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Knowledge and Attitude of Elementary School Children's Mothers towards Pediatric Dental Care in Iran

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Objectives This study aimed to assess the knowledge and attitude of mothers of elementary school children toward pediatric dental care in Iran.
Method A cross-sectional study was conducted on mothers of 254 elementary school children between the ages of 6 and 12 years residing in Qom City, Iran, in 2021. Data collection was performed using a standard questionnaire with confirmed validity and reliability for the Iranian population, which was distributed to mothers online. Data were analyzed using ANOVA, t-test, Mann-Whitney Kruskal-Wallis, one-sample colmogorov smirnov.
Results The response rate was 30.97%. The mean age of mothers was 35.88±6.62 years. The majority of them had a Bachelor's degree, while 21% had a high school diploma or lower degree, and 79% had a degree higher than a high school diploma. The mean knowledge score of mothers was 31.71±4.17 out of 40, and their mean attitude score was 24.19±4.20 out of 30. Among the children, 35.7% were girls, and 64.3% were boys. About 26.8% reported brushing their teeth more than once a day, while 73.2% reported toothbrushing once a day or less. Mothers' age showed no significant correlation with their knowledge (P=0.691) or attitude (P=0.155). Similarly, their educational level showed no significant correlation with their knowledge (P=0.355) or attitude (P=0.155).
Conclusion The mothers of elementary school children assessed in this study demonstrated a relatively high level of knowledge and attitude toward pediatric dental care. Additionally, mothers' educational level had a significant correlation with the frequency of toothbrushing reported by their children.
Keywords Attitude; Iran; Knowledge; Mothers; Tooth

Introduction

Assessment of oral health can largely contribute to general public health by prevention of orally transmitted diseases and promotion of oral health and quality of life. [1, 2] Childhood caries can harm general health status and can cause problems in daily activities, eating, sleeping, and learning of children. Loss of focus due to severe toothache, school absenteeism, and increased tension in the family due to parental work absenteeism are among the other consequences of dental caries in children. [3]

Oral health is defined as an absence of orofacial pain, oral and pharyngeal cancers, oral hard and soft tissue lesions, congenital anomalies such as cleft lip and palate, and any other traumatizing condition in the oral cavity besides having sound teeth. The decayed, missing, and filled tooth (DMFT) index is a commonly used index for assessing oral and dental health, which is routinely employed for research purposes. [4-6]

To date, many caries control strategies have been implemented, such as public education, advising a healthy diet, use of fluoridated mouthwashes, water fluoridation, and school education; however, such strategies have not been ideally implemented in many countries, calling for stronger strategies and research committees to find new cariostatic agents, and causes of caries in different communities. [5, 7, 8]

In recent years, different caries control programs have been implemented in Iran, such as water fluoridation, diet modification, expansion and improvement of the quality of dental care services, and promotion of the use of toothbrushes and toothpaste. However, further attempts are still required with respect to pediatric dental care. [9-14]

It has been well-documented that the knowledge and attitude of parents play essential roles in preventing, controlling, and treating diseases in children, as well as preventing unwanted aggravation of their disease condition. [15, 16] This applies to the oral health of children as well. [15, 16] Parameters related to oral health status and the frequency of dental visits have been the topics of many investigations. A large study in the United States, which analyzed 36,000 health records of children, reported that the suboptimal frequency of dental visits in children was correlated not only with the level of income and race of the parents, but also with their level of knowledge and education. [17] Another study showed that a higher knowledge level of parents affected their receipt of dental care and corrected the cariogenic diet (amount and type of consumed sweets) and behaviors (toothbrushing habit) of their children. [18]

Considering all of the above, this study aimed to assess the knowledge and attitude of mothers of elementary school children in Iran regarding pediatric dental care.

Methods and Materials

This cross-sectional study was conducted on mothers of elementary school children in Qom City, Iran, in 2021. The study protocol was approved by the ethics committee of Shahid Beheshti University of Medical Sciences (IR.SBMU.DRC.REC.1399.102).

Eligibility criteria

The inclusion criteria were: (I) Mothers of elementary school children in the city of Qom, Iran, in 2021 who were willing to participate in the study, and (II) having literacy skills.

The exclusion criteria were: (I) The presence of systemic diseases and (II) conditions affecting the oral health status of children.

Sample size

The minimum sample size was calculated to be 225, considering a 95% confidence interval, an initial estimate for the frequency ratio of the desired response to be 70%, and an error rate of 0.06.

The sample size was calculated with the following formula:

$$n = \frac{z^2 \times p\,(1-p)}{d^2}$$

Sampling method

One all-girls and two all-boys schools were selected from different municipal districts of Qom City to cover all socioeconomic classes. The link to the online questionnaire was sent to the mothers of 290 boys attending Meysam all-boys school, 260 boys attending Hedayat all-boys school, and 270 girls attending Zeynab all-girls school through social media platforms such as WhatsApp and Telegram applications.

Data collection

The questionnaire designed by Saied-Moallemi et al. [19] in Iran for assessing parents' knowledge and attitude toward their children's oral health was used for data collection in the present study. The validity and reliability of this questionnaire had been previously confirmed for use in the Iranian population. [19] The first part of the questionnaire requested demographic information about the mother and child, such as the child's gender, birth order, the mother's age, and the mother's level of education. The second section of the questionnaire inquired about the oral hygiene practices of the mothers, including the frequency of toothbrushing, the use of fluoridated toothpaste, and the pattern of carbohydrate consumption. The third part of the questionnaire included questions about the frequency of toothbrushing by the children, the level of parental supervision over their children's toothbrushing practices, and the rate of carbohydrate consumption by the children. The fourth section of the questionnaire consisted of 6 questions regarding the mothers' attitudes toward oral and dental problems. The fifth section included 8 items assessing the mothers' knowledge levels about microbial plaque, its causes, and the prevention of oral diseases. Each question in the last two sections had a 5-point Likert scale with answer choices of "completely agree, agree, disagree, completely disagree, and no opinion."

The mothers were categorized into three groups based on age: below 30 years, between 30-40 years, and over 40 years. Additionally, mothers' education level was dichotomized as high-school diploma and lower, and higher than high-school diploma.

The frequency of toothbrushing was also dichotomized as "more than once a day" and "once a day or less" (irregularly or never, once a week, twice or three times a week).

Statistical analysis

The answers to the knowledge questions were scored from 1 (lowest) to 5 (highest), and the same scoring method was applied to the attitude questions. Inverse questions (completely disagree) were scored oppositely. The sum of scores in the knowledge section ranged from 8 to 40, indicating the level of knowledge about oral and dental care. The sum of scores in the attitude section ranged from 6 to 30. The knowledge and attitude scores were analyzed using SPSS version 24 (SPSS Inc., IL, USA). The Kolmogorov-Smirnov test revealed a non-normal distribution of knowledge and attitude data ($P<0.05$). However, considering the large sample size and the lack of difference between the results of the Mann-Whitney test and the independent t-test, the independent t-test was applied to analyze the correlation between mothers' education level and their knowledge and attitude scores.

Similarly, considering the large sample size and the lack of difference between the results of one-way ANOVA and the Kruskal-Wallis test, one-way ANOVA was used to analyze the correlation between the age of mothers and their knowledge and attitude scores. The correlation between mothers' education level and the frequency of toothbrushing by their children was analyzed using the Chi-square test. The level of significance was set at 0.05.

Results

A total of 254 mothers filled out and returned the questionnaires, resulting in a response rate of 30.97% (254 out of 820). Table 1 presents the demographic information of the mothers. The mean age of the mothers was 35.88±6.62 years, ranging from 23 to 52. Most mothers had a Bachelor's degree (35%, Table 1). Six mothers (2.4%) did not respond to this question.

Knowledge

The knowledge scores of the mothers ranged from 19 to 40, with a mean knowledge score of 31.71±4.17 out of 40. Table 2 displays the mean knowledge score of the mothers according to their age and level of education. Mothers

between 30 and 40 years had a slightly higher knowledge level than the other groups. However, the difference in knowledge score was not significant among the three age groups, indicating no significant correlation between oral health knowledge and the age of mothers (P=0.691). The mean knowledge score of mothers with a high-school diploma or lower level of education was slightly lower than the other group, but this difference was not statistically significant (P=0.355).

Table 1- Demographic information of mothers

Variable	Category	Number	Percentage
Age	Under 30 years	53	20.9
	Between 30-40 years	144	56.7
	Over 40 years	57	22.4
Educational level	High-school diploma and lower	52	21.0
	Higher than high-school diploma	196	79.0

Attitude

The attitude scores of the mothers ranged from 10 to 30, with a mean attitude score of 24.19±4.20 out of 30. Table 3 presents the mean attitude score of the mothers according to their age and level of education. As shown, the mean attitude score of mothers between 30 and 40 years was slightly higher than the other groups. However, the difference in attitude score was not significant among the three age groups, indicating no significant correlation between the age of mothers and their attitude towards oral health (P=0.076). The mean attitude score of mothers with a high-school diploma or lower level of education was slightly lower than the other group, but this difference was not statistically significant (P=0.155).

Frequency of toothbrushing

Among the mothers, 26.8% reported toothbrushing more than once a day, while 73.2% reported toothbrushing once a day or less. Table 4 presents the frequency of toothbrushing by children based on mothers' education level. In both educational level groups, the number of children brushing their teeth once a day or less was higher than in the other group. Additionally, the number of children brushing their teeth more than once a day was significantly higher in the group of mothers with a high-school diploma or a higher level of education. Thus, the correlation between mothers' education level and the frequency of toothbrushing by children was significant (P=0.003).

Table 2- Mean knowledge score of mothers according to their age and level of education

Variable	Category	Number	Mean	Std. deviation	P value
Age	Under 30 years	53	31.3	4.2	0.691
	Between 30-40 years	114	31.8	4.0	
	Over 40 years	57	31.6	4.4	
Educational level	High-school diploma and lower	52	31.1	3.3	0.355
	Higher than high-school diploma	196	31.7	4.3	

Table 3-Mean attitude score of mothers according to their age and level of education

Variable	Category	Number	Mean	Std. deviation	P value
Age	Under 30 years	53	23.0	4.5	0.076
	Between 30-40 years	144	24.5	4.1	
	Over 40 years	57	24.3	3.7	
Educational level	High-school diploma and lower	52	23.5	4.4	0.155
	Higher than high-school diploma	193	24.4	4.1	

Table 4- Frequency of toothbrushing by children based on level of education of mothers

Educational level	Category	More than once a day	Once a day or less	P value
High-school diploma and lower	Number	6	46	<0.01
	Percentage	11.5%	88.5%	
Higher than high-school diploma	Number	63	133	
	Percentage	32.1%	67.9%	

Discussion

This study assessed the knowledge and attitude of mothers of elementary school children in Qom City, Iran, regarding the dental care of their 6-12-year-old children. The results showed a mean knowledge score of 31.71 out of 40 and a mean attitude score of 24.19 out of 30, both of which were relatively high. Additionally, mothers' education level had a significant correlation with the frequency of toothbrushing by their children. These findings are consistent with Saied-Moallemi et al. [19], who reported high mean knowledge and attitude scores of mothers in Tehran and a significant correlation between the mothers' education level and the toothbrushing frequency of their children. Jain et al. [20] in India also found that mothers' low knowledge levels about oral health correlated with low interest in caries prevention programs and dental care for their children, similar to Saied-Moallemi et al.s' findings. [19] It has been well-documented that socioeconomic status directly correlates with public health. [21] Similarly, low

levels of education among mothers and low family income are correlated with a higher rate of caries and lower quality of life for children. [22, 23] However, in the present study, mothers' educational level did not have a significant correlation with their knowledge or attitude. This is in contrast to the findings of Williams et al. [24] in Burnley, who found a significant correlation between mothers' educational level and their knowledge and attitude toward oral healthcare. Low levels of education and knowledge among mothers, often result in a lack of attention to oral and dental health status, diet, and caries control for themselves and their children. [22, 25, 26]

Several studies have reported low knowledge and attitude among parents regarding oral healthcare. Zhu et al. [27] in China evaluated the knowledge and attitude of 8,800 individuals over 35 years and found that a significant portion of them did not brush their teeth regularly, did not use fluoridated mouthwash, and ignored dental caries until they experienced toothache. Gussy et al. [25] found that parents had poor knowledge about fluoride and its significance, and many were unaware of whether or not they could use fluoridated toothpaste for children under 4 years of age. Noaman et al. [28] reported a deficient knowledge level among mothers in a refugee camp in Iraq, resulting in a high prevalence of dental caries in their children. Begzati et al. [29] found that mothers with elementary or high-school education had the highest dmfs(decay, missing, filling) score among their children and had poor knowledge about oral health. Olatosi et al. [30] in Nigeria demonstrated that although 60% of mothers had an educational level higher than a high-school diploma, they lacked adequate knowledge about dental care for their children. Eigbobo and Onyeaso [31] found that while 70% of mothers had an educational level equal to or higher than a high-school diploma and had moderate to high knowledge levels about dental care for their children, they did not show optimal practice. Nepaul and Mahomed [32] in South Africa reported a parental knowledge score of 70%. They found no significant correlation between age, mothers' educational level, urban versus rural living, and higher knowledge scores with parents' attitudes regarding oral healthcare, which aligns with the present study's findings.

Sogi et al. [33] in India reported a knowledge score of 69.5% and an attitude score of 53.5% for parents; however, they found that the attitude of parents did not match their knowledge level. They also showed that high knowledge and attitude do not necessarily translate to optimal practice in terms of dental care. Additionally, they found no significant correlation between the age of the parents and their knowledge or attitude score. However, they did find that an increase in educational level led to improved knowledge and attitude of parents regarding dental care.

In Jordan, BaniHani et al. [34] evaluated 600 mothers and their children. They found no significant correlation between the knowledge and attitude of mothers towards early caries in their children and their age. However, they found that mothers with a Bachelor's degree or higher level of education and working mothers had significantly higher knowledge levels than others. They also found that 65.9% of mothers had delays in restoring carious teeth in their children, mainly due to being working mothers, low family income, and the time-consuming commute to a dental office.

Chen et al. [35] in Wuhan, China, reported that a higher educational level of parents was significantly correlated with their knowledge level about their children's oral health. They also observed an enhancement in knowledge among parents with a low level of education who participated in oral healthcare courses. Kotha et al. [36] in Saudi Arabia demonstrated that a higher educational level of parents was correlated with a higher knowledge level about oral health. Similarly, Alshammari et al. [37] in Saudi Arabia found no significant correlation between parents' age and their knowledge about their children's oral health. However, they found a significant correlation between their educational and knowledge levels. Ellakany et al. [38] in Saudi Arabia found that a higher educational and income level of parents was correlated with a lower frequency of dental caries in children.

The limitations of this study include a low response rate and the inability to perform clinical oral examinations in children due to the COVID-19 pandemic. Future studies should be conducted in dental clinics and private offices in different districts and cities to obtain more accurate results with higher generalizability.

Conclusion

The mothers of elementary school children evaluated in the present study had a relatively high level of knowledge and attitude toward pediatric dental care, and their educational level correlated significantly with the frequency of toothbrushing by their children.

Conflict of Interest

No Conflict of Interest Declared ■

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