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Early Feeding Practices among Saudi Mothers and Dental Caries in Young Children: A Cross-sectional Study

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ABSTRACT

Introduction: Several risk factors have been associated with Early Childhood Caries (ECC), including feeding practices, nocturnal feeding, delayed weaning from breast- or bottle-feeding, and parental awareness. The purpose of present study was to address a gap in the literature by examining the specific feeding practices of mothers in Jeddah and their relationship with dental caries, while also considering demographic and socioeconomic factors that may influence these practices.

Aim: To assess the prevalence of breast- and bottle-feeding practices among Saudi mothers of healthy children aged 1 to 2 years in Jeddah, Saudi Arabia, and to investigate the relationship between various feeding practices and children's demographic characteristics, maternal socioeconomic status, and maternal knowledge of appropriate feeding practices.

Materials and Methods: A cross-sectional study was conducted at the Faculty of Dentistry, King Abdulaziz University, Jeddah, Saudi Arabia from September 2023 to December 2023. The study included mothers of children aged 1 to 2 years who participated in three community awareness events held across different areas of Jeddah. A trained dentist interviewed the mothers using a validated Arabic questionnaire to assess potential confounding factors. Data were analysed using the Independent t-test for continuous variables and the chi-square test for categorical variables, with a significance level set at $p<0.05$.

Results: The mean age of the study participants was 30.91±7.97 years. Out of the 1,438 mothers who participated in the study, 345 (24.0%) practised exclusive breastfeeding, of whom 70 (20.2%) reported dental caries in their children. Exclusive bottle-feeding was reported by 251 (17.5%) mothers, with 54 (21.5%) reporting dental caries in their children, while mixed feeding was practised by 842 (58.6%) mothers, among whom 186 (22.1%) reported dental caries. Nocturnal breastfeeding and bottle-feeding were practised by 1,119 (77.8%) and 935 (65.0%) mothers, respectively. The mean maternal knowledge score regarding appropriate feeding practices was 2.65±1.29 out of five. Multinomial regression analysis demonstrated statistically significant associations between feeding practices and birth order, type of delivery, maternal education level, maternal occupation, and average monthly household income.

Conclusion: The present study highlights a low rate of exclusive breastfeeding and insufficient knowledge of appropriate feeding practices among mothers in Jeddah, Saudi Arabia. Feeding practices were significantly influenced by birth order, mode of delivery, and maternal socioeconomic status. No significant association was found between feeding methods and dental caries. Enhancing maternal education regarding appropriate feeding practices and promoting exclusive breastfeeding may be important strategies for improving child health outcomes.

Keywords: Attitude, Breast-feeding, Bottle-feeding, Early childhood caries, Maternal knowledge

INTRODUCTION

Despite increased public awareness of oral and dental health, the prevalence of dental caries among children remains significantly high, particularly in developing countries [1]. In Saudi Arabia, several studies have investigated the prevalence of dental caries among preschool children and the associated risk factors for ECC. These studies have consistently reported a high prevalence of caries among preschool-aged children [2,3]. One study reported that 362 (89%) preschool children in Jeddah were diagnosed with dental caries [4]. Additionally, a systematic review published in 2021 reported that the prevalence of caries in primary teeth among children in Saudi Arabia ranged from 21% to 100% [5]. More recently, a large cross-sectional study conducted in 2023 involving 19,870 children reported an overall caries prevalence of 65.6%, with 72.1% of cases affecting primary teeth [3].

Several risk factors have been associated with ECC, including feeding practices, nocturnal feeding, delayed weaning from breast- or bottle-feeding, Socioeconomic Status (SES), and parental awareness of children's oral health [6]. In Islamic culture, breastfeeding is traditionally recommended for a duration of two years [7]. In contrast, the American Academy of Paediatric Dentistry recommends discontinuing breastfeeding at 12 months of age [8]. Furthermore, recent World Health Organisation guidelines provide evidence-based recommendations on complementary feeding for healthy, term infants and young children aged 6 to 23 months, regardless of breastfeeding status, across low-, middle-, and high-income countries [9].

The potential association between breastfeeding practices and dental caries in preschool children in Saudi Arabia was evaluated in a systematic review conducted by Bagher SM in 2013 [10]. Identifying and understanding risk factors specific to the Saudi population is essential for implementing effective public health preventive strategies aimed at reducing the burden of dental caries. The rationale for the present study was to address a gap in the literature by investigating the specific feeding practices of mothers in Jeddah and their association with dental caries, while also exploring the demographic and socioeconomic factors that may influence these practices.

Therefore, present study aimed to assess the prevalence of breast- and bottle-feeding practices among Saudi mothers of healthy children aged 1 to 2 years in Jeddah, Saudi Arabia, and to examine the relationship between these feeding practices, children's

demographic characteristics, maternal socioeconomic status, and maternal knowledge of appropriate feeding practices.

MATERIALS AND METHODS

A cross-sectional study was conducted at the Faculty of Dentistry, King Abdulaziz University (KAUFD), Jeddah, Saudi Arabia from September 2023 to December 2023. Ethical approval was obtained from the Ethics Committee of King Abdulaziz University (Approval No. 131-11-18).

Inclusion and exclusion criteria: The inclusion criteria comprised Saudi mothers of healthy children aged 2-4 years residing in Jeddah, Saudi Arabia. Participants were recruited from three community awareness activities organised by KAUFD in the central, northern, and southern regions of Jeddah. The exclusion criteria included children with medical conditions and healthy children whose parents declined participation.

One of two trained dentists on the research team approached eligible mothers and explained the objectives of the study. Mothers who agreed to participate were interviewed using a validated Arabic questionnaire [11] after providing written informed consent in Arabic. In cases where a mother had more than one healthy child meeting the inclusion criteria, she was instructed to complete the questionnaire for the youngest child. Minor modifications were made to the questionnaire to suit the local population. Community awareness activities were selected using stratified sampling, and three locations were chosen to represent the central, northern, and southern regions of Jeddah.

Sample size calculation: The sample size was calculated using OpenEpi version 3.01 based on the study by Park et al., (2022). In that study, the odds ratio for ECC in children breastfed for more than one year was reported as 0.55, with a 95% confidence interval of 0.44-0.69 [12].

Study Procedure

The questionnaire had been previously tested for reliability and validity in a 2024 study investigating pacifier use among mothers in Jeddah, Saudi Arabia [11]. It comprised four sections: 1.) child demographic data (gender, birth order, and type of delivery); 2.) child feeding practices; 3.) maternal socioeconomic status (education level, occupation, and average monthly household income); and 4.) maternal knowledge of appropriate feeding practices. Additionally, two questions assessed the child's oral hygiene practices and the presence of dental caries. Oral hygiene practices were categorised as: the child brushes independently, brushing is supervised by the parent, or the parent brushes the child's teeth. The English version of the questionnaire is provided as supplementary material [APPENDIX-1].

Feeding practices were classified into exclusive breastfeeding, exclusive bottle-feeding, or mixed feeding. Monthly household income categories were based on central statistics published by the Saudi Arabian government [13]. Illiterate mothers completed the questionnaire with assistance from a trained interviewer who read the questions aloud and recorded the responses, ensuring accurate representation of participants' perspectives.

The final section of the questionnaire included five questions assessing maternal knowledge of appropriate feeding practices, with response options of "yes," "no," or "I do not know." Each correct response was awarded one point, yielding a maximum possible score of five. Additional questions addressed the presence of dental caries, age at caries detection, and whether the child had previously visited a dentist.

STATISTICAL ANALYSIS

Data were entered and analysed using the Statistical Package for the Social Sciences (SPSS), version 22.0 (SPSS Inc., Chicago, IL, USA). Frequencies and percentages were calculated for feeding practices and other categorical variables. Independent t-tests were used for continuous variables, and Chi-square tests were applied for categorical variables, with a significance level set at $p<0.05$.

Multinomial regression analysis was performed to estimate covariate-adjusted associations between feeding practices and independent variables. Results were reported as Odds Ratios (ORs) with 95% Confidence Intervals (CIs). Exclusive breastfeeding served as the reference category, and a p-value<0.05. was considered statistically significant.

RESULTS

A total of 1,438 mothers participated in the study, with a mean age of 30.91±7.97 years [Table/Fig-1].

Variables		n (%)
Child's gender	Male	696 (48.4)
	Female	742 (51.6)
Childbirth order	1st	388 (27.0)
	2nd to 3rd	680 (47.3)
	4th or later	370 (25.7)
Child's delivery method	Normal	963 (67.0)
	Caesarean section	475 (33.0)
The child's oral hygiene practice	I brush his/her teeth	659 (45.8)
	I supervise him/her during brushing	570 (39.6)
	He/she brushes his/her teeth without any supervision	209 (14.5)
Did/does the child have dental caries	Yes	310 (21.6)
	No	1059 (73.6)
	I don't know	69 (4.8)
Maternal education	Illiterate/primary school	510 (35.5)
	Intermediate/high school	346 (24.1)
	College level or higher	582 (40.5)
Maternal occupation	Student	110 (7.6)
	Working	383 (26.6)
	Housewife	945 (65.7)
Average monthly household income	Low	334 (23.2)
	Middle	614 (42.7)
	High	490 (34.1)

[Table/Fig-1]: Demographic characteristics of participating mothers and their included children (N=1438).

Most mothers practised mixed feeding 842 (58.6%). A greater proportion of mothers practised nocturnal breastfeeding with or without bottle-feeding 1,187 (82.5%) compared to nocturnal bottle-feeding alone 935 (65.0%). More children were bottle-fed at night for more than two years 249 (26.6%) compared to children who were breastfed at night beyond this age 73 (6.5%) [Table/Fig-2].

A total of 229 mothers (15.9%) practised bottle-feeding with fluids other than milk. These included juice 104 (45.4%), herbal tea 51

Variables		n (%)	N (%)
Feeding type	Exclusive breastfeeding	345 (24.0)	1438 (100)
	Exclusive bottle-feeding	251 (17.5)	
	Mix-feeding	842 (58.6)	
Duration of breastfeeding with or without bottle-feeding in months	0-3	174 (14.65)	1187 (100)
	4-6	234 (19.7)	
	7-12	212 (17.7)	
	13-24	485 (40.7)	
	≥25	82 (6.9)	
Nocturnal breastfeeding with or without bottle-feeding	Yes	1119 (77.8)	1438 (100)
	No	319 (22.2)	

Duration of nocturnal breastfeeding with or without bottle-feeding in months	0-3	182 (16.3)	1119 (100)
	4-6	224 (20.0)	
	7-12	225 (20.1)	
	13-24	415 (37.1)	
	≥ 25	73 (6.5)	
Duration of bottle-feeding with or without breastfeeding in months	0-3	68 (6.2)	1093 (100)
	4-6	87 (8.4)	
	7-12	153 (14.0)	
	13-24	493 (45.1)	
	≥25	291 (26.6)	
Nocturnal bottle-feeding with or without breastfeeding	Yes	935 (65.0)	1438 (100)
	No	503 (35)	
Duration of nocturnal bottle-feeding with or without breastfeeding in months	0-3	35 (3.7)	935 (100)
	4-6	75 (8.02)	
	7-12	157 (16.7)	
	13-24	419 (44.8)	
	≥25	249 (26.7)	

[Table/Fig-2]: Distribution of participating mothers according to their included child feeding practices (N=1438).

(22.2%), water 56 (24.5%), and herbs 18 (7.9%). Other fluids reported included buttermilk, Cerelac® diluted with water, dates diluted with water, and mint water.

The mean maternal knowledge score regarding appropriate feeding practices was 2.65±1.29 out of 5. Only 336 mothers (23.4%) were aware that nocturnal breastfeeding after tooth eruption may contribute to the development of dental caries [Table/Fig-3].

Variables		n (%)
Mother's milk is the best food source for child	Correct	1382 (96.1)
	Wrong	18 (1.3)
	I don't know	38 (2.6)
Late weaning of breastfeeding after teeth eruption may lead to dental caries	Correct	301 (20.9)
	Wrong	507 (35.3)
	I don't know	630 (43.8)
Late weaning of bottle-feeding after teeth eruption may lead to dental caries	Correct	788 (54.8)
	Wrong	175 (12.2)
	I don't know	475 (33.0)
After teeth eruption, breastfeeding during the night can lead to dental caries	Correct	336 (23.4)
	Wrong	971 (67.5)
	I don't know	131 (9.1)
After teeth eruption, bottle-feeding during the night can lead to dental caries	Correct	997 (69.3)
	Wrong	120 (8.3)
	I don't know	321 (22.3)

[Table/Fig-3]: Distribution of the participating mothers according to their responses to knowledge-based questions (N=1438).

Exclusive breastfeeding and mixed feeding were significantly more common among mothers with college or higher educational qualifications (p=0.009). Based on birth order, exclusive breastfeeding and mixed feeding were more frequently practised among mothers feeding their second or third child (p=0.002) and among mothers whose children were delivered vaginally (p<0.001) [Table/Fig-4].

Most mothers who practiced exclusive breastfeeding reported that their children did not develop dental caries. There was no significant association between the child's oral hygiene practices and the presence of dental caries (p=0.158) [Table/Fig-5]. Exclusive bottle-feeding was significantly more common among mothers with lower education levels (p=0.036 and 0.001), students (p=0.035), working mothers (p=0.006), those from middle-income households (p=0.003), and first-time mothers (p=0.0004), compared with their respective counterparts [Table/Fig-6].

DISCUSSION

Despite the World Health Organisation (WHO) recommendation that infants be exclusively breastfed for the first six months of life [14], a 2009 review reported that infant feeding practices in Saudi Arabia have not changed over the last two decades and remain far from compliant with WHO guidelines [15]. In the present study, only 24% of children received exclusive breastfeeding, while 58.6% received mixed feeding. These findings are consistent with those of a 2012 study by Eldeek B et al., which evaluated feeding practices among mothers in Jeddah and reported that only 25% of mothers exclusively breastfed their children by six months of age [16]. Other studies conducted in Saudi Arabian cities have reported even lower rates of exclusive breastfeeding at six months, ranging from 8.3% to 13.7% in Riyadh and Jazan [17,18].

Despite the high initiation rate of breastfeeding among mothers in Saudi Arabia, a significant decline has been observed in Jeddah as children age [19]. A 2003 study documented that up to 94% of sampled mothers initiated breastfeeding [20], compared with 82.5% in the present study. This suggests that most mothers are willing to breastfeed and have a positive attitude toward this practice. Further research is encouraged to help eliminate breastfeeding challenges and provide mothers with adequate support and encouragement to continue breastfeeding.

A nationwide survey conducted in 2006 evaluated mothers' perceptions and attitudes toward breastfeeding in Saudi Arabia and reported significant differences between Saudi and non Saudi mothers. Compared with non Saudi mothers, more Saudi mothers introduced bottle-feeding within the first three months but delayed the introduction of solid foods. Additionally, fewer Saudi mothers received breastfeeding health education [21]. To minimise confounding factors that might influence our study outcomes, we focused exclusively on assessing feeding practices among Saudi mothers.

Variables		Type of feeding n (%)			p-value
		Exclusive breastfeeding	Exclusive bottle-feeding	Mix-feeding	
Maternal knowledge score	Mean knowledge score (mean+-SD)	2.7±1.186	2.56±1.42	2.65±1.29	0.408
Maternal education	Illiterate/primary school	113 (32.7)	81 (23.4)	151 (43.8)	0.009*
	Intermediate/high school	91 (36.3)	79 (31.5)	81 (32.3)	
	College/higher	306 (36.3)	186 (22.1)	350 (41.6)	
Maternal occupation	Student	16 (14.5)	19 (17.3)	75 (68.2)	<0.001*
	Worker	68 (17.8)	61 (15.9)	254 (66.3)	
	Housewife	261 (27.6)	171 (18.1)	513 (54.3)	
Average monthly household income	Low	84 (25.1)	54 (16.2)	196 (58.7)	0.032*
	Middle	128 (20.8)	125 (20.4)	361 (58.9)	
	High	133 (27.1)	72 (14.7)	285 (58.2)	

Gender	Male	168 (24.1)	124 (17.8)	404 (58.1)	0.917
	Female	177 (23.9)	127 (17.1)	438 (59.0)	
Childbirth order	1st	87 (22.4)	85 (21.9)	216 (55.7)	0.002*
	2nd to 3rd	180 (26.6)	106 (15.7)	390 (57.7)	
	4th or later	78 (21.3)	60 (16.3)	229 (62.4)	
Type of delivery	Natural	246 (25.6)	138 (14.4)	576 (60.0)	<0.001*
	Caesarean	99 (21.0)	113 (24.0)	259 (55.0)	

[Table/Fig-4]: Distribution of the child's type of feeding practices according to the mean maternal knowledge (mean±SD) of proper feeding practices score, maternal socio-economic status, and the included child demographic characteristics (N=1438); Values presented as n (%)

Variables		Did/does the child have any caries?				
		Yes	No	I don't know	Total N=1438	p-value
Type of feeding practices	Exclusive breastfeeding	70 (20.2)	265 (76.8)	10 (2.8)	345 (100)	0.351
	Exclusive bottle-feeding	54 (21.5)	183 (72.9)	14 (5.5)	251 (100)	
	Mix-feeding	186 (22.09)	611 (72.56)	45 (5.3)	842 (100)	
The child's oral hygiene practice	I brush his/her teeth	134 (43%)	489 (46.2%)	36 (52.2%)	659 (100)	0.158
	I supervise him/her during brushing	118 (38.1%)	428 (40.4%)	24 (34.8%)	570 (100)	
	He/she brushes his/her teeth without any supervision	58 (18.7%)	142 (13.4%)	9 (13%)	209 (100)	

[Table/Fig-5]: Association between the child's feeding practices and oral hygiene practices with having dental caries (N=1438).
*Using the Chi-square test.,p-value<0.05 significant; Values presented as n (%)

Type of feeding	Exclusive breastfeeding R	Exclusive bottle-feeding		Mix-feeding	
	n (%)	n (%)	p-value OR (95% CI)	n (%)	p-value OR (95% CI)
Maternal knowledge of proper feeding practices					
Mean knowledge score (out of five)	2.77 ±1.58	2.56±1.43	0.218 0.921 (0.811-1.053)	2.65±1.28	0.357 0.954 (0.864-1.054)
Maternal socioeconomic status					
Maternal education					
Illiterate/primary school	113 (22.2)	91 (17.8)	0.036* 1.530 (1.029-2.276)	306 (60)	0.202 1.213 (0.90112-1.633)
Intermediate/high school	81 (23.4)	79 (22.8)	0.001* 2.162 (1.367-3.418)	186 (53.8)	0.560 1.113 (0.777-1.592)
College or higher R	151 (25.9)	81 (13.9)		350 (60.1)	
Maternal occupation					
Student	16 (14.5)	19 (17.3)	0.035* 2.164 (1.055-4.440)	75 (68.2)	<0.001* 2.803 (1.580-4.972)
Working	68 (17.8)	61 (15.9)	0.006* 1.814 (1.183-2.780)	254 (66.3)	<0.001* 2.215 (1.597-3.072)
Housewife R	261 (27.6)	171 (18.1)		513 (54.3)	
Average monthly household income					
Low	84 (25.1)	54 (16.2)	0.815 1.060 (0.652-1.724)	196 (58.6)	0.084 1.373 (0.958-1.968)
Middle	128 (20.9)	125 (20.2)	0.003* 1.827 (1.229-2.718)	361 (58.9)	0.003* 1.587 (1.173-2.147)
High	133 (27.1)	72 (14.7)		285 (58.2)	
Child's demographic data					
Childbirth order					
1st	87 (22.4)	85 (21.9)	0.004 1.85 (1.215-2.81)	216 (55.7)	0.318 0.85(0.614-1.17)
2nd-3rd	180 (26.6)	106 (15.7)	0.11 1.392 (0.93-2.09)	390 (57.7)	0.038* 0.723 (0.533-0.98)
4th or later	78 (21.3)	60 (16.3)		229 (62.4)	
Method of delivery					
Normal	246 (25.6)	138 (14.4)	<0.001* 0.500 (.354 -0 .707)	576 (60)	0.407 0.888 (0.671-1.176)
Caesarean delivery	99 (21)	113 (24)		259 (55)	

[Table/Fig-6]: Multinomial regression analysis results for the relationship between the participating child's feeding practices (dependent variable) and the mean maternal knowledge score of proper feeding practices (covariate), maternal socioeconomic status, and the participating child's demographic data (N= 1438).
*Significant level at 0.05 using the Chi-square test

When Socioeconomic Status (SES) factors were examined, maternal occupation emerged as one of the main reasons mothers in Saudi Arabia switched to formula and bottle-feeding. In The present study, working mothers-particularly students-practiced exclusive

breastfeeding significantly less frequently than housewives [18]. In addition, housewives practiced nocturnal feeding for longer durations. Although some studies have reported no statistically significant differences in breastfeeding patterns between working mothers and housewives, the prevalence of exclusive breastfeeding has consistently been higher among housewives [22,23]. In Saudi Arabia, mothers are legally entitled to only two months of fully paid maternity leave [24]. Therefore, extending maternity leave and improving workplace breastfeeding facilities may help encourage mothers to continue breastfeeding.

Maternal education level is a crucial factor influencing feeding practices [19]. The present study found that mothers with intermediate or high school education bottle-fed their children significantly less than mothers with higher education levels. This finding is supported by Al-Othman AM et al., (2002), who reported a strong association between maternal education and favorable breastfeeding practices [19].

Mothers who recognised the importance of breastfeeding were found to be 2.2 times more likely to practice exclusive breastfeeding [25]. The present study supports previous literature indicating that most mothers in Saudi Arabia are aware of the benefits of breast milk [16,26]. While many mothers were knowledgeable about the risks associated with late weaning and nocturnal bottle-feeding, most lacked awareness regarding nocturnal breastfeeding and delayed weaning after tooth eruption. These findings align with earlier studies [19,21] and highlight the urgent need for intensive maternal education programs in Saudi Arabia.

More mothers reported bottle-feeding their children beyond two years of age than continued breastfeeding. This may be because bottle-feeding is perceived as more manageable and less stressful as children grow older. Additionally, no association was found between maternal knowledge scores and actual feeding practices, suggesting that SES plays a more influential role in feeding choices. This relationship remained significant even after adjusting for other variables in regression analysis.

Furthermore, the mode of delivery influenced breastfeeding prevalence. Caesarean section delivery was associated with lower rates of breastfeeding and higher rates of bottle-feeding, consistent with findings from a previous systematic review and meta-analysis [27]. This may be attributed to delayed initiation of breastfeeding, impaired lactation onset, and disrupted mother-infant contact following caesarean delivery [28].

In this cross-sectional study, no significant association was observed between maternal feeding reports and dental caries. The highest proportion of children who experienced dental caries were those fed using mixed methods, consistent with findings from Somavilla et al., (2021), who reported similar caries prevalence among breastfed, bottle-fed, and mixed-fed children [29]. Previous studies in Saudi Arabia examining feeding practices and ECC risk have yielded inconsistent results [6,30]. A recent study from eastern Saudi Arabia reported that maternal occupation, smoking, and breastfeeding or bottle-feeding beyond 18 months were associated with an increased risk of ECC [31].

In the United Arab Emirates, a cohort study of 167 mothers reported that 84.3% had ever breastfed, 99.4% initiated breastfeeding early, and 32.9% practiced exclusive breastfeeding for the first six months [32]. To minimise recall bias inherent in retrospective maternal reports, the present study included mothers of children aged 2-4 years, who were likely to have recently weaned their children. Additionally, the present sample size was larger than that of many previous Saudi studies, and participants were recruited from three distinct regions of Jeddah.

Limitation(s)

A major limitation of present study is that dental caries assessment relied on parental reports rather than clinical examinations. Such reports may be influenced by recall bias, personal perceptions, or misinterpretation of symptoms, potentially leading to underreporting or overreporting. Variations in parental understanding may also affect data consistency. Future cohort studies incorporating clinical dental examinations are recommended to further evaluate feeding practices, maternal knowledge, and ECC prevalence. The study findings underscore the importance of improving maternal socioeconomic conditions to support optimal childcare and dietary practices.

CONCLUSION(S)

Among mothers in Jeddah, Saudi Arabia, the rate of exclusive breastfeeding was low, and knowledge of appropriate feeding practices was limited. Feeding practices were primarily influenced by socioeconomic status, childbirth order, and mode of delivery. No significant association was identified between feeding practices and dental caries, although children fed using mixed methods had the highest reported prevalence of caries. Enhancing maternal education and promoting exclusive breastfeeding may play a crucial role in improving child health outcomes.

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[APPENDIX-1]

The validated questionnaire that was used among mothers (N=1438)

Please answer the following Questions if you are a mother of a child between the ages of two and four years.

The demographic characteristics of the participating mothers:

1. Age in years: ( )
2. Level of education:
   a. Illiterate/primary school b. Intermediate/high school
   c. College level or higher
3. Occupation:
   a. Housewife b. Student c. Working
4. Average monthly household income in Riyals:
   a. < 7000 Saudi Riyals b. 7000-16000 Saudi Riyals
   c. > 16000 Saudi Riyals

Answer the following questions about your youngest child between the ages of two and four years.

1. How old is your child in years: ( )
2. What is your child's gender?
   a. Male b. Female
3. What is your childbirth order:
   a 1st b. 2nd to 3rd c. 4th or later
4. What is the child's delivery method?
   a. Natural delivery b. Caesarean delivery.
5. Did/does this child have caries in his/her teeth?
   a. Yes b. No c. I don't know
6. How would you describe the child's oral hygiene practices?
   a. I brush his/her teeth b. I supervise him/her during brushing. **c.** He/she brushes his/her teeth without any supervision.

Feeding practices of the youngest child between the ages of 2 and 4 years.

1. Did you breastfeed your child?
   a. Yes b. No
2. If yes, how long did you breastfeed your child?
   a. 0-3 months. b. 4-6 months. c. 7-12 months.
   d. 13-24 months. e. >25 months.
3. Did you bottle-feed your child?
   a. Yes b. No
4. If yes, how long did you bottle-feed your child?
   a. 0-3 months. b. 4-6 months. c. 7-12 months.
   d. 13-24 months. e. >25 months.
5. Did you breastfeed your child at night?
   a. Yes b. No
6. If yes, how long did you breastfeed your child at night?
   a. 0-3 months. b. 4-6 months. c. 7-12 months.
   d. 13-24 months e. >25 months
7. Did you bottle-feed your child at night?
   a. Yes b. No
8. If yes, how long did you bottle-feed your child at night?
   a. 0-3 months. b. 4-6 months. c. 7-12 months.
   d. 13-24 months e. >25 months.

9. Did you add any liquids other than formula milk in the child's bottle, especially at bedtime?
   a. Yes b. No
10. If yes, specify the type of added liquid. .....

Answer the following knowledge-based questions.

1. Mother's milk is the best food source for a child.
   a. Correct. b. Wrong. c. I do not know.
2. Late weaning of breastfeeding after tooth eruption may lead to dental caries?
   a. Correct. b. Wrong. c. I do not know.
3. Late weaning of bottle-feeding after tooth eruption may lead to dental caries?
   a. Correct. b. Wrong. c. I do not know.
4. After teeth eruption, breastfeeding during the night can lead to dental caries?
   a. Correct. b. Wrong. c. I do not know.
5. After teeth eruption, bottle-feeding during the night can lead to dental caries?
   a. Correct. b. Wrong. c. I do not know.

Thank You