ORIGINAL ARTICLE

MOTHER'S KNOWLEDGE, ATTITUDE, AND PRACTICES RELATED TO THEIR 1–5-YEAR-OLD CHILDREN'S ORAL HEALTH STATUS, RIYADH, SAUDI ARABIA

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ABSTRACT

The aim of the present study was to evaluate mother's knowledge, attitude, and practice towards their preschool children's oral health in University Medical City, Saudi Arabia. Across-sectional study design. A questionnaire was distributed among mothers of children less than five years of age attending well-baby clinics at University Medical City in Riyadh, Saudi Arabia. Among 285 mothers included, 156 (54.7%) age were 30 to 39 years old and 140 (49.12%) had a bachelor's degree and 207 (72.6%) were housewives. Almost all 284 (99.6%) mothers were aware that teeth are an important part of the body. A great majority of 218 (76.5%) of the mothers agreed that "primary teeth are important for a child's general health. Similarly, 90.5% of the mothers agreed that ''consumption of sweet and sticky foods affect dental health". But, the awareness that the important role of the dentist in the prevention of oral diseases, the main source of dental health information, and the importance of dental visits was less in mothers who had incomplete schooling when compared with graduate mothers. The study's findings revealed a lack of knowledge, attitude, and practice among mothers about their children's oral health, indicating the need for an oral health promotion program to close the gaps.

Keywords: *Parents, Preschool, Knowledge, Oral health, Attitude, Practice. Saudi Arabia*

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INTRODUCTION

Oral health is an important section of good general health, and act taking a most important role in a child's life. Dental caries is one of the most important world-wide oral health problems. In most unindustrialized countries, the levels of dental caries were having been low but now have a tendency to increase.[1] Dental caries is an infectious disease that affects 60%–90% of children worldwide between the ages of 2 and 11 years.[2]Children under age 5 years commonly spend most of their time with parents and caretakers, specifically mothers, even when they attend preschool or kindergarten. These early years include "primary socialization, "all through which the earliest childhood routines and habits are developed.[3] Then, initiating basic good oral health habits is essential to establish appropriate dental models that will be maintained into adult life. Mothers use to teach children proper hygiene skills, dietary habits, and healthy practices.[4] Research has shown that mother's dental awareness has an important impact on their children's oral health and oral health-related behaviors.[5–9] The research study revealed that educating mothers in good practices of oral health and adopting a better lifestyle in general may produce positive changes and an increase in long-term benefits for both the mother's and child's health.[10,11] Without having a basic knowledge of caries risk factors, mothers of children with primary teeth face difficulty in keeping their oral hygiene status good, and it will become difficult to implement effective strategies for caries prevention.[12,13] If these issues receive more emphasis, they can help improve hygienic attitude and behaviors and indirectly affect children's health.[14]So, the mother's knowledge, attitude, and practices regarding a child's oral health are very significant, but there have been inadequate studies of this type published in Saudi Arabia. This study is intended to determine the knowledge, attitude, and practices of mothers about the oral health of their children, and it will hopefully support the development and implementation of long-term, oral-health- awareness programs for mothers related to caries prevention in childhood. As a result, the aim of this cross-sectional study was to evaluate mothers' knowledge, attitude, and practice of their children's oral health (1 to 5 years of age from University Medical City in Riyadh, Saudi Arabia.

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METHODOLOGY

This cross-sectional study was carried out among the mothers who reported to the University Medical City who accompanied 1–5-year-old children who attended pediatric clinics (well-baby clinics) for medical treatment. The study was approved by the Institutional Review Board and Ethics Committee, College of Dentistry Research Center (IRB # 19-3670). To estimate the actual sample, the knowledge, attitudes, and practices of mothers, at power 0.93, α =0.05, and maximum difference of 8%, the sample size was determined to be at least 300. Informed consent was also obtained from each participant before commencement of the study.

The purpose of the study was explained to the mothers and confidentiality was assured. Participation was entirely voluntary. No risks to the participants were anticipated due to this study. Inclusion criteria were Saudi mothers whose children were aged 1–5 years and were mentally and physically stable to answer the questionnaire. Excluded were mothers who did not agree to participate or those who failed to meet the inclusion criteria.

This questionnaire purported to investigate the knowledge, attitudes, and practices of mothers regarding the oral health of their children, drawing on previous research in this area [6,15-19] with necessary modifications being made according to patient's lifestyle and the cultural sensitivities of the study population. The data were obtained through a questionnaire consisting of a set of 20 multiple-choice questions and eight Likert-scale questions. This was a useful way to collect information on sociodemographic data; parents' age, sex, and educational level; as well as knowledge, attitude, and what practices are used for their preschool children's oral health care in Riyadh, Saudi Arabia. The questionnaires were prepared in English before they were translated into the local language (Arabic) and then back to English to confirm accuracy.

The data were coded, computerized, and analyzed using SPSS pc+ version 22.0 statistical software (IBM Inc, Chicago, Ill, USA). Descriptive statistics (mean, standard deviation, frequencies, and percentages) were used to describe the quantitative and categorical variables. Descriptive statistics, frequency distribution tests, and chi-square analysis were employed. Confidence interval was kept at 95% and the *P*-value ≤ 0.05 was considered to be statistically significant.

RESULTS

A sample of 285 mothers was included in the study. The sociodemographic characteristics of the included mothers are represented in Table 1. According to their ages, almost half (54.7%) of mothers were between 30 and 39 years of age. About half (47%) of mothers had three or more children. Regarding educational status, 49.12 % of mothers had a bachelor's degree. Almost two-thirds were housewives, while 63.2% were in a high socioeconomic status.

Figure 1 shows the mother's knowledge about their child's oral health their preschool oral health. Interestingly, 99.6% of mothers were aware that teeth are important for the body. Similarly, 93% of the mothers agreed that "consumption of sweet and sticky foods disturbs dental health." The majority (76.5 %) of the mothers agreed that "primary teeth are important for the child's general health" and only 43.5% and 51.6% mothers were found to have complete knowledge about the harmful effects of prolonged bottle feeding on dental health and knew the importance of using fluoridated toothpaste for their children's teeth, respectively. Furthermore, 61.8% of the mothers were aware of the role of the dentist in preventing oral diseases, and 88.4% knew the benefit of visiting a dentist for check-ups, 27.7 % were unaware that they should supervise their child during brushing until they start attending school.

Mothers' responses to various questions are listed in Figure 2. Regarding self-assessment of oral health, almost 38.2 % agreed and 51.2% strongly agreed that good oral health is related to the general health of their child. A great majority (52.6%) of the mothers strongly agreed and 40% agreed that there is a "necessity to clean the child's teeth after every meal." However, more than one-fourth (28.1%) of the mothers did not agree that "cleaning of the child's teeth should be guided by the mother." Similarly, only one fourth (24.9%) of the mothers strongly agreed with the statement, "primary teeth do not require good care as they are going to fall away." About nine in 10 (91.9%) mothers strongly agreed that "milk teeth are essential for children to

TABLE 1: THE SOCIO-ECONOMIC CHARACTERISTICS OF THE MOTHERS INCLUDED IN THE SAMPLE.

Mothers age (years)	18–19	5 (1.8%)
	20–29	91 (31.9)
	30–39	156 (54.7)
	40 and older	33 (11.6)
Education level of mothers	Below high school	26 (9.12)
	High school	119 (41.8)
	University degree	140 (49.12)
Employment status of mothers	Not Working	207 (72.6)
	Working	67 (23.5)
	Student	11 (3.9)
Number of children in family	1	55 (19.3)
	2	96 (33.7)
	More than 3	134 (47)
Family economic status	Good	180 (63.2)
	Median	102 (35.8)
	Poor	3 (1.1)

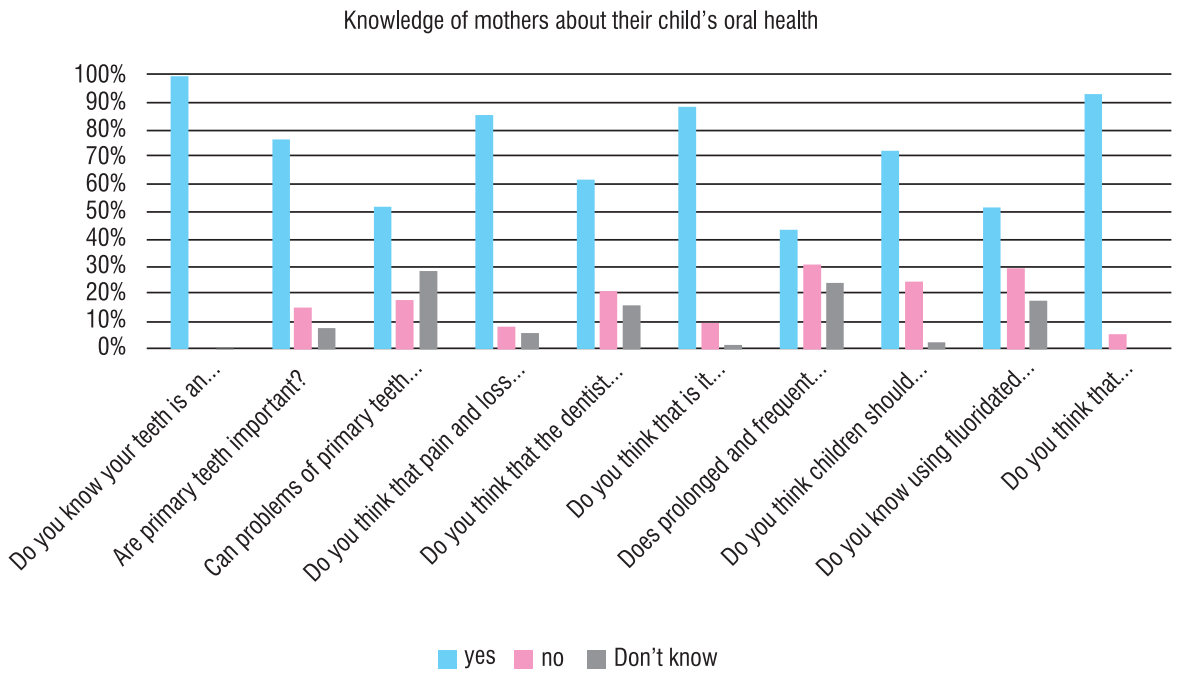

Fig 1: Knowledge of mothers about their child's oral health.

Q	tQuestions	Responses [N (%)]		
		Yes	No	Don't know
1	Do you know your teeth is an important part of your body?	284	0	1
		99.6%	0%	0.4%
2	Are primary teeth important?	218	44	23
		76.5	15.4	8.1
3	Can problems of primary teeth affect the permanent teeth?	148	52	85
		51.9	18.2	29.8
4	Do you think that pain and loss of teeth due to dental caries in certain teeth can be prevented by sealing at an early stage?	243	24	18
		85.3	8.4	6.3
5	Do you think that the dentist plays an important role in the prevention of oral diseases?	176	61	48
		61.8	21.4	16.8
6	Do you think that is it necessary to go for a dental check-up?	252	28	5
		88.4	9.8	1.8
7	Does prolonged and frequent bottle feeding affect dental health?	124	89	72
		43.5	31.2	25.3
8	Do you think children should have their teeth brushed by an adult until they are in school age?	206	71	8
		72.3	24.9	2.8
9	Do you know using fluoridated toothpaste is good for your children's teeth?	147	85	53
		51.6	29.8	18.6
10	Do you think that consumption of sweet and sticky foods affects dental health?	265	16	4
		93	5.6	1.4

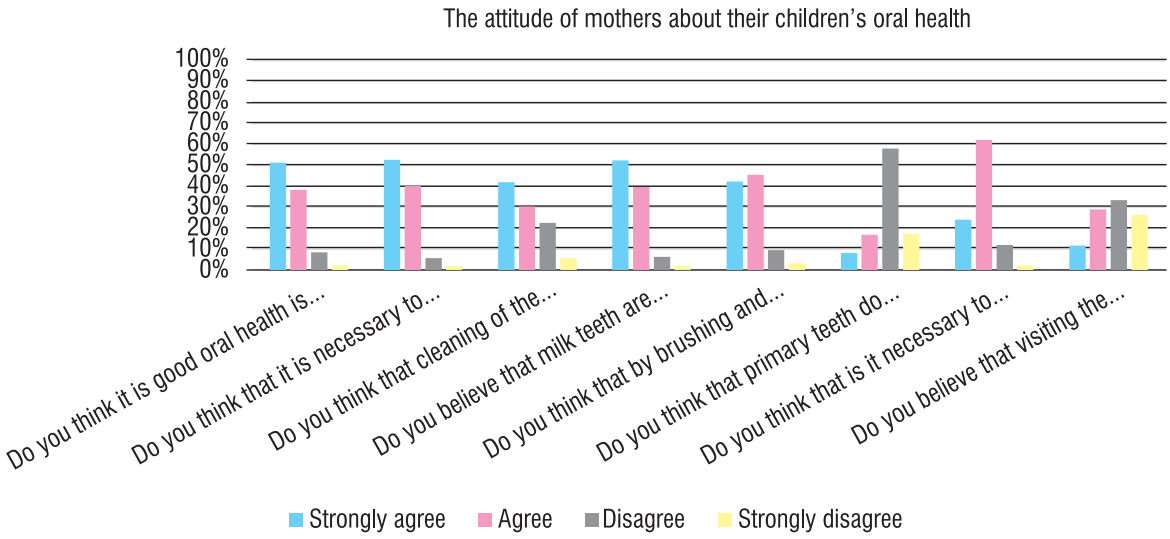

Fig 2: The attitude of mothers about their children's oral health.

Q.	Questions	Responses [N (%)]			
		Strongly agree	Agree	Disagree	Strongly disagree
1	Do you think it is good oral health is related to the general health of your child?	146	109	24	6
		51.2%	38.2%	8.4%	2.1%
2	Do you think that it is necessary to clean the child's teeth after every meal?	150	114	16	5
		52.6	40	5.6	1.8
3	Do you think that cleaning of the child's teeth should be guided by the mother?	119	86	64	16
		41.8	30.2	22.5	5.6
4	Do you believe that milk teeth are essential for children to chew food properly?	149	113	18	5
		52.3	39.6	6.3	1.8
5	Do you think that by brushing and flossing your child's teeth will help in preventing tooth decay?	120	129	27	9
		42.1	45.3	9.5	3.2
6	Do you think that primary teeth do not require good care as it is going to fall away?	23	48	165	49
		8.1	16.8	57.9	17.2
7	Do you think that is it necessary to take your child for regular dental visits?	68	177	34	6
		23.9	62.1	11.9	2.1
8	Do you believe that visiting the dentist is only necessary only when your child experiences pain?	33	82	95	75
		11.6	28.8	33.3	26.3

chew food properly." Moreover, most (87.4%) strongly agreed that brushing and flossing of a child's primary teeth will help in preventing tooth decay. However, only 14% of the mothers did not know or disagreed that it was necessary to take your child for regular dental visits. A similar 40.4% of the mothers strongly agreed that children only experience pain when visiting the dentist.

Table 2 shows the mothers' knowledge regarding different aspects of a child's oral health such as hygiene practices. In relation to the knowledge, mothers generally showed poor practices. In terms of visiting the dentist, only 1.8% of the mothers reported that their children made their first dental visit 6 months after birth and 28.4% of the mother's children had not yet visited the dentist. Of the children who visited the dentist, nearly half (45.6%) of the mothers visited their dentist only when a problem occurred, such as pain.

Most mothers (72.6%) visited a dentist if their children have signs of tooth decay; 3.5% of the mothers try to cope with it. More than half (54.7%) thought that children should have their teeth brushed after

TABLE 2: THE PRACTICE OF MOTHERS ABOUT THEIR CHILDREN'S ORAL HEALTH.

Questions	**Responses [N (%)]**				
Question.1	Bright teeth	Prevent decay	Foul breath		
Reasons for brushing teeth	36(12.6)	234(82.1)	15(5.3)		
Question.2	Horizontal	Vertical	Rolling	Not particular	
Methods of brushing	69(24.2)	89(31.2)	50(17.5)	77(27)	
Question.3	Toothbrush with toothpaste	Toothbrush with water	Miswak	Wooden sticks	None of the above
Mainly Method of oral hygiene	258(90.5)	1(0.4)	18(6.3)	1(0.4)	7(2.5)
Question.4	Once a day	Twice a day	More than twice a day	Never brush	
The frequency of tooth brushing	106(37.2)	142(49.8)	11(3.9)	26(9.1)	
Question.5	Soon after first milk tooth had erupted	After 4-6 milk teeth had erupted	After all milk tooth had erupted	After the first birthday of your child	
When did you commence the cleaning of your child's teeth?	18(6.3)	38(13.3)	156(54.7)	73(25.6)	
Question.6	Once in 15 days	Once in a month	Every 2-3 months	Once the bristle frays out	
When do you change your child's toothbrush?	5(1.8)	27(9.5)	92(32.3)	161(56.5)	
Question.7	Yes	No	Never		
Do you ask your child to rinse his mouth after each meal?	186(65.3)	73(25.6)	26(9.1)		
Question.8	With meal	In between meal	Before going to bed	Not particular	
At what times do you give the sugary food items to your child?	22(7.7)	53(18.6)	10(3.5)	200(70.2)	
Question.9	Try to cope up	Visit the dentist	Brush teeth		
If having signs of tooth decay what do you do?	10(3.5)	207(72.6)	68(23.9)		
Question.10	6 months after birth	After the eruption of first milk teeth	1 year after birth	Only when there is any problem	Never visit dentist
When was your child's dental visit?	5(1.8)	18(6.3)	51(17.9)	130(45.6)	81(28.4)

TABLE 3: RELATIONSHIP BETWEEN MATERNAL VARIABLES AND KNOWLEDGE REGARDING THE IMPORTANCE OF PRIMARY TEETH, NECESSARY TO GO THEIR CHILDREN FOR A DENTAL CHECK-UP AND, FREQUENCY OF TOOTH BRUSHING.

Maternal variables	**Are primary teeth important?**				**Do you think that is it necessary to go for a dental check-up?**				**The frequency of tooth brushing**				
	Yes	**no**	**Don't know**	**P-value**	**Yes**	**no**	**Don't know**	**P-value**	**Once a day**	**Twice a day**	**More than twice a day**	**Never brush**	**P-value**
Mother's age													
18–20	4	0	1		5	0	1		1	3	1	0	
21–29	78	7	6	0.035	87	4	0	0.028	44	40	2	5	0.658
30–40	117	28	11		134	20	2		52	82	7	15	
Older than 40	19	9	5		27	4	2		9	17	1	6	
Employment status													
Not working	155	35	17	0.240	181	22	4	0.685	79	101	9	18	0.317
Working	55	8	4		61	5	1		24	37	1	5	
Student	8	1	2		10	1	0		3	4	1	3	
Level of education													
Below high school	13	8	5	0.035	19	3	4	0.629	6	9	2	9	0.009
high school	87	50	12		105	13	1		44	64	2	9	
University degree	118	16	6		128	12	0		56	69	7	8	

* significant difference at P.

all primary teeth had erupted and only 6.3% chose to start brushing soon after the first primary tooth had erupted. Besides, 82.1% of the mothers felt that the main reasons for brushing teeth of their children were to prevent decay. Almost half (49.8%) of the mothers have stated that they brushed their children's teeth twice per day. Most of the mothers (90.5%) mainly used a toothbrush with toothpaste when brushing their children's teeth. Regarding snacking, 70.2% of the mothers exposed their children to sugary snacks at no particular times. Table 3 shows that the knowledge regarding the importance of primary teeth and the necessity of bringing their children for a dental check-up show significant differences among all age groups, whereas knowledge regarding the frequency of their children's tooth brushing showed no significant differences among all age groups and employment status.

A significant difference was seen in the attitude of mothers regarding the frequency of tooth brushing of their children with their education level. Mothers who were graduates brushed their children's teeth twice a day. No significant difference existed about the knowledge of mothers, who were university and school graduates, about the necessity of taking their children for a dental check-up (Table 3).

DISCUSSION

This cross-sectional study aimed at assessing the knowledge and attitude of a group of Saudi mothers attending pediatric (well-baby) clinics at the University Medical City in Riyadh regarding their children's oral health. This information can be used to prepare baseline data in planning and evaluating the oral health program. Mothers' knowledge and behaviors toward dental health have also been related with a child's oral health.[20] Educating mothers with the correct information would create an opportunity to improve the overall health and well-being of the future generation by inculcating good oral health practices in childhood.

Assessing and analyzing the knowledge of a child's caregivers may contribute to solving some health issues in any given community. The results showed that an overwhelming majority agreed on various aspects of oral health. The findings revealed relatively low-to-moderate levels of knowledge of certain aspects of their children's oral health but sufficient knowledge of aspects related to their attitudes such as necessity of taking your child for regular dental visits. Concerning the importance of frequent dental visits, 88.4% of mothers were aware of the importance of frequent dental visits, which were in agreement with studies among Kuwaiti and American mothers.[21,22] The findings of the current study, on the other hand, were disagreement by Indian mothers.[15,23] Many researchers showed convincingly that those children's, adolescents' and parent's dental fears are related to avoiding dental care and lack of dental care utilization.[24–26] A similarly high percentage (89.4%) of the mothers agreed that dental health affected general body health. This was in line with the previous studies, although another Indian study showed less knowledge.[15,21,22,27,28] Mother's knowledge about the importance of primary teeth and the importance of visiting the dentist in preventing oral disease was 76.5 % and 61.8%, respectively, which is consistent with previous studies.[4,6,15,22,29,30,31] Knowledge of the importance of primary teeth was much better among Canadian and Australian mothers.[28,32] These findings were particularly significant among those between 30 and 40. Brackley et al. noticed that, although mothers agreed on the importance of primary teeth, they could not explain why that is important.[33] Hence, educational information given to caregivers ought to include all aspects of any issue when disseminated, and it should be explained easily and understandably.

Several studies collected in other parts of the world stated that the knowledge of mothers/guardians to be a significant factor in the prevention of oral disease.[20,21,34–36] Educated mothers can better take care of their children's oral hygiene. Similar findings have been reported from a study that low educational level was strongly associated with a lack of information about an oral health issue and lack of access to dental care than those who have a higher education.[37] This may be due to the fact that parents with higher educational levels are expected to have more positive health attitudes and pay greater attention to the health of their children. Williams et al.[38] suggest that parents with a higher level of education may be better able to evaluate the proper source of information and understand that information more completely.

The effect of diet on a child's oral health seemed to be well acknowledged among the mothers. The influence of sugar or sugary substances on the teeth should be a well-known theme, solidified in maternal knowledge, because the deficiency in care has an impact on oral health, as previously reported in other studies.[39–41] Most of the mothers (93%) have been educated about the cariogenicity of sugary food, which comported with previous studies in Kuwait, Saudi Arabia, India, and Malaysia.[4,6,22,29] In contrast, a study among urban Mexican American and immigrant Latino mothers stated a limited depth of knowledge on the frequency of sugar consumption.[42] In this study, only 43.5% of mothers recognized the effect of prolonged and frequent bottle feeding on dental health. This is in contrast to another study showing that the reason for prolonged bottle-feeding included: low knowledge of the proper time to stop feeding, the belief that young children must drink a high volume of milk (a child asks for the bottle at night and parental feeling that the child was too young to not be drinking from a bottle).[43] In particular, parents need to know about proper feeding practices and can avoid their damaging effects.

Most mothers had inadequate knowledge with regard to the duration of brushing teeth and the importance of fluoridated toothpaste. Our study showed that most mothers did know that the need for parental assistance is necessary up to the age of

7 years; inconsistent results have been reported from other studies.[42,44] In the present study, mothers had a negative attitude toward the recommended brushing technique, Studies revealed that Latina mothers also lack knowledge regarding brushing techniques such as frequency and duration of brushing and the importance of fluoridated toothpaste.[45,46] According to the AAPD "the first dental visit should be at the time of eruption of the first primary tooth and no later than 12 months of age".[47] The results of the present study showed maternal knowledge (6.3%) about the ideal time for the first dental visit, in agreement with other studies.[15,21,22,48,49] Whereas Canadian and Saudi mothers had better knowledge.[6,28] Tooth brushing commenced after eruption of all primary teeth in 54.7% of families. Regarding frequency, 37.2% brush their child's teeth once a day. The result of the present study was comparable with studies from UAE, India, and Kosovo, that exhibited relatively lower practice scores. On the other hand, some previous studies showed more positive results.[22,29,32,49-51] Knowledge of the time should be start to brush children's teeth was not determined in half the mothers (51.7%) in the present study, of the mothers knew the effect. The same was noted by Indian, American, and Chinese mothers, whereas Australian mothers were more certain.[4,31,32,48] Overall, the oral health knowledge, attitude, and practices of mothers were in the poor category. The reported high levels of dental caries among children in Saudi Arabia could be partly attributed to low levels of knowledge and oral health-promoting practices among children and their caregivers.[52] As different sections of the community have different culture, food habits, priorities, and practices, appropriate oral health programs with approaches designed for specific requirements, targeting different groups, should be planned. Though mothers displayed a reasonable level of knowledge, one should interpret the current data carefully, because this study might have such results from sampling mothers through the Internet, targeting more knowledgeable and more affluent mothers compared with non-Internet users. Improving the level of knowledge of mothers will lead to improved oral health behavior of their children. Suresh et al.[4] stated that parents, especially mothers, need to be helped to realize that they are role models for their children and be encouraged to improve the child's dental health habits.

CONCLUSION

Results of the present survey revealed that mothers' knowledge, attitude, and practices concerning the oral health of preschool children was low, requiring planning for future oral health treatment programs to close the gaps. However, there were a few limitations in this study as data was collected from a self-administered questionnaire by mothers who might be a source of subjective bias, might not represent the real status of oral health; furthermore, no clinical examination for the children was performed.

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