

Assessing Caregivers Knowledge, Attitude and Practices Regarding their Children Oral Health and Hygiene in Saudi Arabia

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ABSTRACT

Background: Children are an innocent part of our society that needs excellent attention to improve the world's future. Therefore, prime importance should be given to children's oral health care by the community as it affects the status of oral health of the next generations. The national prevalence of dental caries and its severity in children in Saudi Arabia was estimated to be approximately 80% for the primary dentition and about 70% for children's permanent dentition. The more positive attitude of the parents toward dental health care and dental professionals leads to the better dental health of their children.

Objective: To investigate the caregivers' knowledge, attitude, and practices about oral health and hygiene and their influence in maintaining their children's overall oral health and hygiene practices.

Study design: Self-structured, self-administered survey was given to participants to assess caregivers' knowledge, attitude, and practices regarding their children's oral health and hygiene in Saudi Arabia. Statistical analysis was done, and a Chi-square test was used.

Results: One third of the participants did not know the amount of toothpaste needed for children. Most of the caregivers who participated in the study believe that breastfeeding should be stopped after 2 years. Furthermore, more than half of the participants do not know the right time to start teeth brushing. In addition, most of the subjects think that a child should rinse their mouth after tooth brushing.

Conclusion: While most caregivers know the amount of toothpaste needed for children, one third of them did not. The majority of the participant did not know that breastfeeding should be stopped before the age of two. Moreover, more than half of the caregivers did not acknowledge the fact that teeth brushing should be started after the eruption of the first primary tooth. Also, rinsing after tooth brushing was believed to be the right thing to do by most caregivers. Structuring a preventive program will help and the quality of life in the next generations.

Key words: Oral health, Oral hygiene, Children, Quality of life

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INTRODUCTION

Children are an innocent part of our society that needs excellent attention to improve the world's future. Therefore, prime importance should be given to children's oral health care by the community as it affects the status of oral health of the next generations [1]. Moreover, children live in an essential chapter of their lives that needs to be carefully monitored to grow up healthy. The causes of dental caries and their prevention has been investigated [2]. Oral hygiene status of children was associated with

dental caries in several communities [3,4]. Therefore, good oral hygiene practices are recommended for preventing oral diseases, including dental caries and periodontal diseases.

The parent's oral health knowledge and attitude have a significant impact on their children. Insufficient knowledge and attitude of the parents will result in more undesirable consequences, and it will affect their children's attitude toward oral health negatively [5]. It has been reported that children whose parents lack awareness and knowledge of oral health have a higher chance to have dental caries. Healthy dentition and mouth play a significant part in the lives of children because it aids in the consumption of nutrition, permit proper verbalization, and give an interactive means of displaying emotions.

Therefore, the quality of life of the children who complain of pain will be disrupted since they will not be able to eat or speak properly. It was noticed in a study, which was conducted by Ayhan et al. that children with caries are usually weighted less than those without which confirm that dental caries and poor oral health can disrupt the growth and development of a child [6]. So, a healthy mouth with a complete set of teeth must be the principal objective for every child [7].

Children with poor oral health usually miss school which will affect their intellectual development and leads to perform less in school. According to Dr Griffin, lower grades at school are associated with children with poor oral hygiene more than children with good oral hygiene [8]. In terms of cost, treatment of early childhood caries can be expensive to the family and takes a huge amount of health-care budget due to frequent visits to the ER and the need for use of anaesthetic facilities. Also, money is not the only cost to the caregivers, time is valuable and early childhood caries can waste many hours from the caregivers and the children since they will be visiting the dentist a lot [9]. The developed countries have established a considerable reduction in the prevalence and severity of oral diseases among their populations in the last fifty years of the 20th century [10]. This happened due to educational programs concerning oral hygiene, diet habits, feeding practices, and other programs that motivate the population to access provisional preventive dental care [10]. On the other hand, developing countries face complex challenges in improving the oral health of preschool children, specifically in rural areas [10]. The national prevalence of dental caries and its severity in children in Saudi Arabia was estimated to be approximately 80% for the primary dentition with a mean dmft of 5.0 and about 70% for children's permanent dentition with a mean DMFT score of 3.5 [11]. Furthermore, the use of general anesthesia for pediatric patients to provide comprehensive dental care has increased all over the world. However, long waiting time for general anesthesia in pediatric dental procedures has been reported and it has increased in Saudi Arabia. Dental general anesthesia use in children has a tendency to increase even more due to the high reported caries prevalence among Saudi children [11]. Parents and caregivers have a significant role in the child's oral health and hygiene. The considerable part of knowledge and attitude in explaining behavioural changes has been confirmed by many behavioural theories like the health belief model and theory of reasoned action [12]. The more positive attitude of the parents toward dental health care and dental professionals leads to the better dental health of their children. However, without the basic knowledge of caries risk factors, the importance of deciduous teeth, and oral maintenance, it is challenging to employ effective disease preventive strategies [12]. As a fundamental principle of modern health care and inherent within health and social care strategies across the world, prevention is better than cure [9]. The objective of this study is to investigate the caregivers' knowledge, attitude, and practices about oral health and hygiene and their influence in maintaining the

overall oral health and hygiene practices on their children.

MATERIALS AND METHODS

This study is an analytical, cross-sectional study conducted to assess and evaluate caregivers' knowledge, attitude, and practices regarding their children's oral health and hygiene in Saudi Arabia. The study was peer-reviewed and accepted under reference NRC21R/283/07 from the Institutional Review Board (IRB) of the King Abdullah International Medical Research Center (KAIMRC) before the commencement of the study. Written informed consent approval was collected from all individuals who took part in the study. From July to August 2021, data was collected from parents and caregivers with at least one child in Saudi Arabia. This research received no external funding.

A sample was drawn using a convenient sampling technique from all parents and caregivers in Saudi Arabia. The current population of Saudi Arabia in 2021 is estimated at 35,226,222 residents in Saudi Arabia. Based on the precision of 0.05 and a statistical level of confidence of 95%, the sample size required for the study is 385 participants. The sample Data were collected from 387 participants who fulfilled the study's criteria. Inclusion criteria were Saudi and Non-Saudi parents or caregivers of at least one child who lives in Saudi Arabia. Exclusion criteria were Saudi parents or caregivers who are living abroad and currently not in the country of Saudi Arabia. Before carrying out the questionnaire, each participant read the consent form and signed it.

The literature review was done to identify key areas of interest and questions. Then, a self-structured, self-administered survey was given to participants to assess caregivers' knowledge, attitude, and practices regarding their children's oral health and hygiene in Saudi Arabia. A total of 36 questions were included in the survey, which was divided into three main parts: (1) Demographic variables, (2) Knowledge and attitude (3) Oral hygiene practices. The authors assert that they have no conflict of interest. The self-structured questionnaire went through two independent validation processes, each with its own set of criteria. The first stage consisted of a panel discussion with five pediatric dentists who are experts in dental research.

The second phase was piloting the survey to 40 subjects who fit the criteria and were willing to participate. It was observed that Cronbach's alpha coefficients for the questionnaire questions (0.821), which are high stability coefficients, all of this indicate that the resolution has a high degree of stability and can be trusted and relied upon in the field application of the study.

The participants found the questionnaires to be comprehensive, simple, and easy to follow. The self-administered questionnaire was distributed electronically. It was an online-based questionnaire that was distributed via social media and communication applications through Google Forms. The SPSS statistical program version 23 was used to examine the data.

Frequency distribution of the different demographic characteristics (e.g., age, gender, level of education), the first dental visit and the reason along with the first dental visit to the child and the reason, and oral hygiene practices (e.g., brushing time, technique and supervision) were analyzed.

Results with a p-value of equal or less than a level of .05 were considered significant. To determine the association of knowledge and attitude with the different variables, a Chi-Squared test was performed to evaluate the influence of demographic characteristics (gender and level of education), the dental visits and their reasons, and the child's oral hygiene practices.

RESULTS

In the presented study, most of the subjects (98.7%) were Saudi, more than one-third of them (39.5%) were from the central region of Saudi Arabia. (88.9%) The subjects were a first degree relative to a child, and the rest (11.1%) were related to a child in other ways, such as aunts and uncles. More than two-thirds of the subjects (68.2%) had a bachelor education, and 19.9% had a high school/Diploma. Regarding the number of children, 47.0% of subjects had from 2 to 4 children, 32.3% of them had one child, 16.3% of them had from 5 to 7 children, and 4.4% of them had more than seven children.

It was observed that more than half of subjects (54.8%) get their information about the general health of the mouth and teeth and oral hygiene practices from the dentist. In comparison (32.3%) of them get their information from the internet and social media applications. Only 124 subjects (32%) know that the first permanent tooth erupts approximately at six years. The suggested teeth brushing times per day are two times; more than half of the study subjects (60.5%) know that while (34.4%) of them think it should be three times per day. Regarding whether the amount of toothpaste used varies with the child's age, almost two-thirds (67.7%) of the subjects answered yes. Most subjects (83.2%) answered by "frequency of eating" for which of the following items increase the risk of developing cavities when eating chocolate and sweets. In comparison (12.7%) believe that the quantity of chocolate and sweets increases the risk of developing caries. Regarding at what age breastfeeding should be stopped, less than two-thirds of the subjects (60.5%) answered after two years, while (28.4%) answered before two years. (77.3%) of the subjects believe that you should regularly visit a dentist every six months to 1 year.

Less than half of the subjects (43.9%) know the right time for children to start brushing their teeth using toothbrush and toothpaste, which is with the eruption of the first primary tooth; however, (34.9%) of the subjects think that brushing their children's teeth should start upon the eruption of all primary teeth. Regarding the first visit to the dentist, only half of the subjects (50.4%) think it should be when the first primary tooth erupts. On the other hand, (21.2%) and (20.7%) think the first visit

to the dentist should be when the child has a toothache and when the child starts going to school, respectively. Furthermore, less than half of the subjects (46.3%) and (37.2%) of them answered how often you take your child to the dentist every six months to a year and only when there is pain, respectively. Moreover, (45.5%) of the subjects reported that their children consume snacks one time a day while (31%) of them reported that their children consume snacks twice a day; however, (23.5%) reported that their children consume snacks three times or more per day. Surprisingly, only (5.7%) of the subjects stated that their children consume snacks immediately after the main meals. At the same time, most of them reported their children consuming snacks in the middle of the day or between main meals.

Furthermore, most subjects (81.9%) answered that their child did not use a sweetened bottle or pacifier dipped in honey. Also, it was found that (46%) of the subjects do not share utensils with their children while (37.5%) do; however, (16.5%) were not sure. In addition, (43.9%) of the subjects were not sure whether sharing utensils with their children cause tooth decay or not, while (34.15%) believe it does not cause tooth decay, yet (22%) believe it does. The majority of the subjects (92%) feel that oral and dental health affect children's general health and appearance.

When subjects were asked how often they encourage their children to brush their teeth, more than three-quarters of them (78%) revealed that they always encourage them. Also, (77.5%) of the subjects acknowledged that increasing the teeth brushing frequency is needed if the child is receiving orthodontic treatment. Moreover, (53%) of the subjects reported not using artificial sugar substitute products for their children (37.2%) reported using them for their children while (9.8%) were not sure if they use them or not. On the other hand, (60.2%) of the subjects were not sure whether artificial sugar substitutes products cause tooth decay or not, while (25.1%) believed it causes tooth decay, yet only (14.7%) knew that it does not cause tooth decay. Unexpectedly, only (8.8%) of the subjects acknowledged that a dentist taught their children how to brush their teeth, while the majority of the rest reported that a family member taught their children how to brush their teeth.

When subjects were asked about the method of drinking for their children, whether it is direct from the cup or by using a straw, (53.5%) of them answered by using both ways while (42.1%) of them answered direct from the cup, only (4.4%) answered by using a straw. About (73%) of the caregivers said that their children brush their teeth before and after sleep. Furthermore, more than half of the subjects (57.1%) reported that the mother supervises or helps the children brush their teeth and (23%) reported that the children brush their teeth on their own. It was observed that only one-third of the subjects (33.3%) know the appropriate period of teeth brushing, which is 2 minutes, (42.9%) and (12.9%) think it should be only one minute or less than a minute, respectively. In addition, (60.5%) of the subjects acknowledged the

importance of fluoride in toothpaste while (9.8%) do not think it was necessary, (29%) do not know whether it was essential or not. However, the majority of the subjects (79.1%) think that a child should rinse their mouth after tooth brushing while only (9%) of them disagree with them; the others believe that there is no difference (4.9%) or they do not know (7%).

DISCUSSION

To our knowledge and up to this date, this is one of the very few Saudi Arabian studies presenting the assessment of caregivers' knowledge, attitude and practices regarding their children oral health and hygiene. It specifically focuses on the relevant risk factors and protective factors that are likely to impact oral health in this age group. A good understanding of parents and caregivers' knowledge, attitude and awareness regarding oral health is fundamental for oral health promotion efforts to improve the dental health of young and older children. It has been found that the more positive a parent's or a caregiver's attitude toward dentistry, the better their children's dental health will be [13].

Knowledge

In the presented study, age and level of education positively correlate with the obtained information about the general health of the mouth and teeth and the proper way to clean the teeth. It is statistically significant that caregivers'/parents aged 25-34 with a bachelor's degree obtain their information from the dentist. Respectively, (P=0.005) (P=0.004). In a study conducted by Mafeni et al. they found that most parents seek information about oral health and practices from their dentist [14].

While most children have 20 primary teeth, 10 in each of the upper and lower jaws, these teeth eventually are replaced by 32 permanent teeth, 16 in each jaw. The first permanent teeth to erupt are mandibular molars, which usually erupt around the age of 6 [15]. It has been found in this study that age, children number in the family, the obtained information about the general health of the mouth and teeth and the proper way to clean the teeth have a positive correlation with the approximate time for an eruption for the first permanent tooth. It is statistically significant that caregivers'/parents aged 25-34 who have 2-4 children and obtain their information from the dentist have better knowledge regarding the correct timing of the permanent tooth's eruption. Respectively, (P=0.004) (P=0.0001) (P=0.0001).

It has also been found that age, level of education, and the obtained information about the general health of the mouth and teeth and the proper way to clean the teeth positively correlates with the right time for a child to start brushing the teeth using a brush and toothpaste. It is statistically significant that caregivers'/parents aged 25-34 with a bachelor's degree and obtaining their information from the dentist have better knowledge regarding the right time for a child to start brushing the teeth using a brush and a toothpaste when the first primary tooth erupts. Respectively, (P=0.0001) (P=

0.004) (P=0.0001). According to Mustafa et al., brushing should start as early as the first deciduous tooth eruption; this fact was acknowledged by 75% of respondents, while 22% believed brushing should be practiced after the eruption of permanent teeth [16]. Gussy, M.G et al. found similar in rural Australia, where most parents believed, they should start brushing when the first tooth erupts [17]. Contrary to our findings, according to Jain, R et al. a study conducted in Mumbai revealed that most mothers believed that tooth brushing for their children should only be practiced following the eruption of their children's all primary teeth [18].

It has also been found that age and the reasons to visit the dentist positively correlate with reasons for a child to visit the dentist. It is statistically significant that caregivers'/parents aged 25 - 34 who regularly every six months to a year for a check-up take their child to the dentist when the first primary tooth erupts (P=0.0001) (P=0.0001). According to Mustafa et al. More than one-half of respondents (59%) believed that ideal timing for their children first dental visit should be related to the presence of dental pain. Only 32.9% of participants thought that the first dental visit should ideally be by the child's first birthday, whereas more than half of them are convinced that the child should visit the dentist whenever needed [16].

In the presented study, age, level of education and usage and sharing of spoons, forks and other utensils with a child in regards if causing dental caries and are not correlated. It is statistically significant that most of the participants are not sure. Respectively, (P= 0.0001) (P=0.002) (P=0.0001). According to Chhabra et al. Only 9.8% of the parents knew about the transmission of cariogenic bacteria from mother to child. It could increase the risk and severity of caries in very young children [19]. The findings were similar to Sekai et al. who reported that parents' education is required to reduce the risk of early transmission of cariogenic bacteria [20].

All different kinds of toothpaste have the same ingredient, while the focus should be on fluoride. For children's toothpaste, for those less than three years smear layer of the paste on the brush; for those who are older, the amount of toothpaste should not exceed a pea-sized amount in the brush [15]. It also has been found that children number in the family and the obtained information about the general health of the mouth and teeth and the proper way to clean the teeth have a positive correlation with the amount of toothpaste used variation with the age of the child. It is statistically significant that caregivers'/parents aged who have 2-4 children who obtain their information from the dentist have better knowledge regarding the amount of toothpaste used variation with the age of the child. Respectively, (P=0.0035) (P=0.0001).

Attitude

It has also been found that age, level of education, knowledge about the importance of regular visits to the

dentist, and the time they take their children to the dentist have a positive correlation. It is statistically significant that caregivers'/parents that half of the study participants between the age of 18 to 24 have a bachelor's degree and acknowledge the importance of regular visits every six months to the dentist to take their children every six months to 1 year to the dental clinics. On the other hand, caregivers between the age of 45 to 54 or their educational level are less than high school takes their children to the dentist only when there is pain. Also, caregivers who think that you only visit a dentist in case of pain take their children to the dentist only in the presence of pain. Respectively, (P=0.0001) (P=0.037) (P=0.0001). According to Mustafa et al., most Saudi parents consider going to the dentist is of prime importance only if their child suffers from tooth decay or dental pain¹⁶, which is similar to the results of Moulana et al. [21] and Chan et al [22].

It has been established by Gupta et al. that artificial sugar products are not metabolized to acids by oral microorganisms; thus, they cannot cause dental caries [23]. In the presented study, there is a significant relationship between the age of the caregivers and the usage of artificial sugar substitute products (such as Xylitol) for their children. It is statistically significant that caregivers'/parents between the age of 18-24 reported using these products (P=0.044). However, most of the caregivers did not know whether using artificial sugar products could cause tooth decay or not (P=0.008).

There is a positive correlation between the educational level of the caregivers and the number of times their children eat snacks per day. It is statistically significant that more than half of the study participants who have a bachelor's degree reported that their children eat snacks in the middle of the day or between meals and eat snacks one to two times per day. Respectively, (P= 0.025) (P=0.032). According to Pawar et al., most of their study sample did not have any particular time to give sugary food items to their children [24].

Oral practices

This study found that age, level of education and the reasons for a child to visit the dentist has a positive correlation with the supervision of the child and the help of brushing. It is statistically significant that mothers aged 25-34 with a bachelor's degree and who let the child visit the dentist regularly every six months to a year for a check-up supervise and help the child use a brush and toothpaste. Respectively, (P= 0.018) (P= 0.001) (P=0.0001). In most cases, according to Pullishery et al. brushing was usually done with the mother's help, and only a few responded that brushing was carried out exclusively by the child. Younger mothers and mothers with a high level of education have a better knowledge of the use of toothbrushes and toothpaste [25]. These findings correlate with previous studies done by Sufia et al. [26] and Hosani et al. [27].

Tooth brushing should be done twice daily for at least two minutes as recommended by the AAPD [28]. This

study found that age and level of education positively correlate with the appropriate period for brushing and toothpaste. It is statistically significant that half of the study participants, specially caregivers'/parents aged 25 - 34 who have a bachelor's degree, believe that one minute is the appropriate period for brushing and toothpaste. Respectively, (P=0.020) (P=0.041). On the other hand, it is statistically significant that caregivers'/parents who obtain their information from the dentist know that two minutes is an appropriate period for brushing (P=0.0001).

According to Davies et al. fluoride reduces the prevalence and severity of dental caries that require restorative dental care in pre-eruptive, post-eruptive, systemic, and topical situations as it has a caries-protective effect, and it increases tooth resistance against caries [29]. In this study, it is statistically significant that the study participants aged 25-34 and who obtain their information from the dentist believe that fluoride in toothpaste is important for the child when brushing teeth. Respectively, (P=0.0001) (P=0.0001). According to Mustafa et al., half of their study participants acknowledged the importance of fluoride for primary teeth.¹⁶ It also has been found that the level of education and the obtained information about the general health of the mouth and teeth and the proper way to clean the teeth has a positive correlation to rinsing after brushing. However, it is statistically significant that more than half of the study participants who have a bachelor's degree and obtain their information from the dentist believe that the child should rinse with water after brushing the teeth with toothpaste. Respectively, (P=0.003) (P=0.004). A similar result was found in a study was conducted in Poland by Opydo-Szymaczek et al. who found that the majority of their subject rinsed their mouth after brushing their teeth, while only (8%) spit out saliva without rinsing [30]. It is statistically significant that caregivers'/parents who believe that fluoride in toothpaste is important for the child during brushing teeth also thinks that the child should rinse with water after brushing the teeth with toothpaste (P=0.0001). Nevertheless, to promote the beneficial effect of fluoride in the toothpaste, rinsing with water after brushing should be kept to a minimum or eliminated altogether as instructed by the AAPD [28].

Brushing with fluoridated toothpaste twice daily is one of the most effective methods in reducing dental caries prevalence in children [15]. It is statistically significant that caregivers'/parents who let the child visit the dentist regularly every six months to a year for a checkup their child practice brushing twice daily, before and after sleep (P= 0.004). However, in a study that was conducted by Arora et al. found that only 65% of children brushed twice daily, whereas 35% of children brushed once or less daily [31].

CONCLUSION

The more positive attitude of the caregivers' toward dental health care and dental professionals leads to the better dental health of children. Age and level of

education highly correlate with knowledge, attitude, and practices about oral health and hygiene and their influence in maintaining the overall oral health and hygiene practices on children. Furthermore, young mothers played a major role regarding practices about oral health and hygiene and their influence in maintaining overall oral health. A good understanding of the knowledge, attitude, and awareness of caregivers about oral health is fundamental for oral health promotion efforts to enhance the dental health of young and older children. Moreover, structuring a preventive program will help and improve the oral and dental health and this eventually will improve the overall health and quality of life for the next generations in Saudi Arabia.

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