ORIGINAL ARTICLE

# Knowledge and Awareness Level of Children's Oral Health Care among Parents in Saudi Arabia

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## Abstract

**Background:** Parental knowledge and awareness are critical for shaping children's oral hygiene, diet, and dental visits. In Saudi Arabia, despite recommendations from the American academy of pediatric dentistry for twice-daily brushing with parental assistance, many parents undervalue early dental care, leading to delayed checkups and neglected preventive practices. Early childhood caries remains highly prevalent, affecting about 73% of preschool children, and is linked to poor oral hygiene, unhealthy diets, and limited parental awareness. **Objectives:** The objective of this study was to assess the knowledge and awareness level of children's oral health care among parents in Saudi Arabia. **Methodology:** A cross-sectional survey was conducted in Saudi Arabia from July to December 2025 using a structured questionnaire covering socio-demographics and domains of knowledge (10 items), practices (7 items), awareness/motivation (5 items), and attitude (3 items). Responses were scored (knowledge: 0–10; practice: 0–7; awareness/motivation: 0–5; attitude: 3–15) and categorized into predefined levels; data were analyzed in the Statistical Package for the Social Sciences v28. **Results:** A total of 322 parents participated; all were female, 46.6% were aged 20–35 years, 64.6% held a bachelor's degree, and 93.5% were married. Knowledge was high in 60.9%, moderate in 33.5%, and low in 5.6%. Despite high endorsement of twice-daily brushing (93.8%) and 6monthly checkups (90.4%), only 42.5% reported that brushing should start when the first tooth erupts and 36.3% selected age 1 year for the first dental visit, while 40.7% favored the first visit only when problems occur. Fluoride protection was recognized by 53.4%, and 59.9% reported fluoride-toothpaste use. Practices were fair in 60.6%, poor in 33.2%, and good in 6.2%; 68.0% reported dental visits only when problems occur, 88.8% reported sugary snacks between meals at least sometimes, and 24.2% reported bottle-feeding at sleep. Most children brushed once (43.8%) or twice daily (45.0%), and 69.9% received parental brushing assistance. Awareness/motivation was predominantly moderate (73.3%), and attitude was high in 89.4%. Schools were perceived as inadequate for oral-health education by 55.6%, with information mainly from internet and dentists. **Conclusion:** Parents demonstrated generally high knowledge and positive attitudes, but important gaps persist in the early preventive milestones and symptom-driven dental utilization, indicating a need for targeted, practical parental education for families.

**Keywords:** Awareness, children's oral health care, knowledge, Saudi Arabia

## INTRODUCTION

Parental knowledge and awareness of children's oral health significantly influence children's oral hygiene practices, diet, and dental visits. Studies in Saudi Arabia have revealed gaps in parental understanding regarding tooth brushing, fluoride use, the importance of primary teeth,

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and regular dental visits, highlighting the need for targeted educational interventions.[1]

Optimal oral hygiene from early childhood is essential for preventing dental problems later. The American academy of pediatric dentistry recommends twice-daily brushing with an age-appropriate soft toothbrush, with parental assistance for children who cannot brush independently. However, many parents l underestimate the importance of early dental care, leading to inadequate supervision, neglected brushing, and skipped checkups unless pain occurs.[2] These issues highlight the importance of strengthening parental awareness and promoting preventive practices, as a positive attitude toward oral health, together with knowledge of dental care and nutrition, is essential to reducing the impact of dental diseases through early intervention.[3]

Early childhood caries (ECC) is a major oral health issue frequently seen in children under 6 years old. In Saudi Arabia, ECC remains widespread, with studies reporting a prevalence of around 73% among preschool-aged children in cities such as Riyadh and Jeddah. This research aims to evaluate how much parents in Saudi Arabia know about children's oral health.[4]

In 2022, a total of 72.4% of parents reported that their children experienced toothache. Oral symptoms and lesions were linked to a greater difficulty in accessing dental care. Barriers to dental care were more common among parents with lower educational levels and those with more children. Overall, the findings indicate a high level of unmet oral health needs in children, highlighting the importance of parental education in improving children's oral health and addressing public health concerns.[5]

A questionnaire was randomly distributed among parents of 2–6-year-old children who visited Buraidah Central Hospital and the result has shown that parental knowledge and oral hygiene practices improved with higher levels of education. In addition, families with fewer children demonstrated better dietary and hygiene practices. All findings were statistically significant ($P < 0.05$).[6]

Parental knowledge and behavior regarding caries formation and prevention were found to be not satisfactory. Fathers showed less awareness compared with mothers in multiple aspects. Prophylactic guidance should be reinforced by healthcare and oral healthcare providers to improve parental knowledge in Saudi Arabia.[7]

Although several national and international efforts aim to improve awareness, dental caries continues to be among the most common chronic diseases affecting children in Saudi Arabia, with lasting implications for their health and quality of life. Many existing studies are region-specific, outdated, or lack comprehensive evaluation of both knowledge and actual practices.[8]

### Objective

This study aims to assess the current levels of parental knowledge, awareness, and practice regarding children's oral health across various regions of Saudi Arabia and to identify brushing habits, sugar intake, and the timing of dental checkups.

## METHODOLOGY

### Study design and setting

This research consisted of three cross-sectional studies conducted in Saudi Arabia between July 2025 and December 2025.

### Participants, inclusion, and exclusion criteria

Participants were mothers residing in Saudi Arabia. Inclusion criteria comprised mothers of any age whose children, male or female, were either currently receiving dental treatment for caries or had a history of dental treatment, and who were willing to participate in the study. Mothers who were not the primary caregivers or lived outside Saudi Arabia were excluded.

### Data collection and instrument

Data were collected using a structured, self-administered questionnaire developed based on a review of relevant literature,[7] and tailored to the study objectives. The questionnaire comprised three sections:

1. Introduction and Consent: Brief study overview and consent confirmation for voluntary participation
2. Demographic Information: Age, gender, residential area, educational level, and income
3. Knowledge and Awareness Assessment: Questions evaluating parents' understanding of children's oral health, including oral hygiene practices, common dental problems, sources of information, attitudes toward preventive dental visits, awareness of early signs of dental caries, factors affecting children's oral health, and motivations for seeking dental care.

### Scoring system

The questionnaire contained 37 statements and six socio-demographic items. Correct or positive responses received one point, while incorrect or "I don't know" responses received zero points. Scores were categorized as follows:

- Knowledge (10 points): Low 0–3, moderate 4–6, and high 7–10
- Practices (7 points): Poor 0–2, fair 3–5, and good 6–7
- Awareness and motivation (5 points): Low 0–2, moderate 3–4, and high 5

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- Attitude (15 points): Low 3–7, moderate 8–11, and high 12–15.

### Pilot testing

A pilot test was conducted among a small sample of parents to evaluate clarity, feasibility, and ease of use of the questionnaire. Feedback from the pilot was used to refine the instrument. Data from the pilot study were excluded from the final analysis.

### Data entry and analysis

Data were entered into Microsoft Excel for Windows (Office 2021) and subsequently imported into IBM Statistical Package for the Social Sciences Statistics version 28.0 for statistical analysis.

## RESULTS

The socio-demographic characteristics of the participants ($n$ = 322) show that the study participants were mostly women in their early to middle adulthood years as almost half of them are aged between 20 and 35 years. The majority of them are those with a bachelor degree and have low-to-middle income level. The large percentage of married participants (93.5) and the fact that most of them had three to five children give critical background in the context of family processes and possible health-related practices. Furthermore, the fact that 94.4% of children reside with both parents can have an impact on the stability of households as well as the final effect on the health of children.

Figure 1 depicts different ideas regarding the age when a child should start brushing his or her teeth. Medically, the most sought after is that one should begin to brush immediately the first tooth comes out, which is the majority of respondents (42.5%). Nonetheless, quite a significant proportion of respondents (25.2 and 28) reported later ages (3 years old or 1 year old).

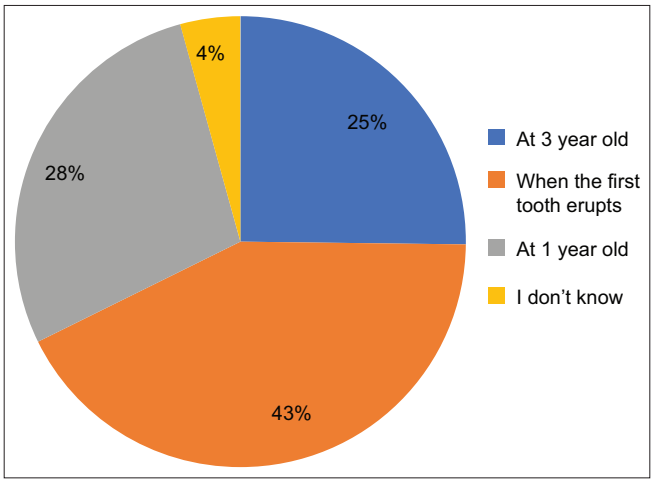


**Figure 1:** Illustrates at what age a child should start brushing their teeth ($n$=322)

As shown in Table 2, parents in Saudi Arabia show rather good awareness of such critical areas of oral health of children, as the necessity of addressing dental caries (77.6%) and the use of regular dental check-ups (90.4%), there are still significant gaps in background knowledge. Only a minority of the parents are aware that they should start brushing the teeth once the first tooth starts to grow (42.5%), and only approximately one-third understand that the first dental appointment should be made at the age of one. The level of awareness of preventive measures, including the use of fluoride (53.4%) and fissure sealants (50.6%), is average, which means that it could be raised through focused education. There are still some misconceptions with the idea that night feeding is not a risk factor to caries (30.1) and that miswak is an adequate oral health measure (26.1). In general, the results indicate the need to boost parental education so that effective and early oral health practices among children are achieved.

The findings have shown that oral-hygiene habits of Saudi Arabian parents are generally good, with a majority of the children brushing their teeth once or twice a day and almost three-quarters being aided by their parents. Nonetheless, there are still some gaps in the preventive care: The percentage of parents who are not aware of using fluoride is rather high, and visiting a dentist is rather a problem-solving activity than a regular one. Dietary risk factors remain, with most kids eating sugary snacks between meals and almost one-quarter of kids sleep with a bottle during their early childhood stages, which are both associated with ECC. Even though the replacement practice of the toothbrush seems acceptable, the combination patterns illustrate the necessity of the reinforcement of parental education of the use of fluoride, the regularity of dental checkups, and the decrease of cariogenic feeding habits to maximize the oral health conditions of children [Table 3].

The data indicate that parental awareness and motivation toward the practice of oral hygiene among children are generally high as more than 90% of parents promote their children to brush their teeth daily and converse with their children about the significance of oral health. Nonetheless, according to the opinion of more than half of the surveyed people, school does not provide sufficient contribution to oral-health education, which means that there is a possibility of an institutional gap in support. The sources of information are primarily non-clinical, but almost half of the parents consult the internet, and dentists demonstrate 46.3% as the information sources [Table 4].

The figures show that most parents in Saudi Arabia have a positive attitude toward oral health of their children. A majority of the respondents are firm believers of the

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**Table 1:** Socio-demographic characteristics of participants (*n*=322)

| Parameter | No. | Percentage |
|---|---|---|
| Age group | | |
| 20–35 years old | 150 | 46.6 |
| 36–45 years old | 108 | 33.5 |
| 46–60 years old | 64 | 19.9 |
| Gender | | |
| Female | 322 | 100.0 |
| Educational level | | |
| High school of less | 63 | 19.6 |
| Postgraduate studies or doctorate | 16 | 5.0 |
| Bachelor | 208 | 64.6 |
| Diploma | 35 | 10.9 |
| Income | | |
| 1,000–5,000 | 149 | 46.3 |
| 6,000–10,000 | 86 | 26.7 |
| <1,000 | 19 | 5.9 |
| More than 10,000 | 68 | 21.1 |
| Marital status | | |
| Widow | 4 | 1.2 |
| Single | 5 | 1.6 |
| Married | 301 | 93.5 |
| Divorced | 12 | 3.7 |
| How many children do you have? | | |
| 1–2 children | 118 | 36.6 |
| 3–5 children | 169 | 52.5 |
| 6 or more children | 35 | 10.9 |
| Does the kids live with both parents? | | |
| No | 18 | 5.6 |
| Yes | 304 | 94.4 |

**Table 2:** Parameters related to knowledge level of children's oral health care among parents in Saudi Arabia (*n*=322)

| Parameter | No. | Percentage |
|---|---|---|
| At what age should a child start brushing their teeth? | | |
| At 3 years old | 81 | 25.2 |
| When the first tooth erupts | 137 | 42.5 |
| At 1 year old | 90 | 28.0 |
| I don't know | 14 | 4.3 |
| What is the ideal age for the first dental visit? | | |
| When the first tooth erupts | 44 | 13.7 |
| At 1 year old | 117 | 36.3 |
| Only when there is a problem | 131 | 40.7 |
| I don't know | 30 | 9.3 |
| Do you think dental caries in primary teeth is important and needs treatment? | | |
| I don't know | 47 | 14.6 |
| No | 25 | 7.8 |
| Yes | 250 | 77.6 |
| Do you think using fluoride protects children's teeth from decay? | | |
| I don't know | 92 | 28.6 |
| No | 58 | 18.0 |
| Yes | 172 | 53.4 |
| Have you heard about fissure sealant? | | |
| I don't know | 21 | 6.5 |
| No | 138 | 42.9 |
| Yes | 163 | 50.6 |
| Do you think cleaning children's teeth with miswak alone is enough? | | |
| No | 238 | 73.9 |
| Yes | 84 | 26.1 |
| Do you think a regular dental check up every 6 months is necessary | | |
| No | 31 | 9.6 |
| Yes | 291 | 90.4 |
| Are you aware that dental caries can affect general health? | | |
| No | 35 | 10.9 |
| Yes | 287 | 89.1 |
| Do you think brushing teeth twice daily is necessary | | |
| No | 20 | 6.2 |
| Yes | 302 | 93.8 |
| Do you think night feeding increase the risk of tooth decay? | | |
| No | 97 | 30.1 |
| Yes | 225 | 69.9 |

importance of early oral health education (80.7), they are confident about the management of their child oral health (64.9), and they also believe that frequent dental check-ups prevent oral health (68.3). This implies that parental awareness and participation in preventive oral care among the pediatrics is generally high.

This pie chart presents the distribution of the knowledge scores of the study population indicating that most of them (60.9%) have high level of knowledge with 33.5% having moderate level and a minor percentage (5.6%) having low level of knowledge. The implication of this is that there is a satisfactory level of knowledge in the assessed group, as shown in Figure 2.

Table 6 shows how the practice scores are distributed among the study participants ($n$ = 322). Most of them practiced fairly (60.6%), with the smaller percentage practicing as good (6.2%). It is also interesting to note that one-third of the participants (33.2) practiced poorly.

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**Table 3:** Parameters related to practice level of children's oral health care among parents in Saudi Arabia (*n*=322)

| Parameter | No. | Percentage |
|---|---|---|
| How many times does your child brush their teeth daily? | | |
| More than twice a day | 28 | 8.7 |
| Never | 8 | 2.5 |
| Twice a day | 145 | 45.0 |
| Once a day | 141 | 43.8 |
| Who helps your child brush their teeth? | | |
| One of parents | 225 | 69.9 |
| Someone else | 20 | 6.2 |
| No one | 77 | 23.9 |
| Does your child use toothpaste containing fluoride? | | |
| I don't know | 66 | 20.5 |
| No | 63 | 19.6 |
| Yes | 193 | 59.9 |
| How often does your child visit the dentist? | | |
| Never | 17 | 5.3 |
| Only when there is a problem | 219 | 68.0 |
| Every 6 months | 66 | 20.5 |
| Once a year | 20 | 6.2 |
| Do you give your child sugary snacks between meals? | | |
| Never | 4 | 1.2 |
| Sometimes | 206 | 64.0 |
| Rarely | 32 | 9.9 |
| Yes, always | 80 | 24.8 |
| Does your child sleep with a bottle of milk or juice? | | |
| No | 244 | 75.8 |
| Yes | 78 | 24.2 |
| How often do you change your child's toothbrush? | | |
| Less than once a year | 49 | 15.2 |
| Every 6 months | 130 | 40.4 |
| Every 3 months | 143 | 44.4 |

**Table 4:** Parameters related to awareness and motivational level of children's oral health care among parents in Saudi Arabia (*n*=322)

| Parameter | No. | Percentage |
|---|---|---|
| Do you encourage your child to brush their teeth daily? | | |
| No | 23 | 7.1 |
| Yes | 299 | 92.9 |
| Do you talk to your child about the importance of teeth and oral health? | | |
| No | 28 | 8.7 |
| Yes | 294 | 91.3 |
| Do you think schools play an adequate role in raising children's awareness about oral health? | | |
| No | 179 | 55.6 |
| Yes | 143 | 44.4 |
| Where do you get your information about children's oral health? | | |
| Friends | 12 | 3.7 |
| Internet | 156 | 48.4 |
| School | 5 | 1.6 |
| Dentist | 149 | 46.3 |

**Table 5:** Parameters related to attitude level of children's oral health care among parents in Saudi Arabia (*n*=322)

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| Parameter | No. | Percentage |
|---|---|---|
| I believe it is important to teach children oral hygiene early | | |
| Agree | 42 | 13.0 |
| Strongly agree | 260 | 80.7 |
| Disagree | 7 | 2.2 |
| Neutral | 13 | 4.0 |
| I feel confident in taking care of my child's oral health | | |
| Agree | 79 | 24.5 |
| Strongly agree | 209 | 64.9 |
| Disagree | 4 | 1.2 |
| Neutral | 30 | 9.3 |
| I believe visiting the dentist regularly prevents future dental issues | | |
| Agree | 75 | 23.3 |
| Strongly agree | 220 | 68.3 |
| Disagree | 4 | 1.2 |
| Strongly disagree | 2 | 0.6 |
| Neutral | 21 | 6.5 |

As Table 7 shows, the highest proportion of the participants (73.3) were moderate awareness and motivation, and the high awareness (18.9) and low awareness (7.8) were observed in 18.9 and 7.8% of the study population ($n$ = 322).

Most of the respondents (89.4) had a high score in attitude which is a positive disposition. The percentage of low attitudinal attitudes was very low (0.3), with 10.2% of attitudinal moderate attitudes, implying that the attitudinal attitudes were generally positive ($n$ = 322).

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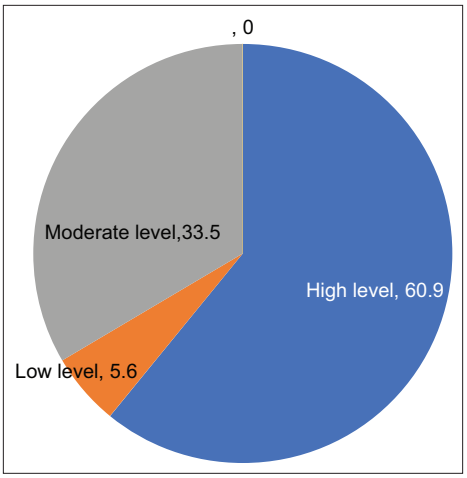


**Figure 2:** Illustrates knowledge score results among the participants (*n*=322)

**Table 6:** Practice score results among the participants (*n*=322)

| Practice score | Frequency | Percentage |
|---|---|---|
| Fair practice | 195 | 60.6 |
| Good practice | 20 | 6.2 |
| Poor practice | 107 | 33.2 |
| Total | 322 | 100.0 |

**Table 7:** Awareness and motivation score results among the participants (*n*=322)

| Awareness and motivation score | Frequency | Percentage |
|---|---|---|
| High awareness | 61 | 18.9 |
| Low awareness | 25 | 7.8 |
| Moderate awareness | 236 | 73.3 |
| Total | 322 | 100.0 |

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**Table 8:** Attitude score results among the participants (*n*=322)

| Attitude score | Frequency | Percentage |
|---|---|---|
| High attitude | 288 | 89.4 |
| Low attitude | 1 | 0.3 |
| Moderate attitude | 33 | 10.2 |
| Total | 322 | 100.0 |

The data presented in [Table 9] reveal participants' knowledge level that was insignificantly related to age group, gender, education level, monthly income, marital status, and number of children and if the kids live with both parents.

The data presented in [Table 10] reveal participants' practice level that was insignificantly related to age group, gender, education level, monthly income, marital status, and number of children and if the kids live with both parents.

The data presented in [Table 11] reveals participants' practice level that was insignificantly related to age group, gender, education level, monthly income, and marital status and if the kids live with both parents, while it was significantly related to number of children.

The data presented in [Table 12] reveals participants' attitude level that was insignificantly related to age group, gender, education level, monthly income, marital status, and number of children and if the kids live with both parents

## DISCUSSION

The present cross-sectional study was aimed to determine the parental knowledge, practices, and awareness/motivation and attitudes for oral health care of children in Saudi Arabia. Among 322 participating parents (all females), overall knowledge and attitudes were generally high; however, there were some preventive care and early intervention gaps, especially in relation to the time of the first dental visit, the time tooth brushing was initiated and patterns of routine dental attendance. These gaps are important as oral diseases still pose a huge burden on the health of people worldwide and are mostly preventable if risk factors are addressed early and consistently.[9]

In the present sample, 60.9% of the participants had a high knowledge score, 33.5% had a moderate knowledge score, and only 5.6% were scored low on knowledge. This comparatively favorable profile of knowledge means that general concepts of oral hygiene and the importance of primary teeth are broadly recognized but also demonstrates that "high knowledge" at the total-score level may be associated with misconceptions or incomplete understanding of important preventive milestones. In particular, although 93.8% agreed that brushing twice daily is needed and 90.4% thought that 6-monthly check-ups are needed, only 42.5% correctly identified that brushing should be started when the first tooth comes through and 36.3% correctly identified 1 year as the perfect age for the first dental visit; it is noteworthy that still 40.7% thought that the first dental visit should only be made when a problem arose.

The idea of early professional engagement is reflected in international policy and best practice statements focusing on a preventive approach and early start of oral health care for children. The FDI World Dental Federation policy statement on perinatal and infant oral health emphasizes the importance of the early start of oral health care for children and concludes that regular dental check-ups usually begin by the age of 1 or by the time that the first primary tooth is visible.[10] In the context of this, the current result that only about one-third of the parents choose to bring their children for their first dental visit at the age of 1 year and that the proportion selecting problem-driven visits was larger provides a definite target to be addressed with anticipatory

**Table 9:** Relationship between knowledge level regarding children's oral health care among parents in Saudi Arabia and socio-demographic characteristics (*n*=322)

| Parameters | Knowledge level | | | Total (*n*=322) (%) | *P*-value* |
|---|---|---|---|---|---|
| | High (%) | Low (%) | Moderate (%) | | |
| Age group | | | | | |
| 20–35 years old | 94 | 9 | 47 | 150 | 0.928 |
| | 48.0 | 50.0 | 43.5 | 46.6 | |
| 36–45 years old | 65 | 5 | 38 | 108 | |
| | 33.2 | 27.8 | 35.2 | 33.5 | |
| 46–60 years old | 37 | 4 | 23 | 64 | |
| | 18.9 | 22.2 | 21.3 | 19.9 | |
| Gender | | | | | |
| Female | 196 | 18 | 108 | 322 | |
| | 100.0 | 100.0 | 100.0 | 100.0 | |
| Educational level | | | | | |
| High school of less | 37 | 3 | 23 | 63 | **0.948** |
| | 18.9 | 16.7 | 21.3 | 19.6 | |
| Postgraduate studies or doctorate | 11 | 1 | 4 | 16 | |
| | 5.6 | 5.6 | 3.7 | 5.0 | |
| Bachelor | 129 | 12 | 67 | 208 | |
| | 65.8 | 66.7 | 62.0 | 64.6 | |
| Diploma | 19 | 2 | 14 | 35 | |
| | 9.7 | 11.1 | 13.0 | 10.9 | |
| Monthly income | | | | | |
| 1,000–5,000 | 92 | 10 | 47 | 149 | **0.465** |
| | 46.9 | 55.6 | 43.5 | 46.3 | |
| 6,000–10,000 | 45 | 5 | 36 | 86 | |
| | 23.0 | 27.8 | 33.3 | 26.7 | |
| <1,000 | 12 | 1 | 6 | 19 | |
| | 6.1 | 5.6 | 5.6 | 5.9 | |
| More than 10,000 | 47 | 2 | 19 | 68 | |
| | 24.0 | 11.1 | 17.6 | 21.1 | |
| Marital status | | | | | |
| Widowed | 2 | 0 | 2 | 4 | **0.750** |
| | 1.0 | 0.0 | 1.9 | 1.2 | |
| Single | 3 | 1 | 1 | 5 | |
| | 1.5 | 5.6 | 0.9 | 1.6 | |
| Married | 185 | 16 | 100 | 301 | |
| | 94.4 | 88.9 | 92.6 | 93.5 | |
| Divorced | 6 | 1 | 5 | 12 | |
| | 3.1 | 5.6 | 4.6 | 3.7 | |
| Number of children | | | | | |
| 1–2 children | 77 | 8 | 33 | 118 | **0.314** |
| | 39.3 | 44.4 | 30.6 | 36.6 | |
| 3–5 children | 98 | 10 | 61 | 169 | |
| | 50.0 | 55.6 | 56.5 | 52.5 | |
| 6 or more children | 21 | 0 | 14 | 35 | |
| | 10.7 | 0.0 | 13.0 | 10.9 | |

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**Table 9:** (*Continued*)

| Parameters | Knowledge level | | | Total (*n*=322) (%) | *P*-value* |
|---|---|---|---|---|---|
| | High (%) | Low (%) | Moderate (%) | | |
| Does the kids live with both parents? | | | | | |
| No | 11 | 1 | 6 | 18 | **1.000** |
| | 5.6 | 5.6 | 5.6 | 5.6 | |
| Yes | 185 | 17 | 102 | 304 | |
| | 94.4 | 94.4 | 94.4 | 94.4 | |

**P*-value was considered significant if ≤0.05

**Table 10:** Relationship between practice level regarding children's oral health care among parents in Saudi Arabia and socio-demographic characteristics (*n*=322)

| Parameters | Practice level | | | Total (*n*=322) (%) | *P*-value* |
|---|---|---|---|---|---|
| | Fair (%) | Good (%) | Poor (%) | | |
| Age group | | | | | |
| 20–35 years old | 94 | 12 | 44 | 150 | 0.257 |
| | 48.2 | 60.0 | 41.1 | 46.6 | |
| 36–45 years old | 60 | 4 | 44 | 108 | |
| | 30.8 | 20.0 | 41.1 | 33.5 | |
| 46–60 years old | 41 | 4 | 19 | 64 | |
| | 21.0 | 20.0 | 17.8 | 19.9 | |
| Gender | | | | | |
| Female | 195 | 20 | 107 | 322 | |
| | 100.0 | 100.0 | 100.0 | 100.0 | |
| Educational level | | | | | |
| High school of less | 38 | 5 | 20 | 63 | **0.624** |
| | 19.5 | 25.0 | 18.7 | 19.6 | |
| Postgraduate studies or doctorate | 8 | 1 | 7 | 16 | |
| | 4.1 | 5.0 | 6.5 | 5.0 | |
| Bachelor | 124 | 14 | 70 | 208 | |
| | 63.6 | 70.0 | 65.4 | 64.6 | |
| Diploma | 25 | 0 | 10 | 35 | |
| | 12.8 | 0.0 | 9.3 | 10.9 | |
| Monthly income | | | | | |
| 1,000–5,000 | 91 | 11 | 47 | 149 | **0.094** |
| | 46.7 | 55.0 | 43.9 | 46.3 | |
| 6,000–10,000 | 51 | 3 | 32 | 86 | |
| | 26.2 | 15.0 | 29.9 | 26.7 | |
| <1,000 | 6 | 2 | 11 | 19 | |
| | 3.1 | 10.0 | 10.3 | 5.9 | |
| More than 10,000 | 47 | 4 | 17 | 68 | |
| | 24.1 | 20.0 | 15.9 | 21.1 | |
| Marital status | | | | | |
| Widowed | 3 | 0 | 1 | 4 | **0.615** |
| | 1.5 | 0.0 | 0.9 | 1.2 | |

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**Table 10:** (*Continued*)

| Parameters | Practice level | | | Total (*n*=322) (%) | *P*-value* |
|---|---|---|---|---|---|
| | Fair (%) | Good (%) | Poor (%) | | |
| Single | 2 | 1 | 2 | 5 | |
| | 1.0 | 5.0 | 1.9 | 1.6 | |
| Married | 184 | 19 | 98 | 301 | |
| | 94.4 | 95.0 | 91.6 | 93.5 | |
| Divorced | 6 | 0 | 6 | 12 | |
| | 3.1 | 0.0 | 5.6 | 3.7 | |
| Number of children | | | | | |
| 1–2 children | 72 | 10 | 36 | 118 | **0.567** |
| | 36.9 | 50.0 | 33.6 | 36.6 | |
| 3–5 children | 103 | 7 | 59 | 169 | |
| | 52.8 | 35.0 | 55.1 | 52.5 | |
| 6 or more children | 20 | 3 | 12 | 35 | |
| | 10.3 | 15.0 | 11.2 | 10.9 | |
| Does the kids live with both parents? | | | | | |
| No | 10 | 1 | 7 | 18 | **0.871** |
| | 5.1 | 5.0 | 6.5 | 5.6 | |
| Yes | 185 | 19 | 100 | 304 | |
| | 94.9 | 95.0 | 93.5 | 94.4 | |

**P*-value was considered significant if ≤0.05

**Table 11:** Relationship between awareness and motivation level regarding children's oral health care among parents in Saudi Arabia and socio-demographic characteristics (*n*=322)

| Parameters | Awareness and motivation level | | | Total (*n*=322) (%) | *P*-value* |
|---|---|---|---|---|---|
| | High (%) | Low (%) | Moderate (%) | | |
| Age group | | | | | |
| 20–35 years old | 31 | 13 | 106 | 150 | **0.620** |
| | 50.8 | 52.0 | 44.9 | 46.6 | |
| 36–45 years old | 22 | 7 | 79 | 108 | |
| | 36.1 | 28.0 | 33.5 | 33.5 | |
| 46–60 years old | 8 | 5 | 51 | 64 | |
| | 13.1 | 20.0 | 21.6 | 19.9 | |
| Gender | | | | | |
| Female | 61 | 25 | 236 | 322 | |
| | 100.0 | 100.0 | 100.0 | 100.0 | |
| Educational level | | | | | |
| High school of less | 14 | 2 | 47 | 63 | **0.138** |
| | 23.0 | 8.0 | 19.9 | 19.6 | |
| Postgraduate studies or doctorate | 1 | 2 | 13 | 16 | |
| | 1.6 | 8.0 | 5.5 | 5.0 | |
| Bachelor | 41 | 21 | 146 | 208 | |
| | 67.2 | 84.0 | 61.9 | 64.6 | |
| Diploma | 5 | 0 | 30 | 35 | |
| | 8.2 | 0.0 | 12.7 | 10.9 | |

AQ7

(*Contd...*)

AQ1

**Table 11:** (*Continued*)

| Parameters | Awareness and motivation level | | | Total (*n*=322) (%) | *P*-value* |
|---|---|---|---|---|---|
| | High (%) | Low (%) | Moderate (%) | | |
| Monthly income | | | | | |
| 1,000–5,000 | 32 | 9 | 108 | 149 | **0.502** |
| | 52.5 | 36.0 | 45.8 | 46.3 | |
| 6,000–10,000 | 17 | 10 | 59 | 86 | |
| | 27.9 | 40.0 | 25.0 | 26.7 | |
| <1,000 | 3 | 2 | 14 | 19 | |
| | 4.9 | 8.0 | 5.9 | 5.9 | |
| More than 10,000 | 9 | 4 | 55 | 68 | |
| | 14.8 | 16.0 | 23.3 | 21.1 | |
| Marital status | | | | | |
| Widowed | 1 | 0 | 3 | 4 | **0.216** |
| | 1.6 | 0.0 | 1.3 | 1.2 | |
| Single | 3 | 0 | 2 | 5 | |
| | 4.9 | 0.0 | 0.8 | 1.6 | |
| Married | 56 | 25 | 220 | 301 | |
| | 91.8 | 100.0 | 93.2 | 93.5 | |
| Divorced | 1 | 0 | 11 | 12 | |
| | 1.6 | 0.0 | 4.7 | 3.7 | |
| Number of children | | | | | |
| 1–2 childrenā | 14 | 15 | 89 | 118 | **0.012** |
| | 23.0 | 60.0 | 37.7 | 36.6 | |
| 3–5 children | 40 | 10 | 119 | 169 | |
| | 65.6 | 40.0 | 50.4 | 52.5 | |
| 6 or more children | 7 | 0 | 28 | 35 | |
| | 11.5 | 0.0 | 11.9 | 10.9 | |
| Does the kids live with both parents? | | | | | |
| No | 3 | 0 | 15 | 18 | **0.408** |
| | 4.9 | 0.0 | 6.4 | 5.6 | |
| Yes | 58 | 25 | 221 | 304 | |
| | 95.1 | 100.0 | 93.6 | 94.4 | |

**P*-value was considered significant if ≤0.05

**Table 12:** Relationship between attitude level regarding children's oral health care among parents in Saudi Arabia and socio-demographic characteristics (*n*=322)

| Parameters | Attitude level | | | Total (*n*=322) | *P*-value* |
|---|---|---|---|---|---|
| | High (%) | Low (%) | Moderate (%) | | |
| Age group | | | | | |
| 20–35 years old | 137 | 1 | 12 | 150 | **0.588** |
| | 47.6 | 100.0 | 36.4 | 46.6 | |
| 36–45 years old | 94 | 0 | 14 | 108 | |
| | 32.6 | 0.0 | 42.4 | 33.5 | |
| 46–60 years old | 57 | 0 | 7 | 64 | |
| | 19.8 | 0.0 | 21.2 | 19.9 | |

(*Contd...*)

AQ1

**Table 12:** (*Continued*)

| Parameters | Attitude level | | | Total (*n*=322) | *P*-value* |
|---|---|---|---|---|---|
| | High (%) | Low (%) | Moderate (%) | | |
| Gender | | | | | |
| Female | 288 | 1 | 33 | 322 | |
| | 100.0 | 100.0 | 100.0 | 100.0 | |
| Educational level | | | | | |
| High school of less | 61 | 0 | 2 | 63 | **0.497** |
| | 21.2 | 0.0 | 6.1 | 19.6 | |
| Postgraduate studies or doctorate | 14 | 0 | 2 | 16 | |
| | 4.9 | 0.0 | 6.1 | 5.0 | |
| Bachelor | 181 | 1 | 26 | 208 | |
| | 62.8 | 100.0 | 78.8 | 64.6 | |
| Diploma | 32 | 0 | 3 | 35 | |
| | 11.1 | 0.0 | 9.1 | 10.9 | |
| Monthly income | | | | | |
| 1,000–5,000 | 139 | 0 | 10 | 149 | **0.509** |
| | 48.3 | 0.0 | 30.3 | 46.3 | |
| 6,000–10,000 | 69 | 1 | 16 | 86 | |
| | 24.0 | 100.0 | 48.5 | 26.7 | |
| <1,000 | 17 | 0 | 2 | 19 | |
| | 5.9 | 0.0 | 6.1 | 5.9 | |
| More than 10,000 | 63 | 0 | 5 | 68 | |
| | 21.9 | 0.0 | 15.2 | 21.1 | |
| Marital status | | | | | |
| Widowed | 4 | 0 | 0 | 4 | **0.815** |
| | 1.4 | 0.0 | 0.0 | 1.2 | |
| Single | 5 | 0 | 0 | 5 | |
| | 1.7 | 0.0 | 0.0 | 1.6 | |
| Married | 267 | 1 | 33 | 301 | |
| | 92.7 | 100.0 | 100.0 | 93.5 | |
| Divorced | 12 | 0 | 0 | 12 | |
| | 4.2 | 0.0 | 0.0 | 3.7 | |
| Number of children | | | | | |
| 1–2 children | 105 | 1 | 12 | 118 | **0.774** |
| | 36.5 | 100.0 | 36.4 | 36.6 | |
| 3–5 children | 152 | 0 | 17 | 169 | |
| | 52.8 | 0.0 | 51.5 | 52.5 | |
| 6 or more children | 31 | 0 | 4 | 35 | |
| | 10.8 | 0.0 | 12.1 | 10.9 | |
| Does the kids live with both parents? | | | | | |
| No | 18 | 0 | 0 | 18 | **0.325** |
| | 6.3 | 0.0 | 0.0 | 5.6 | |
| Yes | 270 | 1 | 33 | 304 | |
| | 93.8 | 100.0 | 100.0 | 94.4 | |

**P*-value was considered significant if ≤0.05

AQ1

guidance in the Saudi context. Importantly, the early visits are not intended to be primarily restorative, but rather risk-based prevention, feeding counseling, fluoride advice, and caregiver education are all delivered, which may decrease the incidence and severity of ECC.[11]

The lack of agreement between perceived importance of having regular check-ups (90.4%) and actual utilization patterns in the present study (68.0% reported visiting the dentist when a problem arises, while 20.5% reported going every 6 months) is clinically significant. A symptom driven pattern of care may contribute to the late presentation and loss of opportunity for prevention, especially in preschool children. Similar concerns have been reported in Saudi Arabia; in a cross-sectional study from Western Saudi Arabia, Nassar *et al*. have reported interestingly observed knowledge gaps regarding early signs of caries and professionally applied preventive measures and also reported that pain/trauma were major reasons for dental visits, which supports the need for a structured preventive guidance.[4,12]

Fluoride-related knowledge and behaviors in this study were of medium level. Only 53.4% of the participants agreed that fluoride helps protect children's teeth from decay. About 59.9% said that their child uses toothpaste with fluoride and 20.5% did not know if their child's toothpaste contained fluoride. This pattern is suggestive of fluoride exposure but knowledge gaps are lacking and may restrict appropriate dosing/supervision/conservative application. Due to the identification of adequate exposure to fluoride as an essential component of prevention of dental caries in global public-health guidance, strengthening caregiver understanding of fluoride use is a practical priority.[9,13]

Awareness of professional preventive adjuncts was also incomplete. Only half of parents had heard of fissure sealants (50.6%), 42.9% reported no awareness, and 6.5% were unsure. This finding is similar to what is known regionally in which many parents may be unfamiliar with preventive procedures; for example, the Western-region Saudi study by Nassar *et al*. showed low levels of parental awareness of the importance and application of fissure sealants.[4] Increasing awareness about preventive services can help caregivers to seek care for preventive services instead of waiting for the symptoms.

Dietary behaviors in the present study indicate chronic cariogenic exposures. Nearly, all parents reported that their child eats sweet snacks between meals at least occasionally (64.0% sometimes and 24.8% always) and 24.2% reported that their child sleeps with a bottle of milk or juice. These behaviors are consistent with known ECC risk pathways because frequent sugar exposure leads to increased acid challenges and nocturnal feeding results in less protective salivary clearance. In Saudi Arabia, national data on children's oral health needs and barriers have similarly highlighted the high frequency of unmet needs and barriers to accessing care; and therefore, prevention will need to focus on behaviors as well as barriers related to access.[2,7]

Attitudes were significantly positive in the present study. About 89.4% of the respondents in the study had a high score of attitude and 80.7% strongly agree that it is important to teach oral hygiene early. Such favorable attitudes can be used for behavior change if education is specific and doable. However, the present results show that positive beliefs were not enough to ensure early dental preventive visits or optimal fluoride knowledge, and that interventions beyond awareness-raising are required, which focus on practical skills and facilitation. There is evidence from Riyadh that parental oral health knowledge may be a determinant of parental practices, and the symptom-driven dental attendance is common, supporting the value of particularly directed education with feasible behavior change.[1,3]

Information sources in this study were mainly the internet (48.4%), dentists (46.3%), and schools had a minor role; it was found that more than half of the study participants (55.6%) thought that schools did not give a good contribution to oral health education. This indicates that the digital platforms and clinical encounters are important channels for the delivery of oral health messages and that school-based programs may be reinforced to reinforce consistent messaging about the importance of early dental attendance, fluoride use, and risk reduction of dietary factors. This approach is in line with the greater thrust in public health for prevention and tackling modifiable risk factors common to other non-communicable diseases.[9]

Most associations between socio-demographic characteristics and outcomes were non-significant in this dataset for knowledge, practice, and attitude; awareness/motivation was significantly associated with number of children. This may suggest that the studied constructs are driven by shared cultural norms and common information channels more than by socioeconomic gradients within this sample, although the all-female composition and the distribution of education/income may limit detection of differences.

Several limitations should be considered. First, the cross-sectional design does not allow causal inference between parental knowledge and children's behaviors. Second, practices were self-reported and may be affected by recall and social desirability bias. Third, all respondents were female, which limits generalizability to fathers and to households where caregiving roles differ. Finally, the survey did not include clinical oral examinations of children; therefore, the relationship between reported behaviors and actual caries outcomes could not be directly assessed.

## CONCLUSION

This study showed that Saudi parents generally had high knowledge (60.9%) and very positive attitudes (89.4%) toward children's oral health care, yet preventive behaviors and key milestone knowledge remained inconsistent. Fluoride-related awareness and use were moderate, and cariogenic practices were common, including frequent sugary snacking and children sleeping with a bottle. Awareness/motivation was mainly moderate and was the only domain significantly associated with number of children. These findings support implementing parental education emphasizing early dental attendance, fluoride use, and reducing high-risk feeding behaviors nationally in Saudi Arabia.

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## ETHICAL APPROVAL

The study was fully explained to all participants, and it was emphasized that participation was voluntary. Written informed consent was obtained from each participant before enrollment. All collected information was securely stored and used exclusively for research purposes.

## INFORMED CONSENT

Written informed consent was obtained from all study participants.

## DATA AND MATERIALS AVAILABILITY

All data generated or analyzed during this study are included in this published article.

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