

Cross-Sectional Study

Examining Oral and Dental Health Literacy of Mothers and Its Relationship with Children's Oral and Dental Health Status

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ABSTRACT

One of the most effective factors in people's oral and dental health is their health literacy. The present study was done to determine the oral health literacy of mothers and its relationship with children's oral health status. This study was cross-sectional (descriptive-analytical). Oral and dental health literacy of mothers was determined by the oral and dental health literacy questionnaire of adults and the state of their children's teeth, and the number of decayed teeth, missing teeth, and filled teeth were recorded. The data were analyzed using SPSS23 software and by one-way analysis of variance and Pearson correlation tests. The average oral and dental health literacy of the studied mothers was 46.66 ± 21.895 and the average number of decayed teeth, filled teeth, and missing teeth in their children was 3.84 ± 1.424 . There was an inverse and significant relationship between oral and dental health literacy of mothers with the overall score of the number of decayed teeth, filled teeth, and missing teeth of their children ($P = 0.007$). The results showed that the oral and dental health literacy of mothers has a direct and meaningful relationship with their education ($P < 0.05$). According to the findings obtained from the current study, there is a significant relationship between the oral health literacy of mothers and the oral and dental health status of their children. Therefore, planning to increase the oral health literacy of mothers seems necessary to improve the oral and dental health of children.

Keywords: Dental health literacy, Mothers, Children, Oral and dental health

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Introduction

Oral and dental hygiene plays an important role in public health and can prevent many diseases [1-3]. There are several variables to measure the oral and dental condition of a society. One of these variables is the calculation of the number of decayed teeth, filled teeth, and missing teeth. The importance of these values is as much as it can be used as a basis for comparing the oral health status of 12-year-old children in different countries [4, 5]. More than half a century has passed since the identification of the factors that cause dental caries; however, dental caries still puts a lot of pressure on the health system of developing countries [6]. One of the main causes of

oral pain and tooth loss is tooth decay [4, 5]. It can be acknowledged that the most common chronic disease among children under 72 months is tooth decay [7]. This multifactorial infectious disease, especially in childhood, is considered one of the most preventable diseases [4, 5]. In some countries of the world, approximately 90% of preschool children experience tooth decay and nearly 70% of them are not treated [8-11].

In most cases, parents do not care about children's baby teeth and caries. Meanwhile, the premature loss of baby teeth or their failure to fall when the replacement teeth come in will cause the row of teeth to fall apart. Correcting the row of teeth and tooth deformities in these children sometimes requires extensive

orthodontic treatments. In addition, having a proper diet and good oral hygiene plays a significant role in preventing tooth decay. It should be noted that the decay of milk teeth could cause infection with constant pain and make the child refuse to eat foods that are difficult to chew. Finally, an abscess from a primary tooth pulp infection can cause dark spots in the underlying permanent tooth [12].

One of the factors affecting children's oral and dental health status is the oral and dental health literacy of their mothers. Oral and dental health literacy is defined as the ability of people to obtain, process, and understand information to receive basic health services needed to make decisions about oral and dental health [13]. Many studies have evaluated the oral health literacy of adults [14-17]. Studies show that the oral and dental health status of children has a significant relationship with the oral and dental health literacy of their caregivers [18-21]. Children with parents with a high level of oral and dental health literacy have better oral and dental health status [22, 23].

Despite the importance of parents' oral health literacy and its importance in the health of young children's milk teeth [20, 24], few studies have investigated the relationship between mothers' oral health literacy and the oral health status of children with teeth. Most of the studies were conducted on children with permanent teeth. Therefore, the current study was conducted to determine the relationship between oral and dental health literacy of mothers and children's oral and dental health status.

Materials and Methods

This was a cross-sectional study (descriptive-analytical type) and the study population included children aged 3 to 6 years with health records. According to the health information registered in the system, the number of children aged 3-6 was 1731.

Considering the correlation rate of $r = 0.2$, confidence level of 0.95, and test power of 0.8, the required sample size of the study was estimated to be 194 people. The samples were selected by random sampling method. For randomization, first, 1731 children were assigned numbers from 1 to 1731 in alphabetical order, and 194 numbers were randomly selected using SPSS software. After the mothers came to take care of the children, they were explained about the study and its purpose, and after obtaining informed consent from them, the data was collected.

The Oral Health Literacy-Adult Questionnaire was used to check the oral health literacy of mothers. This questionnaire contains 17 questions in four sections: calculating numbers, reading comprehension, listening skills, and decision-making. The comprehension section contains six questions that examine the relationship between oral and dental diseases and other diseases, how to prevent tooth decay, and the number of teeth and their growth time. In the number calculation section, after reading a prescription on how to take the antibiotic amoxicillin and an instruction for using sodium fluoride mouthwash, four questions are asked to the mothers under study. In the listening skill section, the interviewer reads three sentences about the instructions after tooth extraction, a maximum of twice, and then the clients answer two questions. The decision section also includes five questions about how to deal with common oral health problems (bleeding from the gums during brushing or flossing, pain and swelling in the mouth, as well as plaque and tooth pigments) and 2 sentences about the concepts of the dental history form. This questionnaire was completed by the researcher using the interview method. The duration of completing each questionnaire was between 10 and 15 minutes. To check the oral and dental health of children, the number of decayed teeth, filled teeth, and missing teeth of their children were examined and recorded by one of the researchers of the present study.

Data were analyzed using SPSS version 23 software and descriptive tests such as number, percentage, mean, and standard deviation and statistical tests. Pearson's correlation test was used to check the correlation between the oral and dental health literacy scores of mothers with the score of quantitative demographic variables as well as the number of decayed teeth, filled teeth, and missing teeth in the studied children. One-way analysis of variance test was also used to investigate the relationship between oral and dental health literacy scores of mothers according to different levels of multi-state qualitative demographic variables.

Results and Discussion

The average age of the studied mothers was 32.38 ± 6.095 . Other demographic information of the studied mothers is presented in **Table 1**. The findings of the current study showed that the average oral and dental health literacy of the studied mothers was 46.66 with a standard deviation of 21.895.

Table 1. Demographic characteristics of the studied mothers (n = 194)

Variable	Levels	N	%
Education level	Under diploma	85	43.8
	Diploma	63	32.5
	Associate and Bachelor	35	18.0
	Masters and Ph.D.	11	5.7
Number of family members	2	6	3.1
	3	43	22.2
	4	96	49.5
	5	35	18.0
	6	14	7.2
Employment status	Housekeeper	149	76.8
	Student	12	6.2
	Employed	33	17.0

In **Table 2**, the average components of oral and dental health literacy of the studied mothers are shown in the areas of reading comprehension, number calculation, listening skills, and decision-making. The average number of decayed teeth, filled teeth, and missing teeth of the studied children was equal to 3.84 ± 1.424 .

Table 2. The mean and standard deviation of the oral health literacy score and its components in the studied mothers (n = 194)

Components of oral health literacy	Mean	Standard deviation
Comprehension	48.71	31.095
Calculate numbers	54.25	23.831
Listening skills	23.45	27.951
Decision making	47.42	29.407
Total score	46.66	21.895

The average number of decayed teeth, filled teeth, and missing teeth of the studied children was 3.11 ± 3.189 , 0.19 ± 0.750 , and 0.54 ± 1.364 , respectively (**Table 3**).

Table 3. The status of the number of decayed teeth, filled teeth, and missing teeth in the studied children (n = 194)

Variable	Mean	Standard deviation
Number of decayed teeth	3.11	3.189
Number of filled teeth	0.19	0.750
Number of missing teeth	0.54	1.364
Number of decayed teeth, filled teeth, and missing teeth	3.084	1.424

The results of the study showed that the correlation coefficient between the total score of mothers' oral and dental health literacy with the total score of the number of decayed teeth, filled teeth, and missing teeth was negative ($r = -0.196$) and significant ($P = 0.007$) (**Table 4**).

Table 4. Correlation matrix of the oral and dental health literacy components of the studied mothers with the average score of the number of decayed teeth, filled teeth, and missing teeth of their children

Oral health literacy and its components	The total number of decayed teeth, missing teeth, and filled teeth		Number of decayed teeth		Number of filled teeth		Number of missing teeth	
	r	P-value	r	P-value	r	P-value	r	P-value
Total oral health literacy score	-0.196	0.007	-0.022	0.765	0.140	0.052	-0.220	0.002
Comprehension	-0.151	0.039	-0.072	0.321	0.011	0.882	-0.272	< 0.001
Calculate numbers	-0.228	0.002	-0.173	0.016	-0.046	0.523	-0.175	0.014
Listening skills	-0.033	0.653	-0.129	0.074	0.096	0.185	0.073	0.310
Decision making	-0.147	0.040	-0.102	0.158	0.035	0.632	-0.128	0.078

As shown in **Table 5**, the correlation coefficient between mothers' age was direct and significant only

with the dimension of reading comprehension. In other words, as the age increased, the reading literacy of

mothers also increased. The findings of the present study revealed that the effect of educational status ($P = 0.001$) and occupation ($P = 0.05$) on the oral and dental health literacy of the studied mothers was significant.

Table 5. Correlation matrix of oral and dental health literacy components of mothers with their age

Variable	Age	
	r	P-value
Total oral health literacy score	0.121	0.092
Comprehension	0.221	0.002
Calculate numbers	0.148	0.104

Listening skills	0.026	0.716
Decision making	-0.052	0.475

Table 6 shows the results of a one-way analysis of variance to compare the average oral and dental health literacy of mothers at different educational and occupational levels. The results of Tukey's post hoc test showed that oral and dental health literacy of mothers with below diploma education was significantly lower than other education levels. Meanwhile, the oral and dental health literacy of working mothers was significantly higher than the health literacy of homemakers.

Table 6. The results of one-way variance analysis to compare the average oral health literacy of mothers at different educational and occupational levels

Variable	Levels	Minimum	Maximum	Mean	Standard deviation	Test statistics	P-value
Education level	Under diploma	0	13	6.025	3.543	22.84	0.001
	Diploma	1	13	8.381	3.366		
	Associate and Bachelor	6	14	11.171	2.394		
	Masters	8	12	9.818	1.601		
Employment status	Housekeeper	0	14	7.583	3.637	3.318	0.05
	Student	4	11	8.250	2.701		
	Employed	1	14	9.393	4.130		

In the present study, the oral and dental health literacy score of mothers was determined, the number of decayed teeth, missing teeth, and filled teeth in children was determined and the relationship between these two variables was determined. The findings of the current study showed that the average oral health literacy of the studied mothers was 46.66 with a standard deviation of 21.895. In addition, the average oral health literacy in the current study was higher than the average health literacy reported among caregivers of children in Carolina [24] and residents of Northern California [25]. The reason for these differences may be in the study population, living area, type of questionnaire to measure oral and dental health literacy, and their different level of education. Because in the present study, only mothers with children aged 3 to 6 years were investigated. For example, Sabbahi *et al.*'s study showed that the reason for the high oral and dental health literacy scores of the clients was their high education [26].

The findings of the present study revealed that among the components of oral and dental health literacy, the highest average was related to the component of understanding numbers. The findings of the present study revealed that the overall average number of missing and filled decayed teeth of the studied children

was 3.84 with a standard deviation of 1.424. The findings of the present study showed that the average number of missing teeth, decayed teeth, and filled teeth in the studied children was 0.54 with a standard deviation of 1.364, 3.11 with a standard deviation of 3.189, and 0.19 with a standard deviation of 0.750, respectively. In the current study, the lowest average was related to the number of filled teeth, which can indicate the low level of services related to oral and dental health because of the high price of these services [27] and the lack of belief in the maintenance of children's milk teeth [28, 29].

In the current study, there is an inverse and significant relationship between the oral health literacy of mothers and the number of missing teeth, decayed teeth, and filled teeth of their children. In this way, as the total oral health literacy score of mothers increased, the overall average number of missing teeth, decayed teeth, and filled teeth decreased. The same relationship was significant for the number of teeth Decay and missing teeth of children were also maintained, but this relationship with the number of filled teeth was not significant. Bridges *et al.* and Vann *et al.* also reported that the oral health literacy of caregivers has a great impact on the oral health status of minors [20, 24]. Considering the role of oral and dental health literacy

of mothers on the state of children's dental health, it is suggested that in addition to increasing access to oral and dental health services at the community level, the necessary training in comprehensive health service centers and also through mass media to Mothers are provided.

In the current study, the age of the studied mothers had no significant relationship with their level of oral and dental health literacy. This finding was consistent with the study of Vilella *et al.* [30]. In the study of Jones *et al.*, it was also found that older adults had higher oral and dental health literacy [31]. The reason for these differences can be the difference in the age group studied. In this study, the oral and dental health literacy of mothers had a significant relationship with their jobs. The oral and dental health literacy of working mothers was significantly higher than the oral and dental health literacy of homemakers. The reason for this significant relationship is more education of working women.

The findings of the present study showed that oral and dental health literacy of mothers with below-diploma education was significantly lower than other educational levels. These findings were consistent with the findings of the study by Richman *et al.* [32]. Based on this finding, it is necessary to emphasize more in the education provided to low-educated and homemaker mothers and to prepare educational content according to their level of literacy and make it available to them. Overall, the findings of this study showed that there is a statistically significant and inverse relationship between the oral and dental health literacy scores of mothers and the average number of decayed teeth, filled teeth, and missing teeth of their children. Thus, it is necessary to pay more attention to teaching the principles of oral and dental care for children and preventive interventions in the country's healthcare system.

Conclusion

The current study was done to determine the oral health literacy of mothers and its relationship with children's oral health status. The average oral and dental health literacy of the studied mothers was 46.66 ± 21.895 and the average number of decayed teeth, filled teeth, and missing teeth in their children was 3.84 ± 1.424 . There was an inverse and significant relationship between oral and dental health literacy of mothers with the overall score of the number of decayed teeth, filled teeth, and missing teeth of their children. The results showed that the oral and dental health literacy of mothers has a direct and meaningful relationship with their education. Based on the results obtained from the

present study, there is a significant relationship between the oral health literacy of mothers and the oral and dental health status of their children. Therefore, planning to increase the oral health literacy of mothers seems necessary to improve the oral and dental health of children.

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