

What do Parents Know About Oral Health and Care for Preschool Children in the Central Region of Saudi Arabia?

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Abstract

Objective: To assess the knowledge level of parents from the central region of Saudi Arabia about oral health and care of preschool children and its relation with sociodemographic variables, parents' self-perception toward their dental health, importance of teeth, and frequency of dental visits. **Material and Methods:** A random sample of 754 parents participated in this cross-sectional study and completed an internationally accepted questionnaire. Chi-square test and logistic regression analysis were used to analyze the data ($p < 0.05$). **Results:** Mean knowledge score of the parents was 4.8 (out of 11). Less than 20% of the parents were knowledgeable about the best position for tooth brushing, the concentration of fluoride in a child's toothpaste, timing of first dental check-up, and best time to give a sugary snack. Mothers, parents with high educational level and family income, parents with a positive attitude towards teeth and excellent self-perception of their dental health were significantly more likely to score higher ($p < 0.05$). **Conclusion:** Knowledge of parents about oral health and care of preschool children in the central region of Saudi Arabia was deficient. Gender, education level of parents, family income, attitude about teeth and self-perception of parents' own dental health were factors, which influenced their knowledge. To improve parents' knowledge, health professionals' role should be improved, and TV commercials directed toward the areas, which had gaps in knowledge.

Keywords: Child; Health Knowledge, Attitudes, Practice; Oral Health.

Introduction

Early childhood caries (ECC) is a chronic transmissible infectious disease and multifactorial in nature. According to the American Academy of Pediatric Dentistry (AAPD), ECC is defined as the presence of one or more decayed, missing (due to caries), or filled tooth surface in any primary tooth in a child 6 years old or younger. At a very young age (three years of age and younger), any sign of smooth-surface caries constitutes severe ECC [1].

Without treatment, ECC can progress rapidly, causing pain and dental infection with a major impact on the quality of life and the ability to function in affected children [2-6]. Health care costs will also increase as dental treatment under general anesthesia may become required among the severe untreated cases and uncooperative children. Having children hospitalized because of ECC is very common, especially in developing countries [2-5]. Several studies have evaluated and categorized the risk factors of ECC, such as sociodemographic factors, dietary factors, oral hygiene factors, and factors related to oral bacterial flora as well as breast and bottle feeding [7].

As many of these risk factors can be prevented and require modification at the home level, parents' engagement, who are the legal guardians of children, particularly at a very young age, has been encouraged to facilitate preventive measures [8,9]. Parental perceptions about their children's oral health can affect the preventive dental care children receive at home and their use of professional dental services [10]. Hence, knowledge of parents regarding dietary recommendations, oral hygiene best practices as well as early establishment of a dental home for preschool children is crucial to reduce the burden of ECC [1,11]. Lack of parents' knowledge of oral health care for preschool children has been linked with an increase in ECC risk in their children [12].

In Saudi Arabia, ECC is a prevalent condition among preschool children. Prevalence estimates ranging from 27.3-73% were reported in different regions of the country [13-15]. Previous reports have demonstrated insufficient knowledge of parents regarding oral health care best practices for their children [16,17]. Identifying areas with gaps in knowledge is important to direct education programs toward them and get them improved.

Therefore, the objective of this study was to assess the knowledge level of parents from the central region of Saudi Arabia about oral health and care of preschool children and its relation with sociodemographic variables, parents' self-perception toward their own dental health, as well as importance of teeth and frequency of dental visits.

Material and Methods

Ethical Approval

Ethical approval was obtained from the Ethical Committee of College of Dentistry, Qassim University (Reference Number: F-2019-3002).

Study Population

This was a cross-sectional study conducted on a random sample of Saudi parents from the country's central region who were contacted through social networking sites (Facebook and Twitter). Parents were recruited from social networking sites as these are very popular in Saudi Arabia. The inclusion criteria for the study were: parents who were residing in the central region of Saudi Arabia as well as speak and understand the Arabic language, parents who had a healthy, with no chronic illness or congenital anomaly, preschool child

in the age range 6 months-6 years, parents who gave written consent to participate in the study, and parents who had an account on Facebook or Twitter.

A sample size calculation was undertaken using the web site <http://www.raosoft.com/samplesize.html>. A 5% margin of error was selected, along with a 95% confidence interval and 50% response distribution. The calculated sample size was 377 parents; however, because it was difficult to ascertain whether that sample size would elicit sufficient responses from all parents (fathers and mothers), it was aimed to recruit at least double the number to achieve a representative sample.

Study Measures

Parents were sent a structured electronic questionnaire in the Arabic language in the period of October 2019 to March 2020. The Google form platform was used because it is available with no requirement for the parents to register [16]. The questionnaire was written initially in the English language, and it was a slight modification from a questionnaire previously adopted [10]. The questionnaire was then translated into the Arabic language and then back in the English language to ensure accuracy. English and Arabic versions were validated by two independent investigators to ensure the similarity of the content of both versions. The questionnaire consisted of three parts and aimed to assess: (1) sociodemographic profile of the parents, (2) self-perception of the parents' own dental health, importance of teeth and frequency of dental visits, and (3) parents' knowledge on oral health and care of preschool children.

Data Analysis

Statistical analysis of the data was conducted using the SPSS software, version 22.0 (SPSS Inc., Chicago, IL, USA). Percentages of parents' responses toward the questions, which assessed their sociodemographic profile, self-perception toward their overall dental health, importance of teeth and frequency of dental visits, and their knowledge about oral health and care of preschool children, were produced. Chi-square test was used to determine the relationship between the individual knowledge questions and the sociodemographic characteristics of the parents as well as the relationship between the questions, which assessed the parents' self-perception of their own dental health, importance of teeth, and frequency of dental visits with their sociodemographic characteristics. Parents were given a knowledge score, which ranged from 0 to 11 according to their answers on the knowledge questions. Every correct answer equaled one point. Mean knowledge scores were computed, and ordinal logistic regression analysis was used to ascertain the association of parents' sociodemographic profile, self-perception of their own dental health, and importance of teeth and dental visits with their mean knowledge score. The level of significance was set at $p < 0.05$ throughout.

Results

A total of 754 questionnaires were shared with the parents through Facebook and Twitter. A total of 192 questionnaires were not answered completely; consequently, they were excluded. The overall response rate was 74.5%. The final sample was 562 parents who answered questionnaires for 562 preschool children.

Description of parents' sociodemographic background, as well as their self-perception towards their own overall dental health, importance of teeth and frequency of dental visits are summarized in Figures 1 and 2, respectively. At the same time, Table 1 shows the percentages of parents' responses in the questions which assessed their knowledge of oral health and care of preschool children.

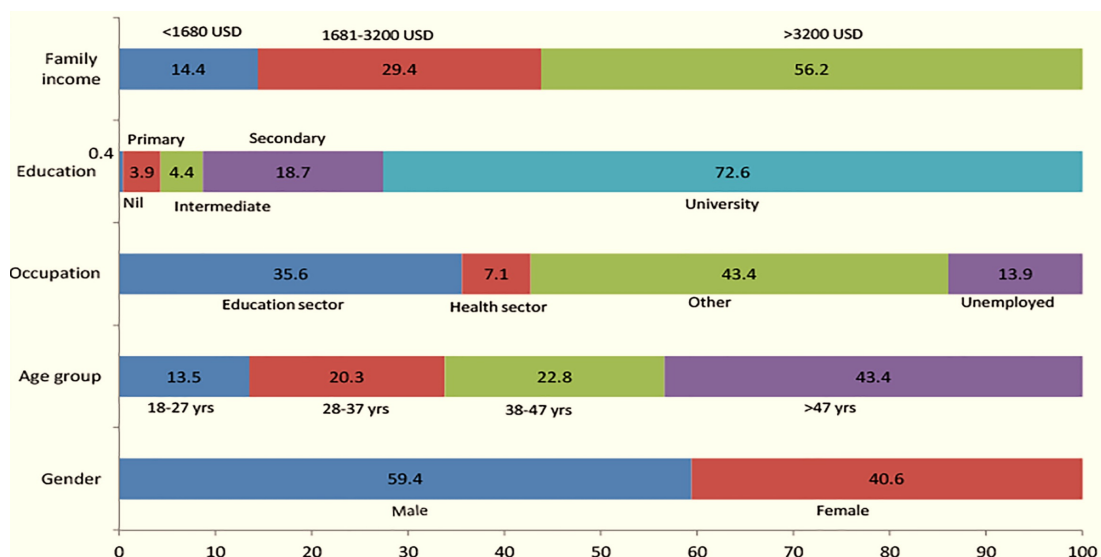


Figure 1. Parents' sociodemographic characteristics.

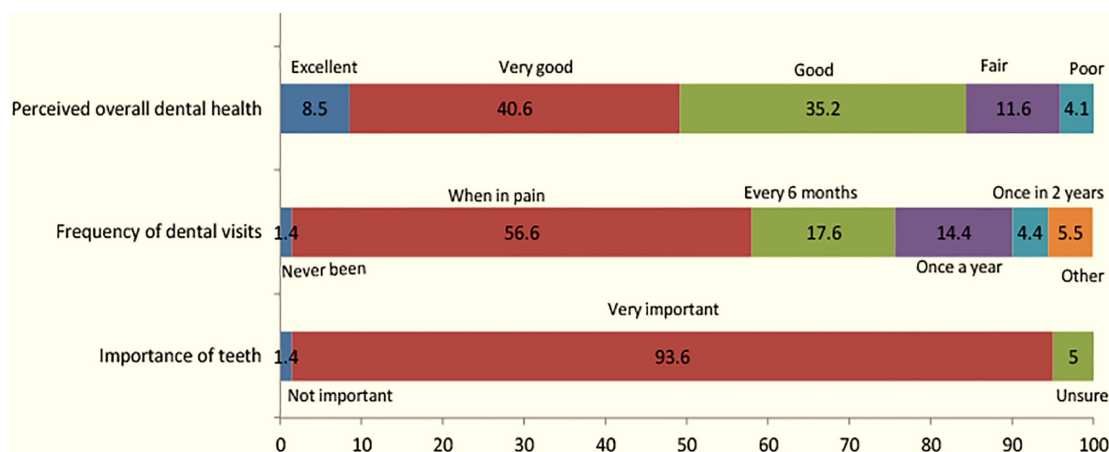


Figure 2. Parents' self-perception about their overall dental health, importance of teeth and frequency of dental visits.

Just less than half of the parents (48.6%) identified the correct answer regarding optimum frequency of oral hygiene measures “twice daily”. Significantly more mothers answered that question correctly when compared to fathers ($p=0.014$). More than two-thirds of the parents (66.0%) identified the correct answer with regards to optimum size of toothbrush for their child “small”, as well as thought that decay of primary teeth was “very important” (65.5%).

Significantly more parents with a university degree answered the former question correctly, while significantly more mothers answered correctly the latter question ($p= 0.005$ and 0.001 , respectively). Little more than half of the parents (55.5%) knew that fluoride should be present in a child’s toothpaste. Significantly more fathers and parents with a university degree as well as parents with high monthly income answered correctly that question ($p=0.046$, 0.018 , and <0.001 respectively).

A majority of parents (75.1%) answered correctly that children should not use a sweetened baby bottle or honey-dipped pacifiers and that decayed baby teeth should be filled (71.7%). Significantly more mothers and parents working in education sector correctly answered the former question ($p<0.001$ and 0.003 , respectively), whereas significantly more mothers, as well as parents with intermediate education level, and parents with high monthly income answered correctly the latter question ($p<0.001$, 0.013 , and 0.002 , respectively).

A minority of parents (4.6%) knew optimum fluoride concentration in a child's toothpaste "1000 ppm" as well as optimum position while brushing a child's teeth "behind the child" (16.9%), timing of the first dental check-up "on getting the first baby tooth" (14.4%), and best time to give a child a sugary snack "during mealtimes" (16.5%). Significantly more fathers and parents with secondary education level answered correctly the question about optimum fluoride concentration in a child's toothpaste ($p=0.046$ and 0.018 respectively), while significantly more mothers answered correctly the question about the best time to give a child a sugary snack ($p=0.037$). Regarding part two questions, significantly more mothers self-perceived their own dental health as "Excellent" compared to fathers ($p=0.007$).

Table 1. Parents' responses in the questions which assessed their knowledge of oral health and care of preschool children.

Questions	Categories	N (%)
Frequency of daily tooth brushing	Once	173 (30.8)
	Twice	273 (48.6)
	Trice	116 (20.6)
Size of brush best for your child	Small	371 (66.0)
	Medium	187 (33.3)
	Large	4 (0.7)
Quantity of tooth paste for your child	Enough to cover whole head	100 (17.8)
	Cover half head	189 (33.6)
	Smear to pea size	237 (42.2)
	Don't know	36 (6.4)
Optimum position to brush your child's teeth	Front of the child	153 (27.2)
	Behind the child	95 (16.9)
	By side of the child	186 (33.1)
	Don't know	128 (22.8)
Presence of fluoride in toothpaste	Yes	312 (55.5)
	No	64 (11.4)
	Don't know	186 (33.1)
Fluoride content of child's toothpaste	1,000 ppm	26 (4.6)
	1,500 ppm	12 (2.1)
	500 ppm	50 (8.9)
	Don't know	474 (84.3)
Best time to give a child sugary snacks	In the morning	273 (48.6)
	At night	30 (5.3)
	At meal-times	93 (16.5)
	Any time	103 (18.3)
	Don't know	63 (11.2)
Using sweetened baby bottle or honey-dipped pacifier is okay	Yes	23 (4.1)
	No	422 (75.1)
	Don't know	117 (20.8)
Importance of decay in baby teeth	Not at all important	52 (9.3)
	Some of it important	62 (11.0)
	Very important	368 (65.5)
	Don't know	80 (14.2)
Optimum time of a child's first dental visit	On getting first baby teeth	81 (14.4)
	On having all baby teeth	138 (24.6)
	When they get some baby teeth	96 (17.1)
	Don't know	247 (44.0)
Treatment of decayed baby teeth	Leave it alone	18 (3.2)
	Fill it	403 (71.1)
	Extract	60 (10.7)
	Don't know	81 (14.4)

The results of ordinal logistic regression analysis and the factors, which had an association with the knowledge score of the parents are shown in Table 2. The mean knowledge score of the parents in the

knowledge questions (part three questions) was 4.8 (out of 11; ± 1.57), the mean knowledge score of fathers was 4.48 (± 1.54) while it was 5.2 (± 1.50) for mothers.

According to the regression model, five factors had a statistically significant effect on the mean knowledge score of the parents; their gender and education level ($p < 0.001$ and $p = 0.024$, respectively), the family monthly income ($p = 0.026$), parents' self-perception about the importance of teeth ($p = 0.03$), as well as self-perception of their own dental health ($p = 0.007$). Mothers had 2.2 (95% confidence interval [CI]: 0.315-0.651) times higher odds to score higher than fathers. Parents who had a university degree had 29.4 times (CI: 0.002-0.635) higher odds to score higher than parents who had never been to school. Parents who had a family monthly income > 3200 USD had 1.52 times (CI: 0.457-0.950) higher odds to score higher than parents who had a family monthly income in the range 1681-3200 USD. On the other hand, parents who answered that their teeth were very important to them had 2.21 times (CI: 1.082-4.509) higher odds to score higher than parents who were not sure about their teeth. Finally, parents who rated their own overall dental health as "Excellent" had 3.71 times (CI: 1.436-9.564) higher odds to get a higher score than parents who rated their own dental health as "Poor".

Table 2. Variables associated with knowledge score of the parents.

Variables	Category	Mean Knowledge Score	B	OR	95% CI	p-value
Gender	Male	4.48	-0.792	0.453	0.315-0.651	<0.001*
	Female Reference	5.20	0 ^a	1	-	
Education	Never Been to School	2.0	-3.393	0.034	0.002-0.635	0.024*
	Primary	4.78	-0.628	0.534	0.242-1.174	0.118
	Intermediate	4.89	0.015	1.015	0.485-2.125	0.968
	Secondary	4.39	-0.376	0.686	0.460-1.024	0.065
	University Reference	4.92	0 ^a	1	.	
Family Income	<1680 USD	4.61	-0.157	0.855	0.526-1.391	0.529
	1681-3200 USD	4.30	-0.417	0.659	0.457-0.950	0.026*
	>3200 USD Reference	5.12	0 ^a	1	.	
Importance of Teeth	Not Important	2.67	-1.700	0.183	0.033-1.010	0.051
	Very Important	4.73	0.793	2.209	1.082-4.509	0.030*
	Not Sure Reference	3.57	0 ^a	1	.	
Perceived Overall Dental Health	Excellent	5.28	1.310	3.707	1.436-9.564	0.007*
	Very Good	4.61	0.759	2.136	0.962-4.745	0.062
	Good	3.89	0.365	1.440	0.652-3.181	0.367
	Fair	4.06	0.119	1.127	0.472-2.688	0.788
	Poor Reference	3.01	0 ^a	1	.	

* $p < 0.05$; CI: Confidence Interval; OR: Odds Ratio.

Discussion

The results of the current study are disappointing as despite that relatively simple questions about oral health and care of preschool children were chosen, and that the majority of parents had positive attitude towards baby teeth and thought that baby teeth decay was important and should not be left but rather treated, the reported overall mean knowledge score of the parents was inadequate (4.8 out of 11).

Deficiencies in the knowledge of parents were noticed in the questions which covered issues related to oral hygiene practices (optimum frequency of tooth brushing per day, quantity of toothpaste suitable for preschool children, position of caregiver while brushing a child's teeth, and fluoride concentration in a child's toothpaste) as well as the questions about timing of first dental check-up and best time to give a child a sugary snack. The correct answer in these questions was given by less than half of the parents, more precisely less than fifth of the parents in the questions which concerned position of the caregiver while brushing a child's

teeth, fluoride concentration in a child's toothpaste, timing of first dental check-up and best time to give a child a sugary snack. Previous authors also reported that parents performed poorly on questions to these effects [10]. In addition, current APPD recommendations about optimum timing of the first dental check-up and establishment of a dental home no later than one year of a child's age [19] seem up till now not communicated properly to the parents. Lack of parents' knowledge about optimum time of first dental check-up was repeatedly reported in Saudi Arabia as well as elsewhere [17,19-21]. More focus on education of parents about these issues is therefore required. Non-dental health professionals, particularly physicians and nurses, can be of great help in this regard. Optimum timing of the first dental check-up, for example, can be communicated to parents during well-child visits, which are mandatory for all preschool children after birth. It has been reported that physicians and nurses have the opportunity to provide oral care for preschool children seven times more frequently than dentists, especially those at high-risk for ECC as a result of well-child visits [22]. Interaction between members of the medical and dental communities is consequently crucial to help refer preschool children at high risk for ECC, especially those who do not have a dental home but have an established medical one [23,24]. Role of the media can also be enhanced to convey the message in an everyday basis to a huge audience; for example, TV commercials for toothpaste can include some information about the fluoride concentration and how to perform tooth brushing, as a demonstration, for a preschool child, as it is relatively difficult to expect parents to read that from tubes of toothpaste or to digest the information presented on dental health leaflets to improve their knowledge [25].

It has been reported that social, economic and environmental factors play a substantial role in shaping people's behavior and translating this knowledge into positive health choices and practices [26]. Socioeconomic status, which may be evaluated by income and education, was linked with dental caries in children; it has been reported that the higher the caregiver's educational level is, and the higher the family income is, the lower the child's caries experience is [21,26-28]. Improved level of education should lead to a better assessment of different sources of information about oral health and care and complete understanding, which should result in better knowledge from the part of the caregiver and consequently less caries experience in children [28,29]. This is supported in the current study, as parents who had the highest educational level (university degree) and those with the highest family income were significantly more knowledgeable. The current study also found that mothers were significantly more knowledgeable than fathers, which is quiet expected as mothers are the primary caregivers of their children. The same finding was reported by other authors [21]. Other factors, which were reported to positively affect the parents' knowledge score in the current study, included a positive attitude towards the importance of teeth and an "excellent" self-perception of parents' own dental health. Acknowledging the importance of teeth by parents is an important and encouraging thing. It implies that parents will likely respond more favorably toward oral health care information given to them from any health professional than parents who think that teeth are not important. On the other hand, caregiver's perceived level of own dental health in the current study had a significant impact on their actual knowledge of oral health and care for preschool children in a way that the better the parents perceived their own overall dental health, the higher their knowledge score was; particularly those who perceived their own dental health as "excellent" were significantly more likely to score higher.

Few limitations of the current study should be noted; the first limitation would be that the present study recruited parents from one region in Saudi Arabia; hence our results may not be generalized on all parents in the country, despite that different social, economic and educational diversities were included in the studied subpopulation. Another limitation would be that we did not ask the parents about the number of



preschool children in their family; parents who take care of many preschool children are less likely to get free to read and improve their knowledge about oral health-related issues.

However, what should be kept in mind that the conclusion that there is a deficiency in the knowledge of the parents, regardless of the number of preschool children, would remain the same even after inclusion of parents who have many preschool children. The last limitation would be that more emphasis was made on knowledge of parents about oral hygiene practices when compared to dietary practices and breast and bottle feeding as it has been observed in several studies that parents' knowledge about dietary practices is generally better than oral hygiene practices, perhaps due to better reinforcement about dietary best practices for children in the media and local care setups [21,30].

Conclusion

Parents' knowledge about oral health and care of preschool children in the central region of Saudi Arabia was deficient, particularly in issues related to oral hygiene best practices, optimum timing of the first dental check-up, and best time to give a child a sugary snack. Mothers, parents with high educational level and family income (high social class), and parents who acknowledged the importance of teeth, as well as those who had excellent self-perception of their own dental health, were more knowledgeable. Improvement in parents' knowledge is possible by enhancing the role of other health professionals who more often communicate with parents and their preschool children when compared to dentists. TV dental commercials can also be enriched with information, which can fill the gap in parents' knowledge.

Authors' Contributions

SNA	 0000-0001-5210-5128	Conceptualization, Methodology, Resources, Software, Supervision, Validation, Visualization, Writing - Review and Editing.
SHA	 ---	Conceptualization, Data Curation, Investigation, Methodology, Project Administration, Writing - Original Draft.

All authors declare that they contributed to critical review of intellectual content and approval of the final version to be published.

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Conflict of Interest

The authors declare no conflicts of interest.

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