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Mother's Knowledge Regarding Oral Health among Their Preschool Children

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Abstract

Background

The maintenance and health of children's milk teeth are important due to the high rate of caries and the fact that their health clearly affects the permanent teeth, the treatment of these caries and its complications leads to high costs for families and the society. This study aimed to determine the mother's knowledge and attitude regarding oral health among their preschool children.

Materials and Methods

The maintenance and health of children's milk teeth are important due to the high rate of caries and the fact that their health clearly affects the permanent teeth, the treatment of these caries and its complications leads to high costs for families and the society. This study aimed to determine the mother's knowledge and attitude regarding oral health among their preschool children.

Results

Based on the results of this study, and given the correct answers, the average score of mothers' knowledge is 14.42 ± 2.33 (out of 20). There was a significant relationship between the mother's age (the mean age of the mothers was 7.07 ± 4.0 years), and their level of knowledge (p-value = 0.029). The mean score of mothers knowledge was significantly different when compared with different levels of their education (p-value = 0.032), and a significant relationship was observed between having multiple children and an increase in knowledge in mothers (p-value = 0.043).

Conclusion

This study revealed that only about 40% of mothers were not aware of simple facts regarding the usage of baby bottles and their children's oral hygiene, which could lead to an increased prevalence of Early Childhood Caries in their children. Hence it is concluded that maternal educational interventions are necessary for improving children's oral health habits.

Key Words: Attitude, Baby bottle syndrome, Children, Early Childhood Caries.

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1- INTRODUCTION

Deciduous teeth, also known as baby teeth and milk teeth, begin to erupt at 6 months of age, and by the age of 24 months, the child will have a total number of 20 teeth in his dentition, which includes 10 teeth per jaw. Many studies have proven the importance of deciduous teeth, and some have even considered them as important permanent teeth (1). Children's necessary nutritional requirements could be provided using these teeth (2). The maintenance and health of milk teeth are very important due to the high rate of caries and the fact that their health clearly affects the permanent teeth (3, 4). Early loss of deciduous teeth, depending on the age and type of missing teeth, can cause complications such as speech impairment, impairment of chewing, decreased maxillary-mandibular arc length and esthetic problems (5, 6). Treatment of dental caries and its complications leads to high costs for families and society (7).

In addition to providing a healthy body, a decent diet can also guarantee the health of an individual's dentition. Bad food habits such as excessive consumption of snacks can promote dental caries (including Early Childhood Caries [ECC]) (8). In addition to controlling food habits, preventive measures such as the use of fissure sealants, fluoride therapy, and observed oral hygiene could be very effective in decreasing dental caries (9). Rampant caries is a rapidly expanding type of caries which results in pulp involvement and has been named due to its high rate of decay (10). Baby bottle tooth decay is one of the most common types of rampant caries in infants and children under the age of 6 years (11, 12). Deciduous teeth are extensively damaged in the Baby bottle syndrome which starts with the labial surface of the maxillary anterior teeth and adjacent to the gingival margin and usually appear as decalcified white spots (11). In addition to tooth decay, the long-term use of baby bottles is also associated with some changes in the microbial flora of the baby's mouth, which promotes further caries (13). In bacterial plaques of children with baby bottle syndrome, bacteria including Streptococcus mutans and lactobacilli were observed (14). In order to reduce the prevalence of this syndrome, parents should be trained to minimize the progression of caries, and due to the high motivation and interest, it is best to educate them before the baby's birth (15). Observed oral hygiene at the start of tooth eruption, diluting milk with water, giving up the milk bottle before the age of one, fluoride utilization, preventing accumulation of residual and food and fluids on teeth surfaces, and also preventing the child from sleeping with the milk bottle (16) are some factors that can reduce tooth decay incidence. Baby bottle syndrome could be prevented by proper parent training and could also reduce the costs required for the treatment of caries. The aim of this study was to evaluate the knowledge of mothers regarding baby bottle syndrome and their children's oral hygiene in order to reduce the prevalence and costs of early childhood caries.

2- MATERIALS AND METHODS

2-1. Study design and population

This cross-sectional study was conducted in the faculty of dentistry of Sari, Mazandaran University of Medical Sciences, Iran, in 2017. The statistical population in this study was 710 people. Using the Cochran formula and the Morgan table the sample size of this project was determined 249 people who were selected by simple random sampling.

2-2. Method

In this study, after a thorough explanation of the ongoing research and consent of the mothers, they were given the right to either answer the questionnaire themselves or to be asked questions orally by an expert.

Mothers were given the choice to pass on questions that they did not want to answer. No names or identifying information was received from any of the subjects.

2-3. Measuring tool

The questionnaire consisted of two sections including demographic questions and 20 items to assess the knowledge of mothers on baby bottle syndrome based on the principles outlined in previous papers and studies (17). Research tool was a researcher-made questionnaire which was confirmed by content validity and internal consistency (Cronbach's alpha [α=0.62]) reliability. The validity and viability of this study was performed and approved by 10 mothers and 15 pediatric dental specialists and all necessary changes were considered in the final questionnaire. Questionnaire scores were measured as a fraction of 20 and qualitative, a score below 10 was considered poor, 10 to 14.99 was medium, and 15 to 20 was classified as good.

2-4. Inclusion and exclusion criteria

All mothers who had children from 1 to 6 years old were free to participate in this project. In cases which questionnaires were not filled completely or when subjects did not consent to the questions, the data were excluded and not recorded.

2-5. Data Analyses

After collecting data, and using the Spearman-Brown coefficient and test-retest method, the questionnaire was confirmed with a self-correlation coefficient of 0.96 and significant level less than 0.001. The data were analyzed using SPSS software version 16.0. P-value less than 0.05 was statistically significant.

3- RESULTS

In this study, 249 subjects were randomly selected from Mothers who were referred to Sari Tooba dental clinic, during 12 months.The mean age of the mothers was 27.07 $\pm$ 4.0 years. Baseline characteristics of participants are shown in **Table.1**. There was a significant relationship between the mother's age and their level of knowledge, so that mothers under 21 years of age had less knowledge than others (p-value = 0.029). The youngest mother was 17 and the oldest was 41 years of age. The mean age of the children was 2.98 ± 0.87 years; the youngest was 1 and the oldest was 5 years old. The sex ratio of boys was higher than girls (48.6% girls n=121, 51.4% boys n=128). The primary demographic questions of the questionnaire showed that the level of education in most mothers was a high school diploma or below high school diploma (49.6%); while fewer subjects had bachelor's and master's degrees (50%), and only a few had higher educational degrees (0.4%). The results of the Kruskal-Wallis test indicates that the mean score of mothers' knowledge was significantly different when compared with different levels of their education. The higher the level of educaton, the higher the knowledge of mothers (p-value = 0.032).

The results revealed that a large number of children (n=223, 89.6%) brushed their teeth less than two times a day, which increased their chances of caries. A survey of utilization of pacifiers and baby bottles showed that many children (n=130, 68.3%) used a pacifier even at early ages, which can subsequently cause deformity and open bite problems. The results of the Kruskal-Wallis test showed that the mean score of mothers knowledge on baby bottle syndrome was significantly related to the number of times their children brushed their teeth (p-value = 0.017). A survey of the number of children each mother had revealed that 44.8% (n=111) of mothers had one child, 51.2% (n=127) had two children and 4% (n=10) had three children or more. A significant relationship was observed between having multiple children and an increase in knowledge in mothers (p-value = 0.043). According to **Table.2**,

the mean scores and frequency of the mother's responses to the questionnaire were observed in this study. According to the answers, the sum of scores in questions 5, 11 and 12 was the lowest and in questions 8, 13 and 19 was the highest. The overall mean knowledge of mothers based on the correct and incorrect answers to the questions of the questionnaire was 11.6 out of 20, which is considered a poor average score. 3.6 percent of mothers (9 mothers) had a good knowledge (scored 15 to 20), 73.5 percent (183 people) had moderate (scored 10 to 14.99), and 22.9 percent (57 people) had poor knowledge. The questionnaire overall questions and demographic questions revealed that there was a significant relationship between questions number 19 (A toothache can prevent a child from paying attention to class) (p-value = 0.001), 1 (Before a baby's first tooth erupts, the mother should clean the baby's gums with a damp cloth) (p-value 0.001), 12 (Tooth decay is the most common childhood chronic disease in children under 7 years of age) (p-value = 0.029), 16 (A child with severe tooth decay does not gain weight properly) (p-value = 0.004) and 4 (Older children should brush twice a day) (p-value = 0.004) and the number of appropriate brushes per day, as the children of mothers who answered the aforementioned questions correctly had a higher rate of brushing their teeth. The results of the Kruskal-Wallis test showed that the mean score of a mother's knowledge of baby bottle syndrome was significantly different based on the number of children they had (p-value = 0.014). The more children a mother had, the more knowledge she had about baby bottle syndrome. The results showed that there was a significant relationship between correctly answering questions number 15 (Using a pacifier is not harmful to the teeth of children) (p-value=0.012), and 2 (When a baby is about 2 years old, mothers should start brushing their teeth) (p-value = 0.022) by the mothers and their children using a pacifier. 68.3% (n=130). 73% (n=181) of the mothers and their children resided in the city and 27% (n=67) resided in villages, the results of the t-test indicated that the mean score of the mother's knowledge on baby bottle syndrome was not significantly related to their location of residence (p-value> 0.05).

Table-1: Baseline characteristics of participants.

Variables	Sub-group	Number	Percentage
Gender	Girl	121	48.6
	Boy	128	51.4
Educational Level	Illiterate	7	2.9
	High school diploma	113	46.7
	Bachelor's degree	109	45
	Master's degree	12	5
	Doctorate and above	1	0.4
Number of children	1	111	44.8
	2	127	51.2
	3	10	4
Location of residence	City	181	73
	Villages	67	27
Type of milk consumed by the child	Breast milk	171	68.7
	Milk powder	31	12.4
	Both	47	18.9
Usage of pacifier and baby bottle	Pacifier	110	44.2
	Baby bottle	62	24.9
	Both	20	24.1
	None	17	6.8

Number of child brushes per day	1	124	49.8
	2	25	10
	3	1	0.4
	Doesn’t brush	99	39.8

Table-2: Frequently distributed and list of questions asked in the questionnaire.

	Items	Answered correct, number (%)	Rank*
1	Before a baby's first tooth erupts, the mother should clean the baby's gums with a damp cloth.	103(41.3%)	17
2	When a baby is about 2 years old, mothers should start brushing their teeth.	145(58.2%)	9
3	When the child is about 6 years old, he can brush his teeth alone without parental supervision.	155(62.2%)	8
4	Older children should brush twice a day.	141(53.8%)	11
5	At the age of three, the child's teeth should be cleaned by parents with a toothbrush.	91(36.1%)	19
6	At the age of 6, children should floss alone	161(64.6%)	7
7	The amount of toothpaste required to brush the child's teeth is about the size of a pea.	136(54.6%)	13
8	The child should not swallow toothpaste.	217(87.2%)	3
9	The child’s toothbrush should be changed every 6 months.	109(43.7%)	16
10	When the child is 2 years old, he should be examined by a dentist.	137(55.0%)	12
11	Children should visit a dentist twice a year.	90(36.1%)	20
12	Tooth decay is the most common childhood chronic disease in children under 7 years of age.	214(79.2%)	4
13	Fluoride supplements are important for preventing tooth decay.	222(89.1%)	2
14	A baby should not have a baby bottle or fruit in his mouth while sleeping.	100(40.1%)	18
15	Using a pacifier is not harmful to children’s teeth.	184(85.9%)	6
16	A child with severe tooth decay does not gain weight properly.	207(83.1%)	5
17	Poor dental health and hygiene can affect a child's learning ability.	123(49.3%)	14
18	Poor dental health and hygiene can affect a child's general health.	144(57.8%)	10
19	A toothache can prevent a child from paying attention in class.	228(91.6%)	1
20	Poor dental health and hygiene can impair a child's nighttime sleep.	112(44.9%)	15

Legend: ***** Ranking of the percentages of correct answers starting with 1 = most frequent correct answer.

4- DISCUSSION

Parents' knowledge and practice are valuable in children's oral health. Prevention of ECC is done by informing parents and teaching them oral hygiene and parental involvement is a key factor in preventative measures, especially for mothers, because they play an important role in their child’s health. Educating parents can establish children 's positive behaviors in the future (18, 19). The results of current study showed that there was a significant relationship between the correct answer to question 19 and the number of appropriate toothbrushes per day as the children of mothers who answered the question correctly brushed their teeth more commonly. This may indicate the effect of the mother’s knowledge on the fact that poor dental hygiene affects her child's education, and thus leads to paying more attention to reducing cavities by encouraging the child to brush more commonly and effectively. Based on the results of this study, and given the correct answers, the average score of mothers' knowledge is 14.42 ± 2.33 (out of 20). In a study by Sultani et al. (20) conducted in 2013 in Isfahan and with a title similar to this study, the results showed that the majority of mother’s knowledge was moderate and poor, which is similar to the results of the present study. Suresh et al. performed another similar study with a larger statistical population (403 individuals) and found that 72.2% of the mothers had a moderate knowledge (21). Also, in a study conducted by Chu et al. (22), a total number of 600 mothers with preschool children participated, the results revealed that more than 60% of mothers had

moderate knowledge, both of the aforementioned studies confirm the results of this study. In other studies such as Nagarajappa et al. (23), Mubeen et al. (24), Hesami et al. (25) Nivedha et al. (26), and Akpabio et al. (17), that were conducted in different countries, we also conclude that results are consistent and in line with the results of the present study and the average knowledge of mothers was measured to be moderate, which indicates that these results are comprehensive. But in the study of Baginska et al. (27) which included 104 mothers who had 3-4-year-old children, the results were contrary to ours, as the majority of mothers had fair information. The difference in results could be due to the low statistical population and also limiting the age of the children participating in this study to 3-4 years.

Furthermore other conditions and cultures of different communities could have been effective. In this study, as in the Akpabio et al.'s study (17), there was no specific relationship between the mother's location of residence and their knowledge on ECC and their children's oral health. Education is one of the most important socio-economic indicators that affects the knowledge, attitude, and skills necessary to adopt health-related behaviors (28).

Highly educated people seem to have more and easier access to resources to increase their knowledge and information. Therefore, mothers with less education should be a priority group in health promotion programs. In the present study, we found that mothers with higher educational levels answered the questions better and scored higher, and statistical analysis revealed a significant relationship between these two variables. Findings from studies conducted by Haghnegahdar et al. (29), Soltani et al. (20), Hashemi et al. (25), Naderifar et al. (30), and Mebidi et al. (31) also confirm these results. In addition, studies by Soltani et al. (20), Benakar et al. (32), and Vojdani et al. (33), also emphasized the impact of education on knowledge on oral health. But in the study of Sharifi Rad and colleagues (34), the results were contradictory to ours, which could be due to the small number of the statistical population (56 persons) in this study. In examining the relationship between the age of the mothers and their knowledge, we found that mothers in the under-21 age group performed significantly poorer and had more incorrect answers than other age groups, and so as the age increased, the average of the correct answers increased significantly.

Naderifar et al. (1999) found that there was a significant relationship between the mother's knowledge regarding oral hygiene and their age. So that older mothers had higher knowledge levels (35). In a study by Kakatkar and colleagues, it was concluded that the age of the mothers was significantly related to their level of knowledge (36). Mubeen et al. (24), and Hashemi and colleagues also conducted similar studies and concluded that there is a direct relationship between the two variables of maternal age and the level of their knowledge on oral health (25).

However, in a study by Haghnegahdar et al. which was conducted on 200 mothers 23-49 years of age, contrary to the mentioned results, no significant relationship was found between these variables (29). The reasons for the discrepancy between the results of this article and the rest of the texts include inadequate sample size, setting an age limit for mothers participating in the study, and excluding mothers under 23 years of age. The main cause of ECC is sleeping with a baby bottle and consuming milk at night, the American Academy of Pediatric Dentistry recommends that children do not fall asleep while drinking milk and after the child's teeth have erupted, unrestricted milk feeding during night times should be avoided. And, in general, baby bottles should not be used for consuming sweet

liquids (37). Our study revealed that only about 40% of mothers were aware of these simple facts, which could lead to an increased prevalence of ECC in their children.

4-1. Study Limitations

There are some limitations in this study, such as the questionnaire was self-reported which could be subject to recall bias, also the study was only conducted on mothers who referred to the Department of Pediatric Dentistry with their children, therefore we suggest that further similar studies be performed on other populations in different health centers.

5- CONCLUSION

According to the results of this study and given the correct answers, the average score of mothers' knowledge is 14.42 ± 2.33 (out of 20). Many mothers lack adequate knowledge about their children's oral health, hence maternal educational interventions are necessary in order to improve children's oral health habits and reduce financial costs on future dental treatments.

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7- CONFLICT OF INTEREST: None.

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