e-ISSN: 2637-0611

Available online at
https://journal.uitm.edu.my/ojs/index.php/COS/index

Compendium of Oral Science 12(1) 2025, 40 - 52

Compendium of Oral Science

# Parental Perceptions of Early Childhood Oral Health in Relation to Children's Caries Experience: A Cross-Sectional Study

Alaa Sabah Hussein[1], Manal Mohamed Mansour Almoudi[2], Siti Hajar Hamzah[1*], Nur Athirah Abdul Aziz[1], Siti Nurfaezah Zainol[1]

[1]*Faculty of Dentistry, Universiti Teknologi MARA Sungai Buloh Campus, Jalan Hospital, 47000 Sungai Buloh, Selangor, Malaysia*
[2]*Department of Paediatric and Preventive Dentistry, Faculty of Dentistry, Al Zawia University, Al Zawia, Libya*

ARTICLE INFO

*Article history:*
Received 12 November 2023
Revised 02 February 2024
Accepted 25 May 2024
Online first
Published 01 March 2025

*Keywords:*
children
parents
knowledge
attitude
oral health

*DOI:*
10.24191/cos.v12i1.5646

ABSTRACT

Recognizing parental perception about early childhood oral health holds significance for crafting effective preventive strategies, given that parental actions and habits frequently exert considerable influence on their children's dental well-being. The aim of this study was to evaluate parental knowledge and practice in the prevention of dental caries in young children and to investigate the possible association between parental knowledge and practices and their children's caries status.

**Methods:** A cross-sectional study was conducted among parents who brought their children under the age of six (n=330 pairs) to the Paediatric Dental Clinic at Universiti Teknologi MARA, Malaysia. The children underwent a comprehensive dental screening while the parents completed a questionnaire regarding their child's oral health. Data were analyzed using descriptive statistics and bivariate analysis.

**Results:** The prevelence of early childhood caries was 76.8% and the mean dmft index was 5.50±4.88. Overall, 97.2% of parents recognized the importance of the primary teeth. However, only 46.2% were aware that the first dental examination should occur 12 months and only 66.3% believed that decayed primary teeth should be restored.

**Conclusion:** While many parents acknowledged the importance of primary teeth, they lacked sufficient knowledge about how to appropriately address carious teeth and the recommended time for the first dental visit. Therefore, parents should receive appropriate anticipatory guidance and also come to appreciate the benefits of early dental visits in preventing caries and promoting the well-being of their children.

[1*] Corresponding author. *E-mail address*: sitihajar1998@uitm.edu.my

## 1. INTRODUCTION

Early Childhood Caries (ECC) is a severe disease affecting the teeth of young children. Generally, first it affects the primary maxillary incisors and then progress to involve primary molars (American Academy of Pediatric Dentistry, 2011). ECC remains a serious public health problem and has been deemed the single most prevalent chronic infectious childhood disease in several developed and developing countries (Colak et al., 2013). The burden of dental caries among preschool children is the highest in South, East, and Southeast Asia. A published review reported the caries status in Southeast Asian countries is worse than for those in various regions of the world (Duangthip et al., 2016). The caries prevalence and experience (dmft score) in preschool children range 25-95% and 0.9–9.0 respectively (Duangthip et al., 2016), whereas in developed countries such as in the USA and UK are 23% and 28% respectively (Dye et al., 2015; Holmes et al., 2015).

Malaysia shares a similar concern about ECC among its preschool population. For the last decade, a slightly declining trend in dental caries prevalence among preschool children was noted but dental epidemiological surveys of 5 to 6-year-olds still indicated a higher dental caries prevalence among this population (MOH, 2003, 2011). According to the National Oral Health Plan for Malaysia 2011–2020, oral health of preschool children is of concern (MOH, 2011). The prevalence of dental caries among 5-year-old preschool children declined from 87.1 % in 1995, to 76.2 % in 2005, to 71.3 % in 2015 and although the dental caries prevalence declined from 1995 to 2005, the mean dft (decayed and filling) did not show a significant decline, only a slight decrease from 5.8 in 1995 to 5.5 in 2005 (MOH, 2015, 2011). In a 2015 National Oral Health Survey of Preschool Children (NOHPS) report, a slight reduction in caries severity was reported with dft of 4.83. However, this report indicated that the largest component of dft is the decay component (d), where the mean decay component (d) was 4.55 (MOH, 2015). The national oral health preschool survey (NOHPS) in 2005 reported that 55.8 % of 5-year-old children had 3 or more primary teeth with caries and 25.3 % of them had dmft >10 (MOH, 2007). In 2007, the dental caries prevalence among 6-year-old children was 74.5 % (MOH, 2009). In addition, according to NOHPS 2015, 21 % of 5-year-old children have 2 or less decayed or filled deciduous teeth (dft $\leq$ 2). Nonetheless, 65 % of children required dental caries treatment (MOH, 2015). Although a declining trend was observed, it still indicates a high caries prevalence and severity among young children in Malaysia.

Many local studies that were conducted in the last few years have observed an increasing trend in the prevalence of dental caries among young Malaysian children (Kaur et al., 2015). This prevalence ranged between 60 % to more than 90 % (Zahara, Fashihah, & Nurul, 2010; Oo, Naing, Mani, & Ismail, 2011; Ruhaya & Jaafar, 2012). A study conducted in Titiwangsa, Kuala Lumpur among preschool children found a high prevalence of dental caries that reached to 60 % with a mean dft score of 3.72 (Zahara et al., 2010). In Kelantan, the results showed a high caries prevalence of 98.1 % among preschool children. The majority of children who had caries (80.6 %) were in the “high category” (dmft > 7) (Ruhaya and Jaafar, 2012).

Primary preventive strategies to address ECC are considered to be a priority for public health activities. There are many factors such as feeding habits, sugar intake, nutritional status, tooth brushing habits, family income, socioeconomic status, parental awareness, and maternal educational level which influence child’s oral health during early childhood (Almoudi et al., 2019).

Parents’ knowledge and attitude about early childhood oral health is important. By understanding the parental perceptions about early childhood oral health, effective preventive measures can be developed. Parental behaviours and practices usually have a direct influence on children’s dental health. (Almoudi et al., 2016). Children under the age of 6 years spend most of their time with the mothers; therefore the earliest childhood routines and habits are acquired during this period such as dietary and oral hygiene habits which are dependent on the level of parental knowledge and behaviours (Almoudi et al., 2016).

https://doi.org/10.24191/cos.v12i1.5646 

Evaluating parental knowledge and behavior enables the dental team to enhance parental understanding and promote the utilization of accessible dental services, thereby preventing ECC and its associated complications effectively. Hence, the aims of this study were to assess the knowledge and practices of parents about ECC prevention and to investigate the possible association between parental knowledge and practices and their children's caries experience.

## 2. MATERIALS AND METHODS

This cross-sectional study was approved by the Human Ethics Committee at Universiti Teknologi MARA (UiTM). Prior to enrollment, all participants signed an informed consent form. Because ECC is age-specific, participation was limited to children under the age of 72 months.

A total of 330 pairs of parents and their preschool children participated in this study, attending either the paediatric dental clinic at the Faculty of Dentistry, Universiti Teknologi MARA (UiTM), or the Mobile Dental Services (MDC). The parents and children were invited to take part in the research. During the study, the child underwent a dental examination while the parent completed a questionnaire at the clinic. Children above 6 years old, those unaccompanied by parents, with special needs or medical issues, and parents who declined to participate were not considered for the study. Out of the total 330 questionnaires completed, 41 were excluded due to incompleteness, leaving 289 validated questionnaires included in the final analysis.

An estimated sample size of minimum 330 participants was calculated using Epi Info software, with a confidence interval of 95%, an alpha level of 0.05 and power of study of 80%.

Data were collected using a structured questionnaire survey, which was adopted and modified from the questionnaire developed by Hussein et al., 2013. The questionnaire was tested to ensure that it was valid and comprehensive. The finalized questionnaire was translated into Bahasa Melayu (BM) using the forward-back translation method. The forward and back translations were then finalized by two separate panels to ensure the semantic equivalence of the BM translated version to the original questionnaire. The questionnaire was designed to elicit information from parents regarding various aspects, including family demographics, their knowledge about oral hygiene practices, feeding habits, and the use of fluoride toothpaste for their children. Additionally, parents were queried about the timing and reasons for their child's first dental visit, as well as the frequency of subsequent dental visits. Furthermore, parents were asked about their beliefs regarding the significance of baby teeth, the potential impact of decayed primary teeth on permanent dentition, and the overall health of their children.

All the children underwent a comprehensive dental screening for dental status according to the World Health Organization criteria (WHO, 1997). The children were examined under light from the dental unit, a disposable dental mirror and a disposable dental probe. A carious lesion was recorded when the carious cavity was clear upon visual inspection or when the any type of caries was detected on any tooth surfaces using a dental probe. The dental caries was scored as the number of decayed (d), missing due to caries (m), or filled (f) primary teeth (t), i.e. dmft. ECC was defined as the presence of one or more decayed, missing (due to caries), or filled tooth surface on any primary tooth in children below 72 months of age (dmft>0).

Parent's responses were matched with findings from each child's dental examination. Study data were analysed using SPSS (version 17.0) (SPSS Inc., IBM, Malaysia). Analysis included frequencies of responses to all questions and the mean dmft as the main outcome variables. To compare two groups, Chi-square and Fisher's exact tests were used for categorical variables, while the t-test was applied for continuous variables. For comparisons involving multiple groups, Analysis of Variance (ANOVA) was conducted. The level of significance was set at $P \leq 0.05$.

https://doi.org/10.24191/cos.v12i1.5646 

## 3. RESULTS

A total 289 out of 330 parents of children below 72 months of age agreed to participate in this study with a response rate 87.6%. The demographic information of the parents and their children was presented in Table 1. The mean age of the parents was 35.44±5.63 years, with slightly more than half of parents (54.8 %) were between 25-34 years old. Majority of parents (96.5 %) were Malays. Two-third of the children (67.3 %) were accompanied by the mother. Overall, 86% of parents reported a history of caries experience. In addition, most of the children were between 3-6 years old and nearly half of them were male (50.9 %). Early childhood Caries (ECC) was found in nearly 77% of the children. (Table 1). In additions, majority of children (52.2 %) visited the dentist after the age of 2 years. Most of these dental visits were for routine check-ups (45 %) whicle others were due to presence of cavities (15.8 %), pain (12.9%) and for other reasons (8 %) (p =0.001). (Data not shown).

Table 1. Demographic characteristics of parents and their children.

| Demographic characteristics of parents | N (%) |
|---|---|
| Relation to the child (284/289) | |
| Father | 93 (32.7) |
| Mother | 191 (67.3) |
| Age (years) (272/289) | |
| <24 | 0 |
| 25-34 | 149 (54.8) |
| 35-44 | 101 (37.1) |
| >45 | 22 (8.1) |
| Race (289/289) | |
| Malay | 279 (96.5) |
| Indian | 1 (0.3) |
| Others | 9 (3.2) |
| Level of education (281/289) | |
| Less than high school | 4 (1.4) |
| High school | 118 (42.0) |
| College | 159 (56.6) |
| Employment status (258/289) | |
| Employed | 202 (78.3) |
| Unemployed | 56 (21.7) |
| Number of children in the family (284/289) | |
| ≤3 | 189 (66.5) |
| >3 | 95 (33.5) |
| Mean ± SD | 3.09±1.40 |
| Number of children below 6 years (273/289) | |
| ≤2 | 219 (80.2) |
| >2 | 54 (19.8) |
| Mean ± SD | 1.85±0.78 |
| Caries experience (287/289) | |
| Yes | 247 (86.1) |
| No | 40 (13.9) |
| **Demographic characteristics of children** | |
| Gender (289/289) | |
| Male | 147 (50.9) |
| Female | 142 (49.1) |
| Age (years) (289/289) | |
| ≤2 | 9 (3.1) |
| 3-6 | 280 (96.9) |
| Mean ± SD | 4.96±1.08 |

https://doi.org/10.24191/cos.v12i1.5646 

| | |
|---|---|
| Race (289/289) | |
| Malay | 279 (96.6) |
| Indian | 1 (0.3) |
| Others | 9 (3.1) |
| Caries experience (289/289) | |
| Yes (ECC) | 222 (76.8) |
| No (caries-free) | 67 (23.2) |
| dmft score (Mean± SD) | 5.50± 4.88 |

Table 2 has indicated no significant difference between dmft score of children with either their gender (p = 0.453) or race. (p = 0.134) respectively. On the other hand, young children had significantly less caries experience compared to older children p=0.002.

Table 2. Dental caries experience and dmft score of children by their demographic characteristics.

| Variables | Total N (%) | ECC N (%) | Caries-Free N (%) | p-value | dmft Mean ± SD | p-value |
|---|---|---|---|---|---|---|
| **Gender (289/289)** | | | | | | |
| Male | 147 (50.9) | 144 (49.82) | 33 (11.41) | 0.760 [a] | 5.71±5.012 | 0.453[b] |
| Female | 142 (49.1) | 108 (37.37) | 34 (11.76) | | 5.28±4.756 | |
| **Age (years) (289/289)** | | | | | | |
| ≤2 | 9 (3.1) | 3 (1.03) | 6 (2.07) | 0.002 [a] | 2.89±5.183 | 0.103[b] |
| 3-6 | 280 (96.9) | 219 (75.77) | 61 (21.10) | | 5.59±4.861 | |
| **Race (289/289)** | | | | | | |
| Malay | 279 (96.6) | 217 (75.08) | 62 (21.45) | 0.057 [a] | 5.52±4.802 | 0.134[b] |
| Indian | 1 (0.3) | 1(0.34) | 1 (0.34) | | - | |
| Others | 9 (3.1) | 4 (1.38) | 4 (1.38) | | 3.89±6.754 | |

Table 3 demonstrates the association between parental knowledge and practices in relation to their children's caries experience. Most parents acknowledged that baby teeth are important for their children's health (97.2%) and that untreated decayed teeth can negatively impact their child's overall health (98.3%)**.** However, there was no significant difference in the knowledge of parents of children with ECC and caries-free children (p= 0.881 and 0.369, respectively). Although many parents of children with ECC and caries-free (78.84% and 21.16%, respectively) acknowledged the importance of restoring decayed teeth, a significant proportion of parents in both groups demonstrated lacked timing of the first dental visit (74.03% and 25.97%, respectively), with no significant difference between them. Almost all parents agreed on their role in preventing decay in their children. Nevertheless, no significant difference was detected between both groups (p= 0.269). Additionally, 77.3% of the parents reported using fluoridated toothpaste for their young children, with no significant difference regarding the amount of toothpaste used on the toothbrush in both CF and ECC groups (p=0.392). Table 3 provided a detailed information on the children's dental caries status based on their parental knowledge and practices.

https://doi.org/10.24191/cos.v12i1.5646 

Table 3. Dental caries status of children by their parent's knowledge and practices.

| Variables | Total N (%) | ECC N (%) | Caries-Free N (%) | p-value |
|---|---|---|---|---|
| **Knowledge** | | | | |
| Baby teeth are important for your child's health (285/289) | | | | |
| Yes | 277 (97.2) | 214 (77.26) | 63 (22.74) | 0.881 [a] |
| No | 8 (2.8) | 6 (75.00) | 2 (25.00) | |
| Untreated decayed teeth can affect your child's general health (289/289) | | | | |
| Yes | 284 (98.3) | 219 (77.11) | 65 (22.89) | 0.369 [b] |
| No | 5 (1.7) | 3 (60.00) | 2 (40.00) | |
| Bottle feeding has bad effects of on child's dental health (287/289) | | | | |
| Yes | 208 (72.5) | 161 (77.40) | 47 (22.60) | 0.627 [a] |
| No | 79 (27.5) | 59 (74.68) | 20 (25.32) | |
| Early first dental visit is important to prevent caries (288/289) | | | | |
| Yes | 260 (90.9) | 202(77.69) | 58 (22.31) | 0.334 [a] |
| No | 26 (9.1) | 18 (69.23) | 8 (30.77) | |
| Children should have their first dental visit as soon as the first tooth erupts (286/289) | | | | |
| Yes | 132 (46.2) | 106 (80.30) | 26 (19.70) | 0.203 [a] |
| No | 154 (53.8) | 114 (74.03) | 40 (25.97) | |
| Fluoride toothpaste can be used even for toddlers (283/289) | | | | |
| Yes | 176 (62.2) | 137 (77.84) | 39 (22.16) | 0.553 [a] |
| No | 107 (37.8) | 80 (74.77) | 27 (25.23) | |
| Tooth decay is caused by bacteria that are transmitted to the child from family members (288/289) | | | | |
| Yes | 102 (35.4) | 26 (38.81) | 41 (61.19) | 0.508 [a] |
| No | 186 (64.6) | 41 (22.04) | 145 (77.96) | |
| Decayed baby teeth should be restored (285/289) | | | | |
| Yes | 189 (66.3) | 149 (78.84) | 40 (21.16) | 0.197 [a] |
| No | 96 (33.7) | 69 (24.21) | 27 (9.47) | |
| Fluoride toothpaste reduces the risk of tooth decay (285/289) | | | | |
| Yes | 229 (80.4) | 175 (76.42) | 54 (23.58) | 0.732 [a] |
| No | 56 (19.6) | 44 (78.57) | 12 (21.43) | |
| Minimal cleaning/ brushing or incorrect tooth brushing can increase a child's risk of developing tooth decay (286/289) | | | | |
| Yes | 260 (90.9) | 202 (77.69) | 58 (22.31) | 0.329 [a] |
| No | 26 (9.1) | 18 (69.23) | 8 (30.77) | |
| Parents can play a role in preventing tooth decay (288/289) | | | | |
| Yes | 284 (98.6) | 217(76.41) | 67 (23.59) | 0.269 [b] |
| No | 4 (1.4) | 4 (100.0) | 0 (0) | |
| Source of information about early first dental visit (145/289) | | | | |
| Family/friends | 18 (12.4) | 15 (83.33) | 3 (16.67) | |
| Dentist/doctor/nurse | 82 (56.6) | 64 (78.05) | 18 (2.95) | |
| TV/internet | 41 (28.3) | 33(80.493) | 8 (19.51) | 0.723 [b] |
| Others/ | 4 (2.7) | 4 (100.0) | 0 (0) | |
| **Practices** | | | | |
| Use fluoride toothpaste for your child (286/289) | | | | |
| Yes | 221 (77.3) | 171 (77.38) | 50 (22.62) | 0.738 [a] |
| No | 65 (22.7) | 49 (75.38) | 16 (24.62) | |
| Amount of toothpaste used for your child between 2-5 years (228/289) | | | | |
| Smear | 69 (30.7) | 50 (72.46) | 19 (27.54) | |
| ½ size of pea | 85 (38.6) | 65 (76.47) | 20 (23.53) | 0.392 [a] |
| Size of pea | 69 (30.7) | 56 (81.16) | 13 (18.84) | |
| Age by which you should wean your child from bottle feeding (239/289) | | | | |
| ≤1year | 21 (8.8) | 13 (61.90) | 8 (38.10) | 0.109 [a] |
| >1year | 218 (91.2) | 169 (77.52) | 49 (22.48) | |

https://doi.org/10.24191/cos.v12i1.5646

| | | | | |
|---|---|---|---|---|
| Frequency of bringing your children to the dentist (282/289) | | | | |
| With an interval shorter than 6 months | 20 (7.1) | 19 (95.0) | 1 (5.0) | |
| Every 6 months | 54 (19.1) | 41 (75.93) | 13 (24.07) | |
| Once a year | 71 (25.2) | 50 (70.43) | 21 (29.57) | 0.230 [a] |
| When needed | 53 (18.8) | 42 (79.25) | 11 (20.75) | |
| Never seen dentist before | 84 (29.8) | 63 (75.91) | 20 (24.09) | |

Table 4 shows that 66.3% of parents with children having a higher mean dmft score of 6.13±5.20 significantly agreed on the importance of restoring decayed primary teeth (p= 0.044). Furthermore, children with higher mean dmft scores visited the dentist at shorter intervals (p= 0.004). In addition, children with high dmft scores significantly had early dental visits, mainly due to pain and cavities (p= 0.001). More detailed information on the dental caries status of children based on their parental knowledge and practices is provided in Table 4.

Table 4. Mean dmft score of the children by their parent's knowledge and practices.

| Variables | N (%) | Mean±SD | p-value |
|---|---|---|---|
| **Knowledge** | | | |
| Baby teeth are important for your child's health (285/289) | | | |
| Yes | 277 (97.2) | 5.49±4.8 4 | 0.565[a] |
| No | 8 (2.8) | 6.50±6.21 | |
| Untreated decayed baby teeth can affect your child's general health (289/289) | | | |
| Yes | 284 (98.3) | 5.50±4.88 | 0.963 [a] |
| No | 5 (1.7) | 5.40±5.12 | |
| Bottle feeding has bad effects on child's dental health (287/289) | | | |
| Yes | 208 (72.5) | 5.26±4.77 | 0.274 [a] |
| No | 79 (27.5) | 6.01±5.16 | |
| Early first dental visit is important to prevent caries (288/289) | | | |
| Yes | 280 (97.2) | 5.53±4.82 | 0.876 [a] |
| No | 8 (2.8) | 5.25±6.01 | |
| Children should have their first dental visit as soon as the first tooth erupts (286/289) | | | |
| Yes | 132 (46.2) | 5.81±5.03 | 0.364 [a] |
| No | 154 (53.8) | 5.29±4.75 | |
| Fluoride toothpaste can be used even for toddlers (283/289) | | | |
| Yes | 176 (62.2) | 5.45±4.79 | 0.889 [a] |
| No | 107 (37.8) | 5.53±5.06 | |
| Tooth decay is caused by bacteria that are transmitted to the child from family members (288/289) | | | |
| Yes | 102 (35.4) | 5.27±5.01 | 0.563 [a] |
| No | 186 (64.6) | 5.62±4.83 | |
| Decayed baby teeth should be restored (285/289) | | | |
| Yes | 189 (66.3) | 6.13±5.20 | 0.044 [a] |
| No | 96 (33.7) | 4.92±4.60 | |
| Fluoride toothpaste reduces the risk of tooth decay (285/289) | | | |
| Yes | 229 (80.4) | 5.34±4.8 4 | 0.229 [a] |
| No | 56 (19.6) | 6.21±4.96 | |
| Minimal cleaning/ brushing or incorrect tooth brushing can increase a child's risk of developing tooth decay (286/289) | | | |
| Yes | 260 (90.9) | 5.64±4.95 | 0.275 [a] |
| No | 26 (9.1) | 4.54±4.13 | |
| Parents can play a role in preventing tooth decay in their children (288/289) | | | |
| Yes | 284 (98.6) | 5.48±4.8 3 | 0.219 [a] |
| No | 4 (1.4) | 8.50±3.31 | |
| Sources of information about early first dental visit (145/289) | | | |
| Family/friends | 18 (12.4) | 4.72±3.49 | |
| Dentist/doctor/nurse | 82 (56.6) | 5.93±5.40 | 0.813 [b] |
| TV/internet | 41 (28.3) | 5.88±4.90 | |

 

| | | | |
|---|---|---|---|
| Others | 4(2.7) | 6.50±5.06 | |
| Use fluoride toothpaste for your children (286/289) | | | |
| Yes | 221 (77.3) | 5.37±4.67 | 0.361 [a] |
| No | 65 (22.7) | 6.06±5.54 | |
| Amount of toothpaste used for your child between 2-5 years (228/289) | | | |
| Smear | 69 (30.7) | 5.04±4.69 | |
| ½ size of pea | 85 (38.6) | 5.59±5.07 | 0.666 [b] |
| Size of pea | 69 (30.7) | 5.77±4.99 | |
| Age by which you should wean your child from bottle feeding (239/289) | | | |
| ≤1year | 21 (8.8) | 5.05±6.11 | 0.108 [a] |
| >1year | 218 (91.2) | 5.66±4.89 | |
| Frequency of bringing your children to the dentist (282/289) | | | |
| With an interval shorter than 6 months | 20 (7.1) | 8.65±4.99 | |
| Every 6 months | 54 (19.1) | 6.11±5.38 | |
| Once a year | 71 (25.2) | 5.30±5.14 | |
| When needed | 53 (18.8) | 5.98±4.80 | 0.004 [b] |
| Never seen dentist before | 84 (29.8) | 4.26±3.99 | |
| Age of first dental visit for your child (289/289) | | | |
| ≤12 months | 20 (6.9) | 5.292±5.29 | |
| 13-24 months | 23 (8.0) | 4.802±4.80 | |
| ≥25 months | 151 (52.2) | 4.954±4.95 | 0.134 [b] |
| Do not know | 95 (32.9) | 4.77±4.63 | |
| Reason for first dental visit (287/289) | | | |
| Not remember | 50 (17.4) | 3.74±3.62 | |
| Check up | 130 (45.3) | 4.38±4.35 | |
| Pain | 37 (12.9) | 9.49±4.95 | |
| Cavities | 45 (15.7) | 7.24±5.20 | |
| Trauma | 2 (0.7) | 3.50±4.95 | 0.001 [b] |
| Others | 23 (8.0) | 5.91±5.01 | |

## 4. DISCUSSION

The high percentage of preschool children age group requires the attention of oral health care division for considering the appropriate measure to prevent ECC. In fact, generally dental caries is not a life-threatening disease; however, by taking general and emotional health into consideration, as well as the cost of treatments, dental caries which is left untreated has a negative impact on children's lives (BaniHani et al., 2018), and maximise the risk for sepsis and pulpitis, which may lead to further complications, such as cellulitis and abscesses (Phantumvanit et al., 2018).

Caries is the most common oral condition in children that can be prevented by parents if they are well educated about oral hygiene and have a positive attitude towards it. One of the most important factors that affect oral health is lack of knowledge about oral hygiene measures, poor oral health knowledge is reflected as poor oral health and reduced access to dental service (Petrauskienė et al., 2020). The general and oral health conditions of children are affected mainly by the parents particularly the mother (Petrauskienė et al., 2020). Mothers are central to providing their children with the information, knowledge and encouragement needed for starting a healthy life. Since tooth brushing and healthcare behaviors are learned from models (e.g. parents), then parents play an important role in establishing their children's oral health behaviors from an early age (Almoudi et al., 2016).

Prevalence of ECC in this study was 76.8%. In fact, a high prevalence of dental caries was reported among Malaysian children previously, where the prevalence of dental caries among 5-year-old Malaysian preschool children was 71.3 % in 2015 (MOH, 2015). In addition, according to NOHPS 2015, 21 % of 5-year-old children have 2 or less decayed or filled deciduous teeth (dft ≤ 2). Nonetheless, 65 % of children required dental caries treatment (MOH, 2015). The present study showed higher mean dmft of 5.50± 4.88

 

that was in agreement with previous studies conducted among Malaysian children showing dmft of 6.24 (Ismail et al., 2018), and 5.27 (Dolah et al., 2020). This finding was higher compared to a previous study with a dmft of 3.98 (Ismail et al., 2017). The higher dmft score in this study might be due to dietary and cultural habits, poor oral hygiene, and higher cost of dental treatment or even due to the difficulty in accessing dental service.

In fact, no significant difference in mean dmft scores between genders was noted which coincide with similar findings was reported previously (Masoud et al., 2020). However, contracting findings were reported, where studies have found that boys tend to have higher mean dmft scores compared to girls (Adil et al., 2020; Ismail and Abdallha, 2022). Children diet and oral hygiene habits at this age is usually decided by their parents, therefore, this could explain the lack of significant differences in mean dmft scores between genders in this study.

Regarding the impact of age of children on caries experience, the present study found a significant association between children's age and their dental caries status, since dental caries is accumulative disease, the prevalence increases with age till age of 5 years old (Ismail and Abdallha, 2022). In the present study, young children ≤2 years significantly showed less caries experience compared to older children 3-6 years. This finding was concurred with previous studies done among young children (Adil et al., 2020; Shirahmadi et al., 2022). In fact, this finding could be attributed to the fact that older children had more teeth and had longer exposure to the risk factors.

In the present study, parents showed good attitude regarding the importance of their children's primary teeth for their children's general health and if decayed teeth left untreated it may negatively impact their children's general health.

In terms of knowledge about oral hygiene care, almost two-thirds of parents did not know that dental caries is causing by cariogenic bacteria and dental caries can transmitted to the child from family members. This finding aligns with Suresh et al (Suresh et al., 2010), who reported an inadequate knowledge among Indian mothers about the transmission of dental caries among family members. These findings highlighted the potential areas in which Malaysian parents could benefit from further education through future health education and promotion programs. In additions, majority of children visited the dentist after age of 2 years. This finding indicates that Malaysian parents are not fully aware of the ideal time for the first dental visit. This concurs with previous studies by (Hussein et al., 2013; Almoudi et al., 2016; Singh et al., 2022). A possible reason for this of lack of awareness could be that Malaysian parents do not fully understand the importance of early preventive dental visit. They may perceive the primary teeth as temporary teeth and overlook their importance in a child's overall oral health. Therefore, it is essential to educate the parents about their vital role in preventing dental caries and to emphasise the value of of the primary teeth through appropriate education programs. Moreover, raising awareness about the importance of early utilization of preventive dental care services for their children. Hussein and colleagues indicated that Malaysian parents have low awareness of the recommended time for their child's first dental visit. Cultural beliefs and the lack of awareness regarding the importance of early preventive dental visits could be a possible reason. Parents' practices and awareness may have a long-term effect on their children's oral health. Therefore, it is crucial to make parents aware of their central role in dental caries prevention. This finding is a crucial step in addressing the prevalent dental caries problem among preschool children in Malaysia and helps in developing a suitable oral education program for Malaysian parents about the importance of early preventive dental care visits for their children which could be a vital step in addressing the dental caries problem among preschool children in Malaysia.

Many parents in the present study who had children with a higher mean dmft score significantly agreed on the importance of dental treatment and restoring their children's primary teeth. Additionally, this study found that children with higher mean dmft scores visited the dentist at short intervals and had early dental

https://doi.org/10.24191/cos.v12i1.5646 

visits mainly due to pain and cavities which is in agreement with a prior study (Tang et al., 2014). Young children affected by dental caries suffer dental pain, and reduced quality of life (Phantumvanit et al., 2018). Dental caries in children can also disrupt their normal sleep and eating **patterns** (Phantumvanit et al., 2018). Consequently, it influences children's nutritional status and general health (Folayan et al., 2019). Again, this finding emphasised the critical role of early preventive dental visits for young Malaysian children in reducing pain and suffering. These visits are essential for promoting healthy growth and development in children. Hence the assessment of knowledge, attitude and practice among primary caretakers of young children can help identify deficient knowledge areas and misconceptions in attitudes and practices. Our study was not without limitations. First, this study is a cross-sectional study. Second, as with many other surveys, respondent bias and recall bias were unavoidable and may have influenced the findings. Additionally, parents may have provided responses that portrayed a more favorable impression of their children's oral health**.**

## 5. CONCLUSION

While many parents recognised the significance of primary teeth, there were certain areas where their knowledge didn't align with their actions, indicating a need for improvement in their children's oral health practices. Specifically, there was a lack of knowledge concerning how to address carious teeth and the recommended timing for a child's first dental visit. Consequently, there is a pressing need to establish tailored anticipatory guidance for parents that emphasizes the advantages of early dental visits in preventing caries and promoting children's overall well-being.

### ACKNOWLEDGEMENTS/FUNDING

We would like to thank all parents who participated in this study. We also would like to acknowledge the staff who helped us throughout the data collection period.

### CONFLICT OF INTEREST STATEMENT

None

### AUTHORS' CONTRIBUTIONS

**Alaa Sabah Hussein**, the first and the corresponding author, provided logistic support, anchored the review and revisions, and approved the article submission. **Manal Mohamed Mansour Almoudi**, the second author, wrote and revised the manuscript. **Nur Athirah Abdul Aziz**, the third author, conducted the data collection and data analysis. **Siti Nurfaezah Zainol**, the fourth author, also conducted the data collection and data analysis. All authors have critically reviewed the manuscript and are responsible for its content.

 

## REFERENCES

Adil, A. H., Eusufzai, S. Z., Kamruddin, A., Wan Ahmad, W. M. A., Jamayet, N. Bin, Karobari, M. I., & Alam, M. K. (2020). Assessment of parents' oral health literacy and its association with caries experience of their preschool children. *Children. (Basel, Switzerland) 7*(8), 101. https://doi.org/10.3390/children7080101.

Almoudi, M. M., Hussein, A. S., Abu Hassan, M. I., & Schroth, R. J. (2019). Dental caries and vitamin D status among children in Asia: A literature review. *Pediatrics International, 61*(4), 327–338. https://doi.org/10.1111/ped.13801.

Almoudi, M. M., Hussein, A. S., Doss, J. G., & Schroth, R. J. (2016). Expectant mothers' readiness to initiate preventive oral health care for their children. *The Saudi Journal for Dental Research, 7*(2), 118–126. https://doi.org/10.1016/j.sjdr.2016.04.006.

American Academy of Pediatric Dentistry. (2011). Policy on early childhood caries (ECC): unique challenges and treatment options. *Pediatrics Dentistry, 27*, 53–55.

BaniHani, A., Deery, C., Toumba, J., Munyombwe, T., & Duggal, M. (2018). The impact of dental caries and its treatment by conventional or biological approaches on the oral health-related quality of life of children and carers. *International Journal of Paediatrics Dentistry, 28*(2), 266–276. https://doi.org/10.1111/ipd.12350.

Colak, H., Dülgergil, C. T., Dalli, M., & Hamidi, M. M. (2013). Early childhood caries update: a review of causes, diagnoses, and treatments. *Journal of Natural Science, Biology and Medicine, 4*(1), 29–38. https://doi.org/10.4103/0976-9668.107257.

Dolah, S., Eusufzai, S. Z., Alam, M. K., & Ahmad, W. M. A. W. (2020). Factors influencing oral health-related quality of life among preschool children in district of Kota Bharu, Malaysia: a cross-sectional study. *Pesquisa. Brasileira em Odontopediatria e Clinica Integrada. 20*(1). https://doi.org/10.1590/pboci.2020.008.

Duangthip, D., Gao, S. S., Lo, E. C. M., & Chu, C.H. (2016). Early childhood caries among 5- to 6-year-old children in Southeast Asia. *International Dental Journal, 67*(2), 98–106. https://doi.org/10.1111/idj.12261.

Dye, B. A., Thornton Evans, G., Li, X., & Iafolla, T. J. (2015). Dental caries and sealant prevalence in children and adolescents in the United States, 2011 – 2012. *Natl. Cent. Heal. Stat. Data Brief, 191*, 1–8.

Folayan, M. O., Arije, O., El Tantawi, M., Kolawole, K. A., Obiyan, M., Arowolo, O., & Oziegbe, E. O. (2019). Association between early childhood caries and malnutrition in a sub-urban population in Nigeria. *BMC Pediatrics, 19,* 433. https://doi.org/10.1186/s12887-019-1810-2.

Holmes, R., Porter, J., Vernazza, C., Tsakos, G., Ryan, R., & Dennes, M. (2015). Health and social care information center. Children's oral health report.

Hussein, A. S., Abu Hassan, M. I., Schroth, R. J., & Ghanim, A. M. (2013). Parent's perception on the importance of their children's first dental visit (a cross-sectional pilot study in Malaysia). *Journal of Oral Research, 1*(1), 17–25. https://doi.org/10.12816/0012189.

Ismail, A. F., Ardini, Y. D., Mohamad, N., & Bakar, H.A. (2018). Association between parental oral health

 

literacy and children's oral health status. *Revista Latinoamericana de Hipertensions, 13*, 305–309.

Ismail, M., & Abdallha, A. E. (2022). Caries assessment in preschool children in relation to some socioeconomic factors. *Advanced Dental Journal, 4*, 61–73. https://doi.org/10.21608/adjc.2022.101295.1116.

Ismail, N. S., Ghani, N. M. A., Supaat, S., Kharuddin, A. F., & Ardini, Y. D. (2017). The Early Childhood Oral Health Impact Scale (ECOHIS): Assessment Tool in Oral Health Related Quality of Life. *Journal of International Dental and Medical Research, 11*(1), 162–168.

Kaur, S., Maykanathan, D., & Lyn, N. K. (2015). Factors associated with dental caries among selected urban school children in Kuala Lumpur, Malaysia. *Archives of Orofacial Sciences,* 10, 24–33.

Masoud, S., Qazi, S. H., & Mumtaz, R. (2020). Prevalence of dental caries and its association with risk factors amongst preschool children of Bharakahu, Islamabad. *Journal of Islamabad Medical & Dental College, 9*(2), 88–94. https://doi.org/10.35787/jimdc.v9i2.463.

MOH, 2015. The national oral health survey of preschool children 2015, Government printers, Kuala Lumpur.

MOH, 2011. National oral health plan for Malaysia 2011- 2020.

MOH, 2009. The national oral health survey of school children 2007 (NOHSS 2007), Government printers, Kuala Lumpur.

MOH, 2007. The national oral health survey of preschool children 2005 (NOHPS 2005), Government printers, Kuala Lumpur.

MOH, 2003. Guidelines on oral healthcare for pre-school children, Government printers, Kuala Lumpur.

Oo, M. M. T., Naing, L., Mani, S. A., & Ismail, A. R. (2011). Dental caries experience and treatment needs in the mixed dentition in North East Malaysia. *Archives of Orofacial Sciences, 6*(2), 41–48.

Petrauskienė, S., Narbutaitė, J., Petrauskienė, A., & Virtanen, J. I. (2020). Oral health behaviour, attitude towards, and knowledge of dental caries among mothers of 0- to 3-year-old children living in Kaunas, Lithuania. *Clinical and Experimental Dental Research, 6*(2), 215–224. https://doi.org/10.1002/cre2.272.

Phantumvanit, P., Makino, Y., Ogawa, H., Rugg Gunn, A., Moynihan, P., Petersen, P. E., Evans, W., Feldens, C. A., Lo, E., Khoshnevisan, M. H., Baez, R., Varenne, B., Vichayanrat, T., Songpaisan, Y., Woodward, M., Nakornchai, S., & Ungchusak, C. (2018). WHO global consultation on public health intervention against early childhood caries. *Community Dentistry and Oral Epidemiology, 46*(3), 280–287. https://doi.org/10.1111/cdoe.12362.

Ruhaya, H., Jaafar, N., Jamaluddin, M., Ismail, R., Ismail, N. M., Badariah, T. C., Mat, A., & Mohamed, S. Z. (2012). *Nutritional status and early childhood caries among preschool children in Pasir Mas, Kelantan, Malaysia.* Archives of Orofacial Science,

Shirahmadi, S., Khazaei, S., Meschi, M., Miresmaeili, A. F., Barkhordar, S., Heidari, A., Bashirian, S., Jenabi, E., Dadae, N., Farzian, S., & Gafari, A. (2022). Dental caries experience in primary school-age children following "Students' Oral Health Promotion Program," Iran. *International Journal of Dental*

 

*Hygiene, 20*(3), 453–464. https://doi.org/10.1111/idh.12561.

Singh, R., Mendiratta, P., Saraf, B. G., Sheoran, N., Saji, S. E., & Kapil, D. (2022). Knowledge, Attitude and Practices of Parents toward the Oral Health of their School-going Children in Faridabad City. *International Journal of Clinical Pediatrics Dentistry, 15*(5), 549-553. https://doi.org/10.5005/jp-journals-10005-2438.

Suresh, B.S., Ravishankar, T.L., Chaitra, T.R., Mohapatra, A.K., Gupta, V., 2010. Mother's knowledge about pre-school child's oral health. *Journal of Indian Society of Pedodontics and Preventive Dentistry. 28*(4), 282–287. https://doi.org/10.4103/0970-4388.76159.

Tang, R. S., Huang, S. Te., Chen, H. Sen., Hsiao, S.Y., Hu, H. Y., & Chuang, F.H. (2014). The association between oral hygiene behavior and knowledge of caregivers of children with severe early childhood caries. *Journal of Dental Sciences, 9*(3), 277–282. https://doi.org/10.1016/j.jds.2013.02.025.

World Health Organization. Oral health surveys. Basic methods. 4th ed. Geneva; 1997.

Zahara, A. M., Fashihah, M. H., & Nurul, A. Y. (2010). Relationship between frequency of sugary food and drink consumption with occurrence of dental caries among preschool children in Titiwangsa, Kuala Lumpur. *Malaysian Journal of Nutrition, 16*(1), 83–90.



## 6. APPENDIX

### A. Author Information

Alaa Sabah Hussein, BDS (Baghdad), MSc (Baghdad) is an Associate Professor and senior lecturer in the Centre of Paediatric Dentistry and Orthodontics Studies, Faculty of Dentistry, Universiti Teknologi MARA, Sungai Buloh Campus, Malaysia. Her main research activity is in the area of dental caries, dental trauma, epidemiology, and organizational learning. She has published widely on these subjects in publications such as *The Saudi Dental Journal, European Archives of Paediatric Dentistry, Journal of Clinical Pediatric Dentistry, Journal of International Dental and Medical Research, Special Care in Dentistry, Dental and Medical Problems and Journal of Health and Translational Medicine (JUMMEC).* She can be reached through her email at alaa@uitm.edu.my; dr_alaasabah@yahoo.com.

Manal Mohamed Mansour Almoudi, *DDS (Tripoli), MSc (UM), PhD (UiTM)* is a lecturer at Al Zawia university in the Department of Paediatric and preventive Dentistry, Faculty of Dentistry, Al zawia unversity, Al zawia, Libya. Her main research activity is in the area of dental caries, epidemiology, preventive dentistry and organizational learning. She has published widely on these subjects in publications such as *The Saudi Dental Journal, Pediatrics International*, *European oral research, Journal of Clinical Pediatric Dentistry, Journal of International Dental and Medical Research,* She can be reached through her email at ma.almoudi@zu.edu.ly, aa_sa680@yahoo.com

Nur Athirah Abdul Aziz, *BDS (UiTM),* dental student at the Faculty of Dentistry, Universiti Teknologi MARA, Sungai Buloh Campus, Malaysia.

Siti Nurfaezah Zainol, *BDS (UiTM),* dental student at the Faculty of Dentistry, Universiti Teknologi MARA, Sungai Buloh Campus, Malaysia.