Turkish Journal of Dental Hygiene
2023, Volume 3, Page No: 22-28

Available online at: www.tsdp.net

ISSN: 3062-3472

Original Article

Investigating the Relationship between Oral Health Related Life Quality and the Severity of Dental Caries in Children

Duangporn Duangthip[1*], Sherry Shiqian Gao[1], Kitty Jieyi Chen[1], Edward Chin Man Lo[1], Chun Hung Chu[1]

[1] Faculty of Dentistry, The University of Hong Kong, Hong Kong SAR, China.

***E-mail** ✉ dduang@hku.hk

Received: 19 February 2024; **Revised:** 21 May 2024; **Accepted:** 22 May 2024

ABSTRACT

Sexuality, which plays an essential and significant role in human life, is provided through healthy sexual organs. Therefore, any disease in the genital area, including vaginitis, can interfere with these tendencies and thus affect the quality of life of the individual. The researchers, therefore, conducted a study aimed at comparing sexual satisfaction in pregnant women with vaginal candidiasis. This is a cross-sectional study to evaluate the effect of Candida vaginitis infection on sexual satisfaction that should be considered in healthy individuals and comparative work. Therefore, in this study, 160 pregnant mothers referred to the gynecology clinic, Shahid Beheshti Hospital, Tehran were selected by convenience sampling method and divided into two groups of healthy pregnant women and vaginal candidiasis women (each group 80 people). Data were collected using the Larson Sexual Satisfaction Questionnaire. After data collection, data were analyzed in SPSS software and analyzed by independent t-test. The results showed that sexual satisfaction in healthy pregnant women was slightly higher than pregnant women with vaginal candidiasis, and there was a significant difference between the two groups regarding sexual satisfaction ($p < 0.05$). These results suggest that there is a relationship between sexual satisfaction and Candida infection. Regarding the difference of sexual satisfaction in the group of pregnant women with vaginal candidiasis and healthy pregnant women, it can be concluded that the rate of sexual satisfaction with the vaginal candidate will be effected and makes problems and disorders.

Keywords: Sexual satisfaction, Pregnant mothers, Healthy mothers, Candidate vaginitis

How to Cite This Article: Duangthip D, Gao SS, Chen KJ, Lo ECM, Chu CH. Investigating the Relationship between Oral Health Related Life Quality and the Severity of Dental Caries in Children. Turk J Dent Hyg. 2023;3:22-8. https://doi.org/10.51847/hRLJbKoNZM

Introduction

Periodontal problems and dental caries are the most common oral diseases in childhood that affect the psychological, economic, and social status of the individual [1, 2] and can lead to pain, bleeding gums, tooth loss, discomfort, and overall disruption of daily activities [3-5]. However, due to a lack of awareness about dental caries in children's lives, caries treatment has not been given the necessary priority in their health [6, 7]. Understanding the effect of oral health on children's quality of life is complex [8-11].

Based on past evidence, oral health has an impact on life quality and affects factors such as smiling, speaking, eating, and other physical activities [12, 13]. Some previous studies have shown a relationship between clinical findings such as caries and malocclusion with the OHRQoL (Oral Health-Related Quality of Life) index so that an increase in caries leads to a decrease in the quality of life in children [14, 15]. Assessing the quality of life-related to oral health in children is crucial because oral health can have a significant effect on the weight of social activities, self-confidence, and learning ability of children [16]. The quality of life of children decreases after tooth loss by

causing speech and sucking disorders and in adolescence by reducing aesthetics and, subsequently, by reducing self-confidence [17, 18].

Family status and parental education level play a fundamental role in children's oral health and have a two-way relationship with it so children's oral health affects the quality of life of the family and the family's status, especially in terms of socio-economic issues, can affect their perception of the oral health status of their children and the importance of addressing it [17-20]. So far, various studies have aimed to investigate the relationship between oral and dental diseases, including Dental caries can also be associated with children's quality of life [14, 15, 21, 22], however, studies aimed at linking the severity of dental caries with children's quality of life have been few.

Currently, the ECOHIS (Early Childhood Oral Health Impact Scale) introduced in 2007 by Pahel *et al*. is the only suitable tool for investigating the oral health-related quality of life status of children [23], which is completed by their parents due to their inability to read, write, and describe emotions [24, 25]. Assessing oral health-related quality of life in children is crucial, as oral health can significantly affect children's weight, social activities, self-esteem, and learning ability [16].

Measuring quality of life in preschool children involves some methodological problems, such as changes in children's cognitive abilities at different ages and difficulty in separating children's perceptions from their parents. However, several tools have recently shown that, when used appropriately, questionnaires for parents can provide reliable and valid information about children's OHQoL (oral health-related quality of life) [24, 25].

Given the importance of a patient-centered approach in clinical decision-making in recent years and the attention paid to OHQoL (oral health-related quality of life), it is important to consider the use of a questionnaire for parents to assess oral health-related quality of life (OHQoL). In dentistry, the current study was designed to study the relationship between quality of life and the severity of dental caries in children.

Materials and Methods

This cross-sectional, descriptive epidemiological study was done on 145 children. The sample size was estimated with a confidence interval of 95%. The sampling method was available, from among those referred to the dental school, and the samples were included in the study based on the exclusion and inclusion criteria.

The inclusion criteria included: children aged 2-5 years of both genders and exclusion criteria included: failure to complete the questionnaires, unwillingness to participate in the study, a history of systemic disease and long-term medication use, and children with congenital diseases and syndromes.

Upon referral to a specialized dental office, the objectives of the research were first explained to the parents, and consent was obtained from them. Then, the relevant checklists were completed. The Early Childhood Oral Health Impact Scale (ECOHIS) questionnaire consisted of 13 questions that were divided into two general categories: The first 9 questions examine the child's oral and dental condition and the impact of this condition and include issues such as difficulty sleeping, eating, and speaking. The last 4 questions examine the effect of the child's oral and dental condition on his or her family, which includes things like being away from work and economic pressure. The way to answer the questions in this questionnaire is a 5-point Likert-type scale, and the answers to the first part include never (score 1), very rarely (score 2), I don't know (score 3), only a few times (score 4), and often (score 5). The questions in the second part are scored as follows: very good (score 1), good (score 2), I don't know (score 3), bad (score 4), and very bad (score 5). The scores of the selected options are added together and the participant's overall score is calculated. It should be noted that the score range of the questionnaire is between 13 and 65. Higher scores indicate more problems and greater effects of dental problems on the participants' quality of life.

At the beginning of the checklist, several questions were added to examine demographic factors, including the following: gender, age, parental education level (below diploma, diploma to BSc degree, and MSc degree or higher), father's occupation (self-employed, employee, unemployed), mother's occupation (employee, self-employed, housewife), number of children in the family, and child's rank in the family. The questionnaires were collected anonymously, and parents were assured that the information entered would remain confidential.

In addition, to examine the relationship between the severity of caries and the life quality related to children's oral health, the children's mouths, and teeth were examined for dental caries. The examination was performed by a trained researcher. The examination was performed while wearing disposable gloves and using a disposable mirror and a sterilized catheter (the catheter was used only to remove debris from the surface of the teeth). Younger children were examined in a knee-to-knee position with the cooperation of their parents. The World Health Organization (WHO) criteria [26] were used to assess the severity of dental

caries. To calibrate, the researcher measured the DMFT (decayed, missing, and filled teeth) of the children at one-week intervals (15 children). Based on the results, the percentage error of the DMFT variable was 1.5%.

The DMFT index can be calculated directly by examining the mouth and counting the number of decayed teeth (equivalent to dentinal caries according to WHO criteria), teeth lost due to decay, and filled teeth, and calculating the total number obtained for each individual. DMFT numbers were considered at three levels: 0, 1-4, and more than 4. Finally, parents were informed about the presence of dental problems and possible problems resulting from lack of treatment in the future, and the necessary recommendations were provided to observe oral hygiene, correct nutritional habits, and prevent the occurrence of oral and dental diseases in other children.

After collection, the data were analyzed by SPSS23 software and descriptive statistical methods to determine the frequency of variables. Spearman and Pearson's statistical tests were utilized to examine the correlation between variables. P-values < 0.05 were considered as significant levels.

Results and Discussion

The average age of the children studied was 4.12 ± 1.2 years and the average age of the parents was 43.3 ± 6.5 years. Most of the children (73.1%) were in the age range of 4 to 5 years. Most of the parents (69.7%) had a diploma to BSc degree. The majority of the families (49%) had two children. The children studied were the second child in 56 cases (38.6%) and the first child in 71 cases (49%). Other basic demographic information is given in **Table 1**.

Table 1. Demographic and epidemiological data of 145 children based on parental responses

Variable		N	%
Age	2 - 2 years and 11 months	15	10.3
	3 - 3 years and 11 months	24	16.6
	4 - 5 years	106	73.1
Gender	Boy	72	49.6
	Girl	73	50.3
Parents' education	Below Diploma	11	7.5
	Diploma to Bachelor	101	69.7
	Master's Degree and above	33	22.7
Father's occupation	Self-employed	45	31
	Employee	99	68.3
	Unemployed	1	0.6
Mother's occupation	Employee	35	24.1
	Self-employed	27	18.6
	Housekeeper	83	57.2
Number of children	1	43	29.7
	2	71	49
	3	28	19.3
	4	3	2.1
Child rank	First	71	49
	Second	56	38.6
	Third	16	11
	Fourth	2	1.4

According to the results, the average index of DMFT was 4.3 ± 37.7, and the highest frequency with 95 cases (65.5%), was in the range of 1-4 **(Figure 1)**.

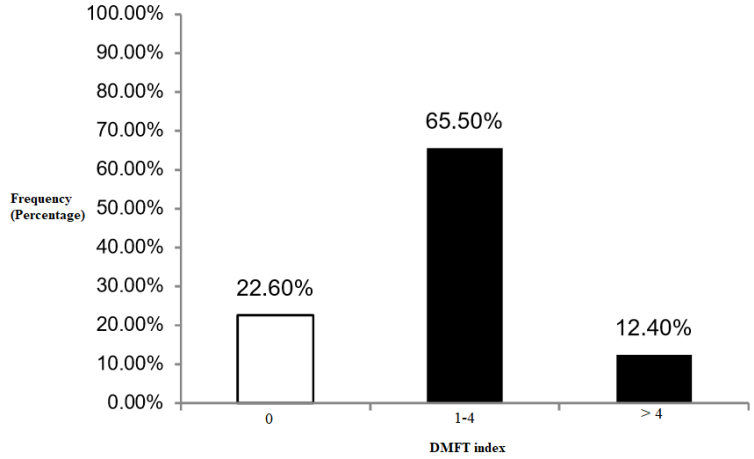

Figure 1. Percentage of the prevalence of the DMFT index in the studied children

The average score of the ECOHIS quality of life questionnaire was 39.18 ± 69.95. It should be noted that the range of the ECOHIS questionnaire score is between 13 and 65 and higher scores indicate more problems and greater effects of dental problems on the life quality of the participants. In other words, a higher score indicates a less desirable quality of life, and a lower score shows a more desirable quality of life.

Spearman and Pearson correlation tests were utilized to examine the relationship between demographic characteristics and caries severity with children's quality of life. Based on the results, there was a significant and inverse correlation between the life quality score and children's age (P = 0.047, r = -0.67). In other words, older children have a more desirable quality of life. It was also found that there was a significant inverse correlation between the quality of life score and children's rank (P = 0.04, r = -0.71) and parents' education (P = 0.018, r = -0.51). This means that children who were born later had a more desirable quality of life, and children of parents with higher education had a more desirable quality of life. The average monthly income had a significant inverse correlation with the quality of life score (P = 0.022, r = -0.18). Therefore, children in families with higher monthly incomes have a more desirable quality of life. In addition, our results showed that there was a significant and direct correlation between the mean quality of life score, the number of decayed teeth (P = 0.000, r = 0.433), and the age of the parents (P = 0.043, r = 0.527). This means that children with more decayed teeth and children with older parents have a poorer quality of life. No significant correlation was found between other study variables, including gender (P = 0.112) and the quality of life of children **(Table 2)**.

Table 2. Results of correlation tests between the oral health-related quality of life score (ECOHIS) and study variables

Study variables	ECOHIS questionnaire	
	P-value	R
Age	0.047	-0.67
Number of children	0.537	0.52
Rank of children	0.04	-0.71
DMFT index	0.000	+0.543
Gender	0.112	0.238
Parental education	0.018	-0.51
Parental age	0.043	0.527

There was also a significant and direct correlation between the quality of life score and the DMFT index (P = 0.000, r = 0.543). This means that children with a higher DMFT index score had a lower quality of life.

This study examines one of the most common chronic diseases in the world. Dental caries is very common among children. Dental caries affect the psychological, economic, and social status of the individual [1]. According to previous studies, oral health is effective in quality of life and affects factors such as smiling, talking, eating, and other physical activities [12].

The mean score of the oral health-related quality of life questionnaire in our study was 39.18 ± 69.95 and had a direct and significant relationship with increasing caries, and quality of life was negatively affected by caries, tooth loss, and fillings, which is similar to other studies [21, 22]. In other studies, the quality of life of children has decreased with the increase in dental caries, and dental caries in children have led to feelings of guilt and discomfort in parents. Also, dental caries and toothache in children will lead to sleep disorders, parental leave, and economic burden on the family, and dental caries in children affects society in various aspects [12, 15, 21, 22].

In this research, no significant difference was observed between the quality of life scores in girls and boys, which was similar to the findings of other studies [12, 22, 24]. In addition to quality of life, the lack of gender difference in the average DMFT scores was also confirmed in our study. Because there is usually no difference in diet, hormonal changes, oral hygiene, and parental care in children under 5 years of age. The present study also showed the effect of higher parental education on oral health-related quality of life. Therefore, children whose parents had academic education reported higher oral health-related quality of life than children whose parents did not have this education. In other studies, Scarpelli *et al*., and Chaffee *et al*. also found a greater association between parental education and the effect of dental caries on children's quality of life [22, 27].

It is generally expected that increased specialized and general knowledge could lead to increased awareness of health, including oral health, or that it could cause parents to be more concerned and attentive to their children's oral health. Indeed, higher education would be directly related to increased socioeconomic well-being. Previous studies have shown the role of a higher socioeconomic level in increasing the quality of life-related to oral health. Our study showed that age was significantly related to oral health-related quality of life, with older children having a better quality of life. However, in some studies, younger children faced fewer problems. The greater impact of dental caries in older children in other studies could be due to the later onset of dental caries and greater compliance with timely weaning and tooth brushing in those countries. However, it should be noted that age itself cannot be a factor that reduces quality of life and in some cases, it was not an influential factor [3, 28] and can have its effects on quality through other variables and factors.

Younger children had a lower quality level, which could be due to the lack of cooperation of this age group of children with the dentist for dental treatment and the lack of cooperation of children with parents in maintaining oral hygiene. In addition, considering that treatment of younger children requires treatment under anesthesia and considering the reluctance of some parents to anesthesia, these unresolved dental problems have a greater effect on the life quality of children. An increase in the child's rank in our study was accompanied by an increase in quality of life. In addition, no relationship was reported between the number of children and the quality of life score in our study, which is similar to other studies [3].

One of the limitations of this cross-sectional study is that long-term studies examining the effects of dental caries on their quality of life over time would have more reliable results. It is also recommended that studies be conducted on individuals with similar socio-economic characteristics.

Conclusion

This research aimed to study the association between the severity of dental caries and the quality of life of preschool children. Overall, based on the results of our study, the mean ECOHIS was 39.18 ± 69.95. There was a significant relationship between lower quality of life with younger age of children, lower education of parents, and higher number of decayed teeth. Based on the findings of the present study, the severity of dental caries affects the life quality of children, and with an increase in the number of decayed teeth, lower socioeconomic status of parents, and older age of parents, the quality of life of children decreases.

Acknowledgments: None

Conflict of Interest: None

Financial Support: None

Ethics Statement: None

References

1. Kathmandu RY. The burden of restorative dental treatment for children in third world countries. Int Dent J. 2002;52(1):1-9.
2. Hsiao SY, Chen PH, Huang SS, Yen CW, Huang ST, Yin SY, et al. Dental treatment needs and related risk factors among school children with special needs in Taiwan. J Pers Med. 2021;11(6):452. doi:10.3390/jpm11060452
3. Abanto J, Carvalho TS, Mendes FM, Wanderley MT, Bönecker M, Raggio DP. Impact of oral diseases and disorders on oral health-related quality of life of preschool children. Community Dent Oral Epidemiol. 2011;39(2):105-14.
4. Corrêa-Faria P, Paixão-Gonçalves S, Paiva SM, Martins-Júnior PA, Vieira-Andrade RG, Marques LS, et al. Dental caries, but not malocclusion or developmental defects, negatively impact preschoolers' quality of life. Int J Paediatr Dent. 2016;26(3):211-9.
5. Yang L, Zhao S, Zhu Y, Lai G, Wang J. Oral health-related quality of life and associated factors among a sample from East China with severe early childhood caries: A cross-sectional study. BMC

Oral Health. 2023;23(1):837. doi:10.1186/s12903-023-03560-4
6. Lee GH, McGrath C, Yiu CK, King NM. Sensitivity and responsiveness of the Chinese ECOHIS to dental treatment under general anesthesia. Community Dent Oral Epidemiol. 2011;39(4):372-7.
7. Hashim NA, Yusof ZYM, Saub R. Responsiveness to change of the Malay-ECOHIS following treatment of early childhood caries under general anesthesia. Community Dent Oral Epidemiol. 2019;47(1):24-31. doi:10.1111/cdoe.12417
8. Lee GH, McGrath C, Yiu CK, King NM. A comparison of a generic and oral health-specific measure in assessing the impact of early childhood caries on quality of life. Community Dent Oral Epidemiol. 2010;38(4):333-9.
9. Gilchrist F, Rodd HD, Deery C, Marshman Z. Development and evaluation of CARIES-QC: A caries-specific measure of quality of life for children. BMC Oral Health. 2018;18:1-6. doi:10.1186/s12903-018-0662-8
10. Khoshnevisan MH, Ghasemianpour M, Samadzadeh H, Baez RJ. Oral health status and healthcare system in IR Iran. J Contemp Med Sci. 2018;26:4(3):107-18.
11. Asiri FYI, Tennant M, Kruger E. Oral health status, oral health behaviors, and oral health care utilization among persons with disabilities in Saudi Arabia. Int J Environ Res Public Health. 2022;19(24):16633. doi:10.3390/ijerph192416633
12. Abanto J, Paiva SM, Raggio DP, Celiberti P, Aldrigui JM, Bönecker M. The impact of dental caries and trauma in children on family quality of life. Community Dent Oral Epidemiol. 2012;40(4):323-31.
13. Pakkhesal M, Riyahi E, Naghavi Alhosseini A, Amdjadi P, Behnampour N. Impact of dental caries on oral health related quality of life among preschool children: Perceptions of parents. BMC Oral Health. 2021;21:1-8. doi:10.1186/s12903-021-01396-4
14. Kramer PF, Feldens CA, Ferreira SH, Bervian J, Rodrigues PH, Peres MA. Exploring the impact of oral diseases and disorders on the quality of life of preschool children. Community Dent Oral Epidemiol. 2013;41(4):327-35.
15. Ramos-Jorge J, Pordeus IA, Ramos-Jorge ML, Marques LS, Paiva SM. Impact of untreated dental caries on quality of life of preschool children: Different stages and activity. Community Dent Oral Epidemiol. 2014;42(4):311-22.
16. Gift HC, Reisine ST, Larach DC. The social impact of dental problems and visits. Am J Public Health. 1992;82(12):1663-8.
17. Humphris G, Freeman R, Gibson B, Simpson K, Whelton H. Oral health-related quality of life for 8-10-year-old children: An assessment of a new measure. Community Dent Oral Epidemiol. 2005;33(5):326-32.
18. Jain M, Kaira LS, Sikka G, Singh SK, Gupta A, Sharma R, et al. How do age and tooth loss affect oral health impacts and quality of life? A study comparing two state samples of Gujarat and Rajasthan. J Dent Med Sci. 2012;9(2):135-44.
19. Jiménez-Lobo J, Batista-Cárdenas D, Aguilar-Cubillo A, Gómez-Fernández A, Ramírez K. Changes in oral health-related quality of life before and after dental treatment in 8–12-year-old Costa Rican schoolchildren. Front Dent Med. 2023;4:1167845. doi:10.3389/fdmed.2023.1167845
20. Block C, König HH, Hajek A. Oral health and quality of life: Findings from the survey of health, ageing and retirement in Europe. BMC Oral Health. 2022;22(1):606. doi:10.1186/s12903-022-02599-z
21. Ramos-Jorge J, Alencar BM, Pordeus IA, Soares ME, Marques LS, Ramos-Jorge ML, et al. Impact of dental caries on quality of life among preschool children: Emphasis on the type of tooth and stages of progression. Eur J Oral Sci. 2015;123(2):88-95.
22. Scarpelli AC, Paiva SM, Viegas CM, Carvalho AC, Ferreira FM, Pordeus IA. Oral health-related quality of life among Brazilian preschool children. Community Dent Oral Epidemiol. 2013;41(4):336-44.
23. Pahel BT, Rozier RG, Slade GD. Parental perceptions of children's oral health: The early childhood oral health impact scale (ECOHIS). Health Qual Life Outcomes. 2007;5(6):1-10.
24. Sajadi FS, Pishbin L, Azhari SH, Moosazadeh M. Impact of oral and dental health on children's and parents' quality of life based on early childhood oral health impact scale (ECOHIS) index. Int J Dent Sci Res. 2015;3(2):28-31.
25. Li S, Malkinson S, Veronneau J, Allison P. Testing responsiveness to change for the early childhood oral health impact scale (ECOHIS). Community Dent Oral Epidemiol. 2008;36(6):542-8.
26. World Health Organization. Oral health surveys: Basic methods. World Health Organization; 2013.

27. Chaffee BW, Rodrigues PH, Kramer PF, Vítolo MR, Feldens CA. Oral health-related quality-of-life scores differ by socioeconomic status and caries experience. Community Dent Oral Epidemiol. 2017;45(3):216-24.
28. Nemati S, Ghasempour M, Khafri S. Impact of oral and dental health on quality of life in Iranian preschool children and their families. Electron Physician. 2016;8(11):3296-301. doi:10.19082/3296