

Mothers' knowledge, attitude, and practice regarding their primary school children's oral hygiene

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Background

Evaluation of parental knowledge, attitude, and practice regarding dental hygiene is an important tool which projects parent's outlook toward oral health of their children. Proper dental hygiene prevents dental caries and allows early detection for any abnormality in earlier stages.

Objective

The aim was to assess knowledge, attitude, and practice of mothers regarding oral health and its effect on their children's dental health status.

Participants and methods

This is a cross-sectional study of a random sample of 392 primary school children and their mothers. The children were selected randomly from two primary schools randomly selected from Shebeen El-Kom district's primary schools and proportionally allocated according to the total number of children in each school. A predesigned questionnaire was used to assess mother's knowledge, attitude, and practice regarding their child's oral hygiene.

Results

Good knowledge of proper oral hygiene was represented by 88.5% of the studied group. Approximately 70% of the studied group had positive attitude toward proper oral hygiene, and 52.3% had satisfactory level of oral hygiene practice. The study shows a statistical significant difference of mothers' good knowledge level and their education, occupation, and socioeconomic status. Proper knowledge and practice regarding oral hygiene statistically significantly increase the absence of decayed or filled teeth.

Conclusion

Good knowledge, positive attitude, and satisfactory practice of mothers regarding child's oral hygiene affect dental health status of the studied children.

Keywords:

attitudes, knowledge, practice and oral hygiene

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Introduction

Oral diseases are the most common noncommunicable diseases that affect people throughout their lifetime, causing pain, discomfort, disfigurement, and even death [1].

Poor oral health may profoundly affect general health. The burden of oral disease is particularly high for poor population groups in both developed and developing countries. Today, geographic space is comprehended as a functioning domain, a receptor of social procedures, and an activator of these procedures. Analysis of the example of disparity and spatial dissemination of oral problems is principal for the allotment of assets to regions with the best social privation, prompting more noteworthy endeavors to address the issues [2].

Dental caries has high prevalence, which varies from 49 to 83% across different countries [3]. Dental knowledge and practices depend upon with mother's education and demographic inhabitation as research studies consider that mothers with higher education have a better knowledge about oral hygiene and how

to modify their children's bad habits of oral health, like poor brushing habits, diet with high sugar intake, tooth decay, drink milk or sweet liquids at bedtime finally their social class and stressful life events [4].

Egypt released results of an epidemiological study on oral health status, which showed that utilization of dental services is not at optimal level. Overall, 40% of participants reported that they experienced dental problems at the time of examination but did not see a dentist for treatment. Visiting behaviors of participants showed that nearly 20% had not visited a dentist for more than 2 years and another 20% had never been to a dentist [5].

This study aimed to assess mother's knowledge, attitude, and practice regarding oral and dental health of their

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children among primary school in Shebeen El-Kom District, Menoufia Governorate, Egypt.

Participants and methods

This is a cross-sectional study that was approved by the Ethical Committee of Faculty of Medicine, Menoufia University. An official permission letter was obtained from the authorities and directed to Educational Administration in Shebeen Elkom district, and then written consents were granted by the headmasters of the selected schools. After clarifications of purposes of the study to the mothers of selected student, they were invited to the school to give full informed consent to participate. Written consents emphasized that all data collected were strictly confidential and data were used for scientific purpose only, and they have the right to fill the questionnaire or not.

The study was conducted in the context of time frame of 11 months from first of November 2018 to September 2019.

Sample size was calculated using EPI Info Program version 7 (CDC) in Atlanta, Georgia (USA), based on prevalence 58.2% of proper mothers' knowledge, in accordance with Mahmoud *et al.* [6]. The total number of primary school children was 85 989 in academic year 2018–2019 in Shebeen Elkom district. Two schools out of 121 primary schools in Shebeen Alkom district were selected randomly: Taha Hussein primary school in Shbeen Elkom city, which represented an urban area with total number of 692 students, and Met Khalaf primary school, which represent a rural area, with total number of 1574 students. A sample of 392 students was selected and proportional allocated according to total number of children in each school: 132 from the first school and 262 from the second one.

A predesigned questionnaire was used to assess mother's knowledge, attitude, and practice regarding oral hygiene through direct interview. This questionnaire included questions about sociodemographic data, including age, sex, family size, father's and mother's occupations, and father's and mother's education. Socioeconomic status (SES) was assessed according to El-Gilany *et al.* [7], which was formed of seven domains, with total score of 84 of these domains. SES was classified into three levels depending on the quartiles of the score calculated: those with score range from 19 to 38 (low), from 38 to 57 (middle), and from 57 to 84 (high social class). Another part is 13 questions for knowledge, seven questions for detection of their attitude, and 10 questions to evaluate practices.

The questionnaire assessed mother's knowledge by questions such as, what is best time for washing child teeth? What is adequate frequency to wash child teeth? What are causes of dental caries? Does florid have role in protection against dental caries? etc.

Mothers' attitude was assessed by questions such as, is it necessary to teach children teeth brushing? May dental caries affect child general health? Is it necessary to check child teeth regularly by dentist? etc.

Their practice was assessed by questions such as, what is mother's role in her child dental care? When was last time of her child visit dentist? etc.

The questions that assess the knowledge were 13 questions, which were scored as follows:

0 → for wrong answer and 1 → for right answer.

The overall knowledge score was calculated based on the number of questions answered correctly:

- (1) Good knowledge when total score greater than or equal to 75%
- (2) An average knowledge when total score 50–74%
- (3) Poor knowledge when total score less than 50%.

The questions that assessed attitude were seven questions, which were scored as follows:

0 → for negative attitude and 1 → for positive attitude.

The questions that assessed mothers' practice were 10 questions, which were scored as follows:

0 → for unsatisfactory practice and 1 → for satisfactory practice.

Attitude and practice scores were calculated based on the number of questions answered correctly:

- (1) Positive attitude/satisfactory practice if total score greater than or equal to 50%
- (2) Negative attitude/unsatisfactory practice if total score less than 50%.

Validity of the questionnaire was tested by being submitted to a panel of three experts to test its validity. The experts were professors in family medicine, community medicine, and dental medicine. The preliminary items were revised by the experts to determine whether the items were relevant for assessment. The expert were asked to evaluate individual items in relation to its relevance and appropriateness and then rate items on a four-point scale as follows:

- 4 – Adequate (simple, relevant, and clear)
- 3 – Adequate but needs minor revision

- 2 – Needs major modification
1 – Not so adequate (could be omitted).

Content validity index is the percentage of total items rated by experts as either 3 or 4. A score of greater than or equal to 80% is generally considered to have a good validity [8]. Content validity index of the designed questionnaire was calculated, and it was 95%.

Reliability of the questionnaire was calculated by SPSS version 20 using Cronbach's α , which was $r = 0.8$. Hence, the questionnaire is reliable.

Primary school children of the participated mothers were subjected to dental examination which was conducted within the school clinic by the researcher to detect numbers of normal, filled and decayed teeth. The children with infected teeth were referred to nearby schools dental clinic of the school's health insurance to be managed and treated.

Statistical design and analysis

Statistical analysis was conducted with SPSS V.20 (IBM, Armonk, New York, USA). Descriptive data were analyzed by calculation of mean value and SD for quantitative data, whereas frequency and percentage were used for qualitative data, which were analyzed using χ^2 for comparison between two independent qualitative variables normally distributed.

Results

Sociodemographic data of the participants

The mean age of the studied group was 8.3 ± 1.8 years. Mean age of mothers was 33.1 ± 5.8 years, range of 21–53 years. Regarding parent education, 62.8% of fathers were highly educated, ~one-third of them were professional workers, whereas 66.6% of the mothers were highly educated, and about half of them were housewives. Approximately 89% of families have crowding index more than one person per room. Moderate socioeconomic state represented 80% of the participants (Table 1).

Regarding mothers' knowledge

Good knowledge was represented by ~88.5% of the participants. Good maternal knowledge about child oral health was statistically significantly higher among mothers 30 years and older, highly educated, housewives, and mothers who had higher SES (Table 2). Approximately 72% of the mothers received their information and knowledge about oral and dental health from relatives (Fig. 1).

Table 1 The sociodemographic characteristic of the studied groups

	<i>n=393 [n (%)]</i>
Residence	
Rural	252 (64.2)
Urban	141 (35.8)
Age (mean \pm SD)	
Children	8.33 \pm 1.86
Father	38.18 \pm 6.7
Mother	33.1 \pm 5.8
Father's education	
Illiterate/read and write	13 (3.3)
Basic	23 (5.9)
Secondary	56 (14.2)
2-year institute	54 (13.7)
University or higher	247 (62.8)
Father occupation	
Nonworking	0 (0.0)
Unskilled manual worker	6 (1.5)
Skilled manual worker/farmer	49 (12.5)
Trades/business	54 (13.7)
Semiprofessional	140 (35.6)
Professional	144 (36.6)
Mother's education	
Illiterate/read and write	11 (2.8)
Basic	8 (2.0)
Secondary	52 (13.2)
2-year institute	60 (15.3)
University or higher	262 (66.6)
Mothers' occupation	
Nonworking	206 (52.4)
Unskilled manual worker	6 (1.5)
Skilled manual worker/farmer	4 (1.0)
Trades/business	12 (3.1)
Semi-professional	83 (21.1)
Professional	82 (20.9)
Family size	
<5 persons	186 (47.3)
\geq 5 persons	207 (52.7)
Crowding index	
<One person per room	42 (10.7)
\geq One person per room	351 (89.3)
Child education	
<50% in schools	71 (18.0)
\geq 50%	68 (17.3)
All children	254 (64.7)
Socioeconomic state	
High	200 (50.9)
Middle	168 (42.7)
Low	25 (6.4)

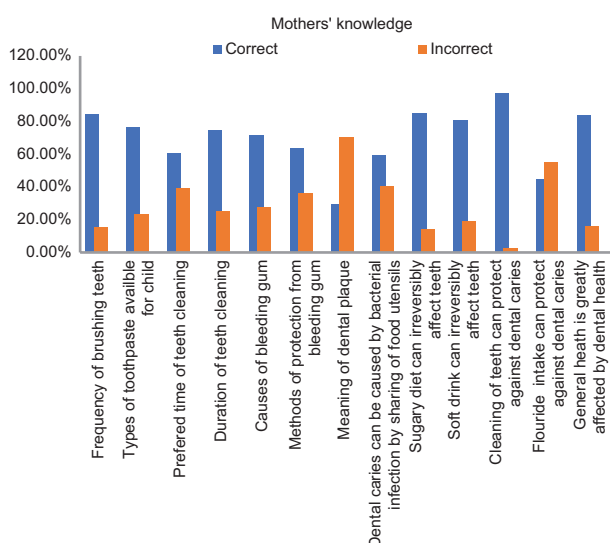
Approximately 96% of the mothers knew that teeth brushing protects against dental caries, and also 85 and 80% of them knew that sugary diet and soft drinks (respectively) are risky for dental caries. Overall, 82.6% reported that adequate frequency of teeth brushing is twice daily, ~76% of mothers knew different forms of toothpaste that could be used for their child dental care, 72.7% were aware that most common cause of bleeding gum is gingival disease,

Table 2 Relation between maternal knowledge score and their sociodemographic characteristics

	Good (n=348) [n (%)]	Fair (n=36) [n (%)]	Poor (n=9) [n (%)]	χ^2	P
Mothers' age (years)					
<30	129 (37.1)	14 (38.9)	5 (55.6)	1.30	0.521
≥30	219 (62.9)	22 (61.1)	4 (44.4)		
Mothers' education					
Illiterate/read and write	1 (0.3)	8 (22.2)	2 (22.2)	204.8	<0.001**
Basic	2 (0.6)	2 (5.6)	4 (44.4)		
Secondary	34 (9.8)	16 (44.4)	2 (22.2)		
Higher	311 (89.4)	10 (27.8)	1 (11.1)		
Mothers' occupation					
Housewife	177 (52.9)	22 (61.1)	9 (84.2)	9.5	0.008*
Working	185 (49.1)	14 (38.9)	0 (0.0)		
Residence					
Rural	123 (35.3)	13 (36.1)	5 (55.6)	1.56	0.459
Urban	225 (64.7)	23 (63.9)	4 (44.4)		
Socioeconomic state					
High	198 (56.9)	2 (5.6)	0 (0.0)	129.005	<0.001**
Middle	144 (41.4)	20 (55.6)	4 (44.4)		
Low	6 (1.7)	14 (38.9)	5 (55.6)		

*Statistical significant difference at $P < 0.05$. **Statistical significant difference at $P < 0.01$.

Figure 1



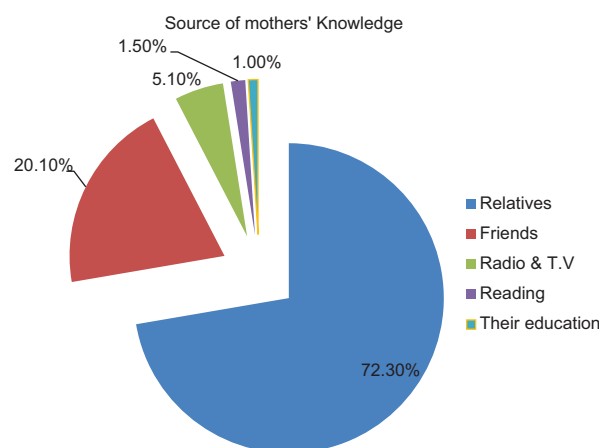
Mother' knowledge regarding their children oral health.

and 62.8% reported that teeth brushing and flossing protect against bleeding gums. Approximately 59% of them reported that dental caries may be due to oral bacterial infection, whereas only 45% of them mentioned that fluoride supplementation has a role in dental protection. Least knowledge of mothers was about definition of dental plaque (29.8%) and its drawbacks (36.9%) (Fig. 2).

Regarding mothers' attitude and practice toward oral care of their children, 70% of the mothers had positive attitude (Fig. 3) and 57% of mothers had satisfactory practice (Fig. 4).

There were statistically significant differences between mothers' knowledge score and their appropriate oral

Figure 2



Source of mothers' knowledge regarding their children oral hygiene.

hygienic practice and dental health status of their children (numbers of normal, filled or decayed teeth), as 66.7 and 44.4% of children who had filled and decayed teeth, respectively, their mothers had poor knowledge, and also 50.5 and 77.1% of children who had filled and decayed teeth, respectively, their mother had unsatisfactory practice (Tables 3 and 4).

Discussion

This study analyzed data from a large random sample of mothers living in Menoufia Governorate, Shebeen Elkom district, for the purpose of evaluating the knowledge, attitude, and practice regarding their children's oral health. The SES has an effect on the knowledge, attitude, and practices of parents, and hence, it can affect the level of parental care, which will

affect health status of their children in general and oral health status in specific.

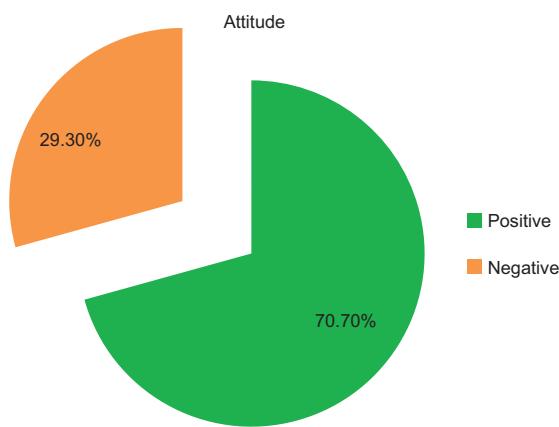
In this study, mean age of mothers was 33.1 ± 5.8 years, range of 21–53 years. Overall, 64.2% of them lived in rural area and 63.1% of them had income that just meets ordinary expense and emergency. Approximately 63% of mothers had high educational level (university graduate), whereas 52% of mothers were housewives.

Regarding mothers' knowledge in the current study, 88% of mothers had knowledge prescribed as good about oral hygiene of their children. Suresh *et al.* [9], in their study in India, reported that 73.8% of mothers had good knowledge, and also adequate knowledge was found among 58.2% of mothers in a study done

by Mahmoud *et al.* [6], in United Arab Emirates. On the contrary, Alzaidi *et al.* [10], in their study in Saudi Arabia, reported that 74.0% of mothers had insufficient knowledge. The great difference in mothers' knowledge may be related to difference in education level of participants in different studies.

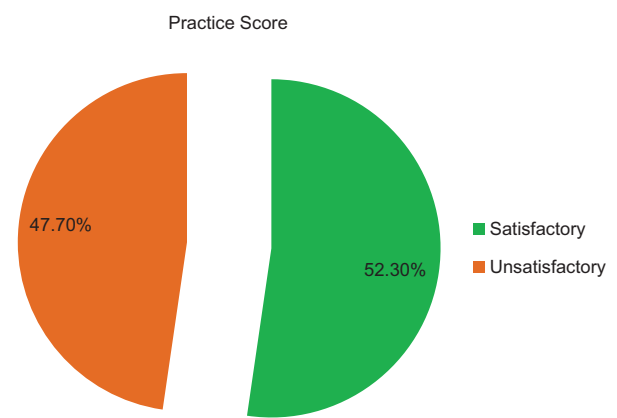
This study detected that the main source of mothers' information about children oral hygiene which was found to be from relatives (72.3%) and to less extent from different types of mass media. The study by Chala *et al.* [11] in Morocco was in agreement with this result, which showed that the main sources of information cited by mothers were family members and other mothers. However, it is in contrary to Nigerian mothers in the study by Oredugba *et al.* [12] and the study by Moslemi *et al.* [13] in Iran, who reported that ~53

Figure 3



Mothers' attitude toward their children oral health.

Figure 4



Mothers' practice regarding their children oral health.

Table 3 Maternal knowledge level and dental health status of their children

Knowledge score	Good (n=348) [n (%)]	Fair (n=36) [n (%)]	Poor (n=9) [n (%)]	χ^2	P
Number of filled teeth					
No filled teeth	150 (43.2)	7 (19.4)	1 (11.1)	11.08	0.025*
1-3	135 (38.7)	20 (55.6)	6 (66.7)		
≥3	63 (18.1)	9 (25.0)	2 (22.2)		
Number of decayed teeth					
No decayed teeth	150 (43.2)	7 (19.4)	1 (11.1)	15.37	0.003**
1-3	53 (15.2)	11 (30.6)	4 (44.4)		
≥3	145 (41.6)	18 (50.0)	4 (44.4)		

*Statistical significant difference at $P < 0.05$ **Statistical significant difference at $P < 0.01$.

Table 4 Maternal practice level and dental health status of their children

Practice score	Satisfactory (n=205) [n (%)]	Unsatisfactory (n=188) [n (%)]	Total (n=393) [n (%)]	χ^2	P
Number of filled teeth					
No filled teeth	100 (48.8)	58 (30.9)	158 (40.2)	13.68	0.001*
1-3	33 (16.1)	35 (18.6)	68 (17.3)		
≥3	72 (35.1)	95 (50.5)	167 (42.5)		
Number of decayed teeth					
No decayed teeth	100 (48.8)	0 (0.0)	100 (25.4)	120.8	<0.001**
-3	76 (37)	145 (77.1)	221 (56.2)		
≥3	29 (14.2)	43 (22.9)	72 (18.4)		

*Statistical significant difference at $P < 0.05$. **Statistical significant difference at $P < 0.01$.

and 77% of mothers received their information from electronic media and TV programs, respectively.

In the current study, ~85% of mothers knew that sugary diet is risky for dental caries, which disagreed with the results of a Nigerian study performed by Oredugba *et al.* [12], who found that 44% of mothers believed that type of food might lead to children dental caries.

In the present study, ~59% of mothers knew that dental caries may be due to oral bacterial infection, which was different to results of Dhull *et al.* [14], who concluded that 77.8% did not agree that caries causing bacteria is transferred from mother to the child.

Approximately 45% of the mothers who participated in our study believed that fluoride supplementation has a role in dental protection, which differs from results of Chala *et al.* [11], who reported that 60.9% of mothers were aware that fluoride has a beneficial effect in caries prevention.

Regarding mother's attitude toward their children oral hygiene, the result conveyed that majority of mothers (70.7%) had positive attitude toward oral care of their children. This result is in line with the study by Babu *et al.* [15] in India and Mubeen and Nisar [16] in Pakistan who reported that 59 and 55.5% of mothers, respectively, had positive attitude regarding oral health of their children.

In this study, it was found that mothers' practice regarding their children oral health was satisfactory, as 52.3% of mothers were well versed in dental practices of their children in the term of washing methods, brushing interval, and time of seeking dentist care. The result of the study by Jain *et al.* [17], done in Mumbai, India, was in parallel with our study, as 58.8% of mothers were following satisfactory practices toward a children's oral health. Moreover, Chala *et al.* [11], in a study in Morocco, showed that mothers' own practices about dental care were statistically related to their children's use of dental care, with *P* value less than 0.001. This is in contrary to the study done by Rajanna *et al.* [18], in Rajasthan, India, and Abduljalil and Abuaffan [19], in Sudan, as awareness of oral hygiene practices among mothers was found to be very poor.

Regarding children's oral hygiene status (number of filled and decayed teeth) in relation to mother's knowledge about healthy oral cavity of their children, the current study showed that there were statistically significant differences between mothers' knowledge and numbers of filled and decayed teeth. This result is in agreement with an Indian study done by Chand *et al.* [20], who found that mothers' oral hygiene

knowledge had a significant correlation with oral hygiene status of their children (*P* = 0.00).

The current study showed an association between presence of filled and decayed teeth among children who had poorly practicing mothers regarding oral hygiene of their children; among 50.5 and 77.1% of children who had filled and decayed teeth, respectively, their mother had unsatisfactory practice. This result matches a study done in South America by Percival *et al.* [21] who reported that 58.6% of children who had early childhood caries (early childhood caries means presence of 1 or more decayed teeth), their mothers had poor practices, with *P* value less than or equal to 0.001.

Conclusion

Good knowledge, positive attitude, and satisfactory practice of mothers regarding child's oral hygiene positively affect dental health status of the studied children.

Recommendations

Based on results of this study, it is recommended that periodic screening should be provided for early detection of oral diseases among school children and also updating national health policies, strategies, and plans to ensure that maternal and child oral health is specifically identified as a priority area with specified resources. Mass media should provide continuous health education on the importance and methods of oral hygienic practice and teeth protection in children.

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Conflicts of interest

There are no conflicts of interest.

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