the minor role of father in children's oral health care in our society.

One of the important challenges when evaluating children's oral and dental health problems is children's lack of cognitive growth and unreliable responses. Therefore, it is required that parents help assess children's quality of life. [19] Therefore, parents' individual and social differences and their accuracy and responses to the questions might affect the study results.

One of the limitations of this study was unequal distribution of children's age groups. However, by considering the fact that parents were included in the study, whose children were at the age range of 2–5 years old, the unequal distribution of children's age was unpredictable. By considering the large sample size in this study, it does not seem that unequal distribution of age disrupts the study validity. Such a limitation exists in similar studies that had smaller sample sizes compared to this study [11,14].

5. Conclusion

The results of this study indicated a significant inverse relationship between the mean of dmft of children and their and their parents' quality of life. In addition, the results indicated that the impact of oral and dental health on children's quality of life is more than that on their parents'. Furthermore, the impact of oral and dental health on children's quality of life had a significant relationship with children's age and mother's level of education. However, this factor did not exhibit a significant relationship with children's sex and father's level of education.

It is suggested that a study be performed in the society by using ECOHIS questionnaire in the form of an epidemiologic study in order to compare its results with the results of the present study.

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