ORIGINAL RESEARCH

Child Oral Health-related Knowledge and Practices of Mothers in Bahrain—Are Practices Based on Knowledge?

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Abstract

Introduction: Young children are not capable of maintaining good oral hygiene independently. The current prevalence of dental caries in Bahrain is extremely high and considering the importance of mother's role, the present study was aimed to identify the association between child oral health-related knowledge and practices of Bahraini mothers.

Materials and methods: This questionnaire-based cross-sectional study included mothers with at least one child between 6 months and 12 years of age. The questionnaire consisted of three parts to decipher information on demographic data, knowledge of mothers on child oral health, and the oral health-related practices of mothers. Student *t*-test and ANOVA were used to assess the level of significance between the variables and knowledge scores. The *p*-value of ≤0.05 was considered statistically significant. The data obtained were analyzed using Graph Instat version 3.1. software.

Results: In total, 264 mothers were included. The total mean (SD) knowledge score was 7.73 (1.83). Anxious mothers (*p*-value = 0.050), aged 31–40 ($p = 0.046$) significantly displayed greater knowledge scores. About 73.8% of the mothers took their child to a dentist only in pain. There were significantly greater odds of good knowledge scores in mothers that received tooth brushing demonstration [2.33 (1.37–3.95)].

Conclusion: The mean knowledge scores of mothers were found to be poor. Although majority of the mothers showed promising oral hygiene practices, these practices were not based on good knowledge regarding oral health. This relationship needs to be established in order to bring about an overall improvement in the oral health of the children in Bahrain.

Keywords: Health promotion, Maternal knowledge, Pediatric oral health.

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Introduction

Oral health has a direct link to overall general health,[1] and parental involvement to improve and maintain oral health is imperative. Mothers, especially, take the lead role in the overall development of a child, compared with fathers, in many cultural backgrounds. In order to maintain good oral health, oral health practices such as proper tooth brushing and cleaning, avoiding free sugars, regular dentist visits to keep track of the oral disease risk etc., should begin as soon as the eruption of the first primary teeth.[2–4] Since young children are not capable of maintaining good oral hygiene independently, it is the responsibility of the mothers to have thorough knowledge, take regular advice from their dentist, and inculcate the best possible oral hygiene practices in their children.

According to the Scottish Dental Clinical Effectiveness Programme[5] (SDCEP) guidance on prevention of dental caries in children, supervised tooth brushing should be performed for young children with the use of a soft, age-specific toothbrush, and the specified amount of fluoridated toothpaste. The caries risk status of children should be monitored by regular dentist visits. Additional fluoride supplements such as mouthwashes or varnishes will be prescribed by the dentist based on the risk status. Dietary restrictions such as frequent sugar intake, sticky food, and bedtime snacking should be avoided. The water intake should be adequate, and the diet should include adequate amount of fiber.[5] Mothers should display adequate knowledge regarding all these factors to prevent oral disease burden in children.

Researches in the past investigated factors such as maternal age, income, occupation, education level, and marital status to be associated with the knowledge regarding the oral health of children.[6–10] However, it is interesting to note that the association varied significantly between the studies. Hence, it is not possible to extrapolate the results from other geographic locations and it is important to study the factors in our location. Majority of the previous studies also indicated toward mothers overestimated the oral health status of their children, and were not aware of the actual dental disease status.[6–10] This should be considered a major barrier toward acquiring the right knowledge regarding optimum oral health. In addition, it is important to note that majority of the previous studies reported poor knowledge and practice of mothers related to child oral health, and this was significantly associated with increased caries level in children.[11]

A recent survey reported that the current prevalence of dental caries in Bahrain is 86.8% in a 6-year-old, 56.4% in a 12-year-old,

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1. Link between general and oral health
2. Knowledge of eruption and exfoliation of primary and permanent teeth
3. Pacifier use and weaning
4. Cariogenic food, their frequency, and duration of eating in relation to oral health
5. Feeding practices like tasting their child's food, bottle-feed, or snacking at bedtime in relation to oral health
6. Brushing habits—types of toothbrushes, duration and frequency of tooth brushing, and replacing old toothbrushes
7. Benefits of fluoride use and amount of fluoride in toothpaste
8. First visit to a dentist

Box 1: Factors used to assess and calculate the knowledge scores

and 59% in a 15-year-old.[12] Considering the importance of mother's role in the overall oral health of the child, and the increased caries prevalence in Bahrain, it is important to understand the factors that are associated with the knowledge of Bahraini mothers regarding child oral health and their related oral health practices. This study also attempted to identify the association between knowledge and practice of oral health to ensure that future preventive programs will consider the factors that are studied.

Materials and Methods

Study Design and Setting

This cross-sectional study was conducted in five primary care dental clinics, one from each region, across the five regions in Bahrain. The health centers were chosen based on convenience. The data were collected over a four-month period. The present study is reported according to the STROBE guidelines[13] for the presentation of cross-sectional studies. The study protocol was approved by the Ministry of Health Primary Care Ethics Committee.

Participants

Two hundred and sixty-four mothers that had at least one child from 6 months to 12 years of age were included. This was considered based on the age of eruption of the first primary tooth, and 0–12 years is the pediatric age-group in Bahrain. The mothers were selected irrespective of their age, medical history, reason for their dental visit, and dental procedure undertaken. The participants were selected based on convenience sampling. All study participants signed a written informed consent prepared according to the Declaration of Helsinki.

Data Sources and Variables

A descriptive three-part questionnaire was prepared for the study. The first part consisted of questions on demographic data of study participants such as age, education level, occupation, marital status, and number of children. The second part of the questionnaire consisted of a series of questions to assess the participant's knowledge regarding child oral health. Two external experts in the field of cardiology and pediatric dentistry evaluated and validated a series of 17 closed-ended questions. The questions were prepared based on the factors that are mentioned in Box 1. Participants were also asked to rate their child's oral health status. Any ambiguities in the questions or responses were corrected before the actual study. Each correct answer was given a score of one and knowledge scores were calculated based on the total score. The third part of the questionnaire was used to assess the participant's oral health-related practices on their children. A series of 13 closed-ended questions regarding their everyday practice on child oral health were asked. This questionnaire was also validated by independent subject experts and pretested on 10 participants.

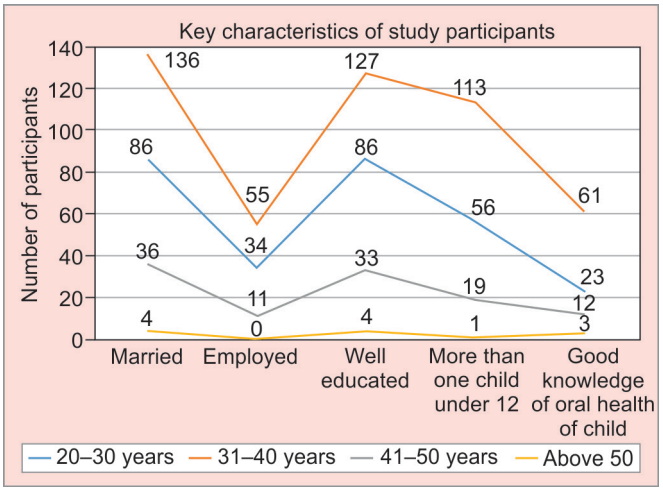

Fig. 1: Key characteristics of study participants

Statistical Analyses

Descriptive statistics were used to analyze the demographic data. Considering at least 30% of the population proportion fit into the inclusion criteria and will visit the included primary care dental clinics, at 95% confidence interval and 5% margin of error, a total sample of 250 is the minimum sample that is necessary. Hence, 264 participants were included. Cronbach's alpha was used to check the reliability of the data obtained from the present sample. Kolmogorov–Smirnov test and Shapiro–Wilk test were used to check normality. Student *t*-test and ANOVA were used to assess the level of significance between the variables and knowledge scores. Association between the categorical outcomes and the knowledge scores was assessed using Pearson's Chi-squared test. The *p*-value of ≤ 0.05 was considered statistically significant. All statistical tests were performed using Graph Pad Instat version 3.1 software.

Results

Demographic Data of Study Participants

Two hundred and sixty-four mothers were included in the study. The mean (SD) age of study participants was 34.33(6.96). About 51.5% ($n = 136$) of the participants were 31–40 years of age. About 98.8% ($n = 261$) were married and used social media ($n = 261$) to know more about the oral hygiene of children. Although 94.6% ($n = 250$) of the participants had some level of higher education, only 37% ($n = 96$) were employed. About 82.1% ($n = 217$) rated that their child had good oral hygiene, while 7.9% ($n = 21$) rated excellent. Cronbach's alpha for the current sample was 0.77, indicating that the data from the sample are reliable. The key characteristics of study participants are presented in Figure 1.

Table 1: Demographic data and their associated mean knowledge scores

Variables	*Categories*	*Number (%)*	*Mean (SD) knowledge scores*	*p-value*
Age-groups	20–30 years	86 (33.8)	7.51 (1.72)	**0.046***
	31–40 years	136 (51.5)	7.95 (1.88)	
	41–50 years	38 (14.3)	7.34 (2.10)	
	Above 50 years	4 (0.15)	9 (0.82)	
Marital status	Married	261 (98.8)	7.74 (0.116)	0.319
	Divorced	3 (0.11)	6.67 (0.882)	
Number of children	0–3 children	112 (42.4)	7.79 (1.91)	0.535
	More than 3 children	152 (57.5)	7.69 (1.84)	
Number of children from 6 months to 12 years	At least 1	75 (28.4)	7.62 (1.85)	0.553
	More than one	189 (71.5)	7.77 (1.87)	
Use social media to know about the oral health of child	Yes	261 (98.8)	7.73 (1.87)	0.803
	No	3 (0.11)	8.00 (1.73)	
Employment status	Housewife	165 (62.5)	7.62 (1.83)	0.423
	Working	96 (36.3)	7.93 (1.94)	
	Student	3 (0.11)	8.00 (1.00)	
Education level	No education	7 (0.26)	7.57 (2.14)	0.714
	Elementary	7 (0.26)	7.14 (1.77)	
	Higher secondary	118 (44.6)	7.66 (1.85)	
	Graduate	132 (50)	7.84 (1.87)	
Rating their child's oral health status	Excellent	21 (7.9)	7.19 (2.27)	0.171
	Good	217 (82.1)	7.83 (1.83)	
	Poor	26 (0.98)	7.34 (1.71)	

*p-value of ≤0.05 was considered statistically significant

Knowledge of Mothers Regarding Child Oral Health

The total mean (SD) knowledge score of study participants was 7.73(1.83). Only 99 (37.5%) participants had a knowledge score of ≥8.5, which is 50% of the total knowledge score for the 17 questions. The knowledge scores were calculated for the variables such as age, marital status, employment status, education level, use of social media, and their rating on their child's oral health status. A statistically significant difference was noted in the mean knowledge scores based on the age-groups studied (p-value = 0.046). About 31–40 years old participants displayed greater knowledge compared with other age-groups significantly. The mean knowledge scores for other variables studied are presented in Table 1. There was no significant difference between other variables studied and the mean knowledge scores.

Child Oral Health-related Practices of Mothers

About 73.8% (n = 195) of the mothers took their child to a dentist only when in pain. Majority of the mothers in Bahrain brushed their child's teeth twice daily (62.1%) under supervision (63.2%). They used fluoridated toothpaste (45.4%) with a manual toothbrush (95%). In addition, majority of the mothers half-filled the brush head with toothpaste (72.7%) and did not allow rinsing after brushing (66.6%). About 80.6% of the mothers allowed snacking only between meals and did not bottle-feed at night time (87.1%). The mean knowledge scores were greater in mothers that supervised their child's brushing, twice daily using electric toothbrush. In addition, greater knowledge scores were observed in mothers that filled their brush head fully with toothpaste and did not allow rinsing following brushing. In contrast, mothers with greater knowledge scores allowed bottle-feeding at night. The mother's knowledge on the time of snacking did not influence the knowledge scores (Table 2). It is to be noted that none of these showed a statistically significant difference. Figure 2 shows the oral health-related practices of mothers based on their demographic data.

Association between Knowledge Scores and Oral Health-related Practices

A significant number of anxious mothers had greater knowledge compared with those that were not anxious regarding their child's dental treatment (p-value = 0.050). The use of handpiece for restorations or root canal treatment, extractions, and use of local anesthetic injections made the mothers anxious. Also, participants that had significantly greater knowledge scores used fluoridated toothpaste (p-value = 0.035) for their child and knew the amount of fluoride in the toothpaste (p-value = 0.038). The responses to questions regarding the oral health practices and the level of significance are presented in Table 2. There were significantly greater odds of good knowledge scores in mothers that received tooth brushing demonstration compared with those that did not receive it. The odds ratio was 2.33 (1.37–3.95). The association between other variables and knowledge scores is presented in Table 3. Anxious mothers [1.47 (0.84–2.57)] that supervised their child's brushing [1.56 (0.90–2.69)], used electric toothbrush [1.67 (0.56–4.91)] with fluoridated toothpaste [1.74 (0.80–3.77)], and allowed limited snacking [1.03 (0.54–1.95)], and no bottle-feed at night time [2.03 (0.98–4.18)] expressed greater odds of good

Table 2: Oral health practices and mean knowledge scores

Oral health behavior-related practices	*Responses*	*N (%)*	*Mean (SD) knowledge scores*	*p-value Level of significance*
When do you take your child to the dentist?	Only when there is a complaint or pain	195 (73.8)	7.67 (1.78)	0.386
	Regular visits 3–6 months interval	69 (26.1)	7.89 (2.07)	
Were you anxious during your child's dental treatment?	Yes	185 (70.075)	7.88 (1.82)	**0.050***
	No	79 (29.92)	7.41 (1.94)	
Dental procedures performed in the child that made mothers more anxious	Cleaning using scaler	23 (8.71)	Participants were allowed to choose multiple options	
	Root canal and restoration—use and sound of handpiece	132 (50)		
	Extraction and use of injections	114 (43.185)		
	Examination and visiting the dentist	14 (5.30)		
Brushing frequency	More than 2 times	16 (6.06)	7.06 (1.87)	0.083
	Once daily	77 (29.1)	7.67 (1.99)	
	Twice daily	164 (62.1)	7.88 (1.76)	
	Not daily	7 (2.65)	6.42 (2.29)	
Supervised/independent brushing	Mother brushed or supervised	167 (63.25)	7.92 (1.73)	0.085
	Father brushed or supervised	8 (3.03)	7.50 (1.92)	
	Independent without supervision	89 (33.7)	7.39 (2.05)	
Tooth brushing tool	Electric	13 (4.92)	8.18 (2.22)	0.621
	Manual	251 (95)	7.72 (1.85)	
What type of toothpaste do you use for the child?	Fluoridated	120 (45.4)	8.51 (1.55)	**0.035****
	Non-fluoridated	35 (13.25)	7.82 (2.17)	
	Don't know	108 (40.9)	7.01 (1.74)	
Amount of fluoride in your child's toothpaste	Less than 1000 ppm	42 (15.9)	8.14 (1.81)	**0.038****
	More than 1000 ppm	193 (73.1)	8.31 (2.07)	
	Don't know	29 (10.9)	7.56 (1.81)	
Amount of toothpaste used for brushing	Fully fill the brush head	64 (24.2)	7.90 (2.04)	0.136
	Half fill the brush head	192 (72.7)	7.72 (1.80)	
	No specific quantity	8 (3.03)	6.50 (1.41)	
Have you received tooth brush demonstration?	Yes	155 (58.7)	7.99 (1.92)	0.147
	No	105 (39.7)	7.36 (1.71)	
Do you wash your child's mouth with water immediately after brushing?	Yes	88 (33.3)	7.65 (1.85)	0.316
	No	176 (66.6)	7.89 (1.88)	
Allow snacking	Anytime of the day or night	51 (19.3)	7.72 (1.65)	0.569
	Only with meals	213 (80.6)	7.73 (1.91)	
Bottle feeding at night time	No	230 (87.1)	7.6 (1.79)	0.972
	Yes	34 (12.8)	8.64 (2.08)	

**p-value of $\leq$0.05 was considered statistically significant

knowledge scores. However, these were not statistically significant (Table 3).

Discussion

The present study was aimed to identify the knowledge of mothers in Bahrain regarding child oral health and to identify the association between child oral hygiene practices and their knowledge. This was a cross-sectional study that included 264 mothers. Majority of the study participants were 31–40 years old, married, well-educated with a higher secondary or a graduate degree, and preferred to be a stay-home mother. While 82% of the mothers believed that their child had good oral hygiene, a recent unpublished survey conducted by the Ministry of Health in Bahrain revealed that 86.8% of 6-year-old children, 56.4% of the 12-year-old, and 59% of the 15-year-old had dental caries.[14] High prevalence of dental caries in the whole of the Gulf Commonwealth Countries (GCC) region is a great concern and this was reported in a systematic review by Naidu et al.[15] This indicates that the current status of oral hygiene in children is not good enough to prevent dental diseases. Considering that majority of the mothers overrated their child's oral hygiene status, there is a need to educate the mothers on what constitutes excellent oral health and hygiene. This will be the first step in improving oral health in children. Similar results were also presented in previous studies across the world where mothers overestimated their child's oral health status.[6,8,10,15]

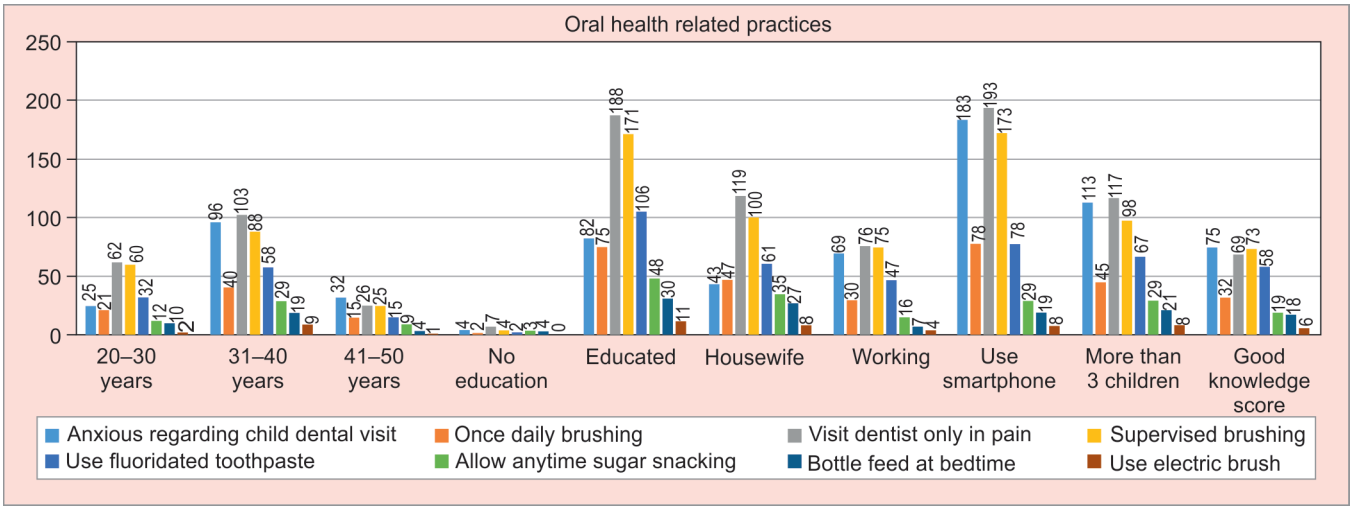

Fig. 2: Oral health-related practices of study participants

Table 3: Odds ratio to assess the level of association between the variables and knowledge scores

Variables	*Adjusted odds ratio (95% CI)*
Visit to the dentist regularly	0.62 (0.35–1.10)
Anxious mother	1.47 (0.84–2.57)
Brushing frequency twice daily	0.93 (0.55–1.58)
Supervised brushing	1.56 (0.90–2.69)
Electric brushing tool	1.67 (0.56–4.91)
Use fluoridated toothpaste	1.74 (0.80–3.77)
Received toothbrush demonstration	**2.33 (1.37–3.95)***
Time of snacking	1.03 (0.54–1.95)
Bottle feed at night	2.03 (0.98–4.18)

*Statistically significant association

The mean knowledge scores were calculated based on 17 questions. The questionnaire was based on various factors that lead to dental diseases in children. Good knowledge scores were considered when the total knowledge score was greater than 50%. This was based on previous studies.[6–10] Unfortunately, only 37% of the participants had good knowledge scores. This infers that there is a definite lack of knowledge among mothers regarding factors such as the link between general and oral health, cariogenic food, brushing habits, feeding practices, etc., that were tested in the present study. These are important factors that positively contribute to dental disease burden in children.[16] Unless there is thorough knowledge regarding these factors, the prevalence rate of dental caries will be on the rise. Significantly, the 31–40 years old mothers had better knowledge compared with other age-groups. A similar study in the Saudi Arabia also reported that parents between 31 and 40 years had better knowledge, however, both mothers and fathers were included in the study.[6] The same study also reported significantly greater knowledge in parents that had more than four children, and in parents that used social media to know about child oral health. This is in contrast to our present study, where no other variables showed significant differences. Another study in China reported that parents with higher educational backgrounds had good knowledge scores. This is also in contrast to the results from the present study. It is interesting to note that the significance of these factors varies based on different geographic locations. Hence, it is mandatory to understand the factors in each geographic location, and extrapolation of results from other studies might not be reliable. There are significant variations in beliefs and practices of mothers based on the cultural background and the geographic location, and this may be the reason for the differences that is noted in these studies.

The sound of handpieces used for restorations and root canal treatment, local anesthetic injections, and extractions done on children made mothers feel more anxious. Mothers that were anxious during their child's dental visit significantly showed greater knowledge scores. Although anxious mothers presented with greater knowledge scores, previous studies reported that the overall oral health-related quality of life in their children was poor, due to poor adherence, or avoidance of dental care.[17–19] This is also reflected in our study that majority of the mothers took their child to the dentist only when there was pain. A recent study by Goyal et al.[20] reported higher mean dmft scores in children of extremely anxious mothers. In order to improve the overall dental health, it is the responsibility of the public health stakeholders and dental professionals to understand the best-possible approach to effectively communicate with the mothers to reduce dental anxiety and encourage the mothers to seek dental care for their children. Mothers in Bahrain that showed significantly greater knowledge scores knew the advantages of fluoride in toothpaste in relation to oral health. This is positive to know that mothers in Bahrain are aware of fluoride use. Future preventive programs can be framed to further develop their knowledge on other forms of fluoride as well.

Although the overall knowledge scores seemed to be poor, it is encouraging to note that majority of the oral health-related practices of mothers were promising. Majority of the mothers in Bahrain brushed their child's teeth twice daily (62.1%) under supervision (63.2%). They used fluoridated toothpaste (45.4%) with a manual toothbrush (95%). In addition, majority of the mothers half-filled the brush head with toothpaste (72.7%) and did not allow rinsing after brushing (66.6%). About 80.6% of the mothers allowed snacking only between meals and did not bottle-feed at night time (87.1%). This infers that knowledge and practices did not show a causal relationship in mothers, in Bahrain. It is important that practices be based on sound knowledge regarding oral health.

Mothers that received toothbrush demonstration significantly showed greater odds of higher knowledge scores in the present study. It is indeed in the hands of the dentist to effectively deliver oral health instructions to the mothers. This is a form of health education intervention, and the dentist can use various forms such as leaflets, educational videos, role play, hands-on demonstrations etc., to effectively deliver any instructions. In our clinical setting, the dentist uses toothbrush and a teeth model to demonstrate the brushing technique. It is preferable to use the language of the country, however, most oral health educational interventions in the past used more than one language. Majority of the studies on the past reported that any all of the above-mentioned educational interventions significantly improved the knowledge on oral health.[21–23]

To conclude, the knowledge of Bahraini mothers regarding their child oral health is poor. Although majority of the mothers showed promising oral hygiene practices, these practices were not based on good knowledge regarding oral health. This relationship needs to be established in order to bring about overall improvement in the oral health of the children in Bahrain.

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References

1. Dörfer C, Benz C, Aida J, et al. The relationship of oral health with general health and NCDs: A brief review. Int Dent J 2017;67 (Suppl 2):14–18. DOI: 10.1111/idj.12360.
2. Sun HB, Zhang W, Zhou XB. Risk factors associated with early childhood caries. Chin J Dent Res 2017;20(2):97–104. DOI: 10.3290/j.cjdr.a38274.
3. Davies RM, Blinkhorn AS. Preventing dental caries: Part 1 the scientific rationale for preventive advice. Dent Update 2013; 40(9):719–720. DOI: 10.12968/denu.2013.40.9.719.
4. Lynch RJ. The primary and mixed dentition, post-eruptive enamel maturation and dental caries: A review. Int Dent J 2013;63 (Suppl 2):3–13. DOI: 10.1111/idj.12076.
5. Prevention and Management of Dental Caries in children. Scottish Dental Clinical Effectiveness Programme (SDCEP) Guidelines. Available at: https://www.sdcep.org.uk/wpcontent/uploads/2013/03/SDCEP_PM_Dental_Caries_Full_Guidance1.pdf. [Accessed on November 11, 2021].
6. Salama F, Alwohaibi A, Alabdullatif A, et al. Knowledge, behaviours and beliefs of parents regarding the oral health of their children. Eur J Paediatr Dent 2020;21(2):103–109. DOI: 10.23804/ejpd.2020.21.02.03.
7. Chen L, Hong J, Xiong D, et al. Are parents' education levels associated with either their oral health knowledge or their children's oral health behaviors? A survey of 8446 families in Wuhan. BMC Oral Health 2020;20(1):203. DOI: 10.1186/s12903-020-01186-4.
8. Kumar G, Dhillon JK, Vignesh R, et al. Knowledge, attitude, and practical behavior of parents regarding their child's oral health in New Delhi. J Indian Soc Pedod Prev Dent 2019;37(1):3–7. DOI: 10.4103/JISPPD.JISPPD_257_18.
9. Alkhubaizi Q, Moule A, Al-Sane M, et al. Oral health practices and knowledge among parents and hired caregivers. Eur Arch Paediatr Dent 2018;19(6):403–410. DOI: 10.1007/s40368-018-0372-6.
10. Alkhtib A, Morawala A. Knowledge, attitudes, and practices of mothers of preschool children about oral health in Qatar: A cross-sectional survey. Dent J (Basel) 2018;6(4):51. DOI: 10.3390/dj6040051.
11. Begzati A, Bytyci A, Meqa K, et al. Mothers' behaviours and knowledge related to caries experience of their children. Oral Health Prev Dent 2014;12(2):133–140. DOI: 10.3290/j.ohpd.a31667.
12. Alrowaili EF. Self-reported knowledge about dental caries at young age and variations between dental practitioners in the Ministry of Health in Bahrain. BDJ Open 2021;7:18. https://doi.org/10.1038/s41405-021-00073-6.
13. von Elm E, Altman DG, Egger M, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: Guidelines for reporting observational studies. Int J Surg 2014;12(12):1495–1499. DOI: 10.1016/j.ijsu.2014.07.013
14. First Gulf Countries Council Pathfinder Oral Health Survey—2014–2015. Oral and Dental Health Services (MOH).
15. Naidu RS, Nunn JH. Oral health knowledge, attitudes and behaviour of parents and caregivers of preschool children: Implications for oral health promotion. Oral Health Prev Dent 2020;18(1):245–252. DOI: 10.3290/j.ohpd.a43357.
16. Wright JT. The burden and management of dental caries in older children. Pediatr Clin North Am. 2018;65(5):955–963. DOI: 10.1016/j.pcl.2018.05.005.
17. Goettems ML, Ardenghi TM, Romano AR, et al. Influence of maternal dental anxiety on oral health-related quality of life of preschool children. Qual Life Res 2011;20(6):951–959. DOI: 10.1007/s11136-010-9816-0.
18. Shin WK, Braun TM, Inglehart MR. Parents' dental anxiety and oral health literacy: Effects on parents' and children's oral health-related experiences. J Public Health Dent 2014;74(3):195–201. DOI: 10.1111/jphd.12046.
19. Carlsson V, Hakeberg M, Boman UW. Associations between dental anxiety, sense of coherence, oral health-related quality of life and health behavior – A national Swedish cross-sectional survey. BMC Oral Health 2015;15:100. DOI: 10.1186/s12903-015-0088-5.
20. Goyal J, Menon I, Singh RP, et al. Association between maternal dental anxiety and its effect on the oral health status of their child: An institutional cross sectional study. J Family Med Prim Care 2019;8(2):535–538. DOI: 10.4103/jfmpc.jfmpc_415_18.
21. Niranjan N, Knight S. An education intervention to improve oral health knowledge and behaviour in learners: A cluster randomized controlled trial. S Afr Dent J 2017;72(4):167–172. https://hdl.handle.net/10520/EJC-a210b8cc2.
22. Adeniyi AA, Oyapero A, Ajieroh V, et al. Effect of health education intervention conducted by primary health care workers on oral health knowledge and practices of nursing mothers in Lagos state. J Public Health Afr 2018;9(2):833. DOI: 10.4081/jphia.2018.833.
23. Friel S, Hope A, Kelleher C, et al. Impact evaluation of an oral health intervention amongst primary school children in Ireland. Health Promotion Int 2002;17(2):119–126. DOI: 10.1093/heapro/17.2.119.