

## Knowledge and Practice of Mothers in Relation to Dental Health of Pre-School Children

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### Abstract

**Introduction:** Mother's dental health knowledge has a vital role on children's dental health. This study aimed to assess knowledge and practice of mothers in relation to dental health of pre-school children.

**Subjects and methods:** A cross-sectional pre-school based study of 419 mothers of 3-5 years old pre-school children were selected randomly from 20 kindergartens in Khartoum North, Sudan. An interviewer administered questionnaire used to assess the mother's dental health knowledge and practice in relation to mother's age, education and occupation.

**Results:** The majority of mothers 394 (94%) age were 20 to 40 years old, 52.7% had university education and 63.7% were housewives. In general, mothers showed good knowledge, the overall mean  $\pm$  SD knowledge score was  $7.22 \pm 1.42$ , while for practice the overall mean  $\pm$  SD practice score was  $41.3 \pm 11.8$ . Significant association found between dental health knowledge and practice and mother's education level ( $p = 0.00$ ).

**Conclusion:** Relatively good mother knowledge regarding dental health of preschool children but regrettably this knowledge was not fully reflected on practices. Higher education mothers had better knowledge and practices. The findings of this study emphasize the significant role of mothers in promoting dental health of pre-school children.

**Keywords:** Dental health; Mother; Knowledge; Practice; Pre-school

### Introduction

Oral health is an integral component of good general health and plays a major role in the child's life. Dental caries is one of the most important global oral health problems. In most developing countries, the levels of dental caries were low but now tend to increase [1].

Early childhood caries (ECC) is defined as "the presence of one or more decayed, missing (due to caries), or filled tooth surfaces in any primary tooth in a child less than 6 years old". ECC imposes significant threats to the physical, psychological and social well-being of young children as dental pain and subsequent tooth loss resulting in difficulty in eating, speaking, sleeping and socializing [2].

Since infants and toddlers are unable to care for themselves and are dependent on their parents [3]. Mothers in particular are the primary model for developing behaviour. During early years of the life; the child acquire the earliest childhood routines and habits. Therefore, initiating basic good oral health habits is essential to establish appropriate dental norms that will be maintained into adult life. Mothers use to teach children proper hygiene skills, dietary habits and healthy practices [4]. Research has showed that mothers' dental awareness has an important impact on their children's oral health and oral health-related behaviours [5-7].

Developing an effective dental health promotion strategy must be based on understanding of the unique needs of the population. Thus, the assessment of the knowledge and practice of mothers may be the

first step in identifying areas of weakness and trying to change behaviours [8]. There is a paucity of literature available regarding children's oral health in Sudan and the studies are mostly among school age children [9-11].

To our knowledge, there is no study exploring the dental health of preschool children. Therefore, this study aimed to assess knowledge and practice of mothers in relation to dental health of pre-school children.

### Subjects and Methods

First an ethical clearance was obtained from the Research Committee, Faculty of dentistry, University of Khartoum as well as the head ministries of the selected kindergartens in order to conduct this study. A consent letter was sent to the parents of the selected children through the kindergarten's authorities. This was a descriptive, cross-sectional, pre-school based study on a sample of mothers in Khartoum North locality, Khartoum state, Sudan. A Sample size of 419 was calculated based on the formula  $(1.96)^2 \times pq \times deff/d^2$  taking  $p = 0.25$  from previous study [12] with a relative error (d) of 6% and design effect of 2 and adding 18 as non-respondent.

Khartoum North locality is divided into four sectors. A list of all kindergartens was obtained from the Administration of Preschool Education at the State Ministry of Education/Khartoum North. A multi-stage cluster sampling technique was used to select 5 kindergartens randomly from each sector. A random cluster consisting of 21 children were chosen from selected kindergarten.

A request letter explaining the purposes of the study was sent to the mothers of the selected children through the kindergartens authorities. Mothers were asked to attend the kindergarten and direct interviewed questionnaires were completed by the main researcher.

Mothers of medically fit Sudanese pre-school children aged 3-5 years old were included in the study. Exclusion criteria were mothers did not agree to participate or fail to attend for interview.

The questionnaire was adopted from previous study by Chahbra et al. [13]. Some items were omitted from the original questionnaire and replaced with more detailed questions exploring feeding and brushing practices. It was constructed in English, translated into Arabic and back-translated to English and pre-tested using 40 subjects and modifications made based on the results before the study commenced.

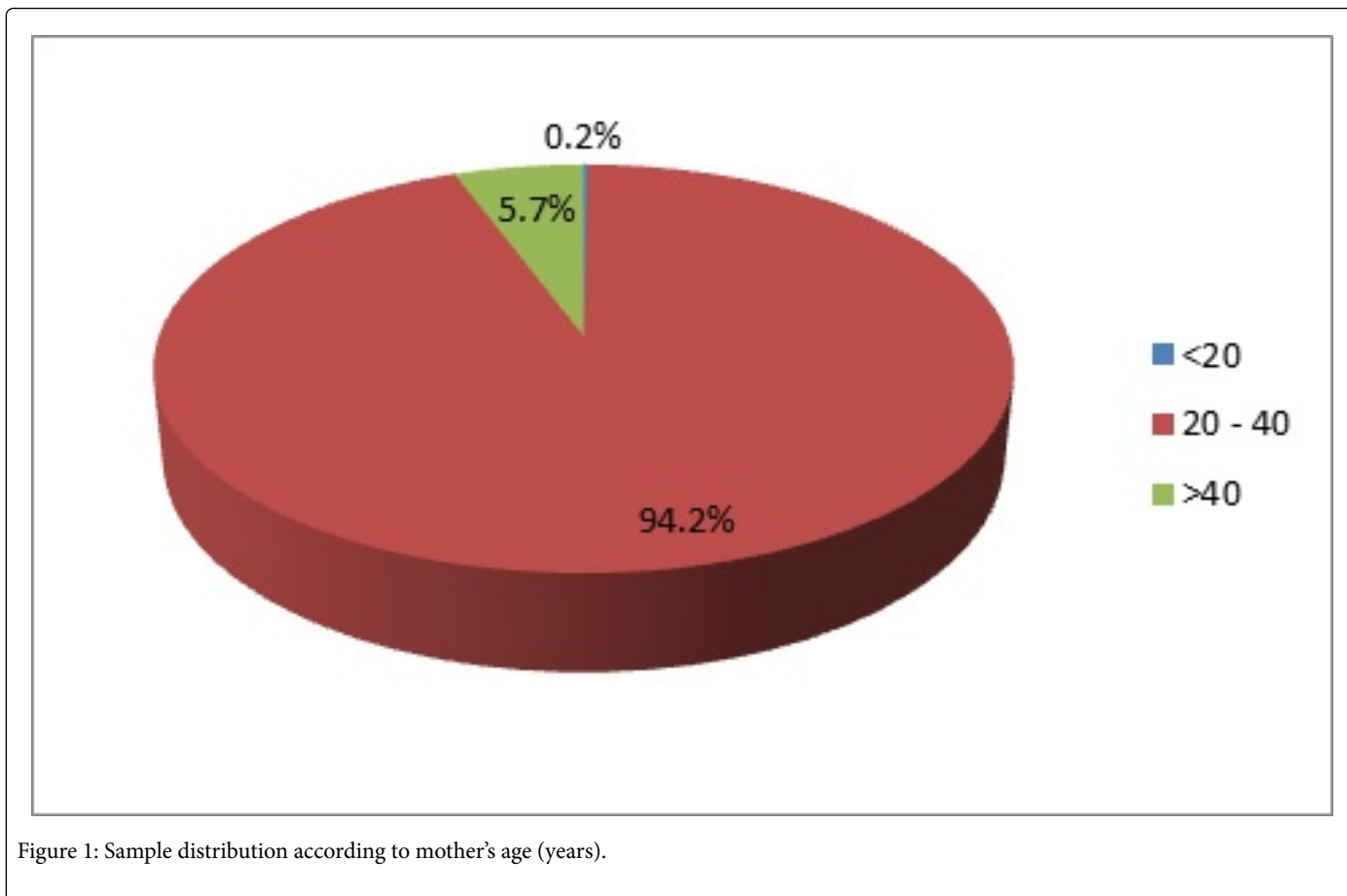


Figure 1: Sample distribution according to mother's age (years).

### Statistical Analysis

Data were collected, summarized, cleaned and coded. All statistical analyses were performed with the Statistical Package for Social Sciences (SPSS) program (version 20). Descriptive statistics; frequency distribution tables, graph, means and standard deviations were used. Spearman's Correlation was used to determine the relationship between mother knowledge and practice questions and mother's age, occupation, education and family size. Chi square test was used, P-value of less than 0.05 was considered as significant.

### Results

According to mother's ages, the majority 394 (94%) were between 20 and 40 years of age (Figure 1).

Almost half of the interviewed mothers had university education 52.7% and 63.7% of them were housewives (Figure 2). According to the number of the children in the family, the majority 342(81.6%) had 2-5 children (Figure 3).

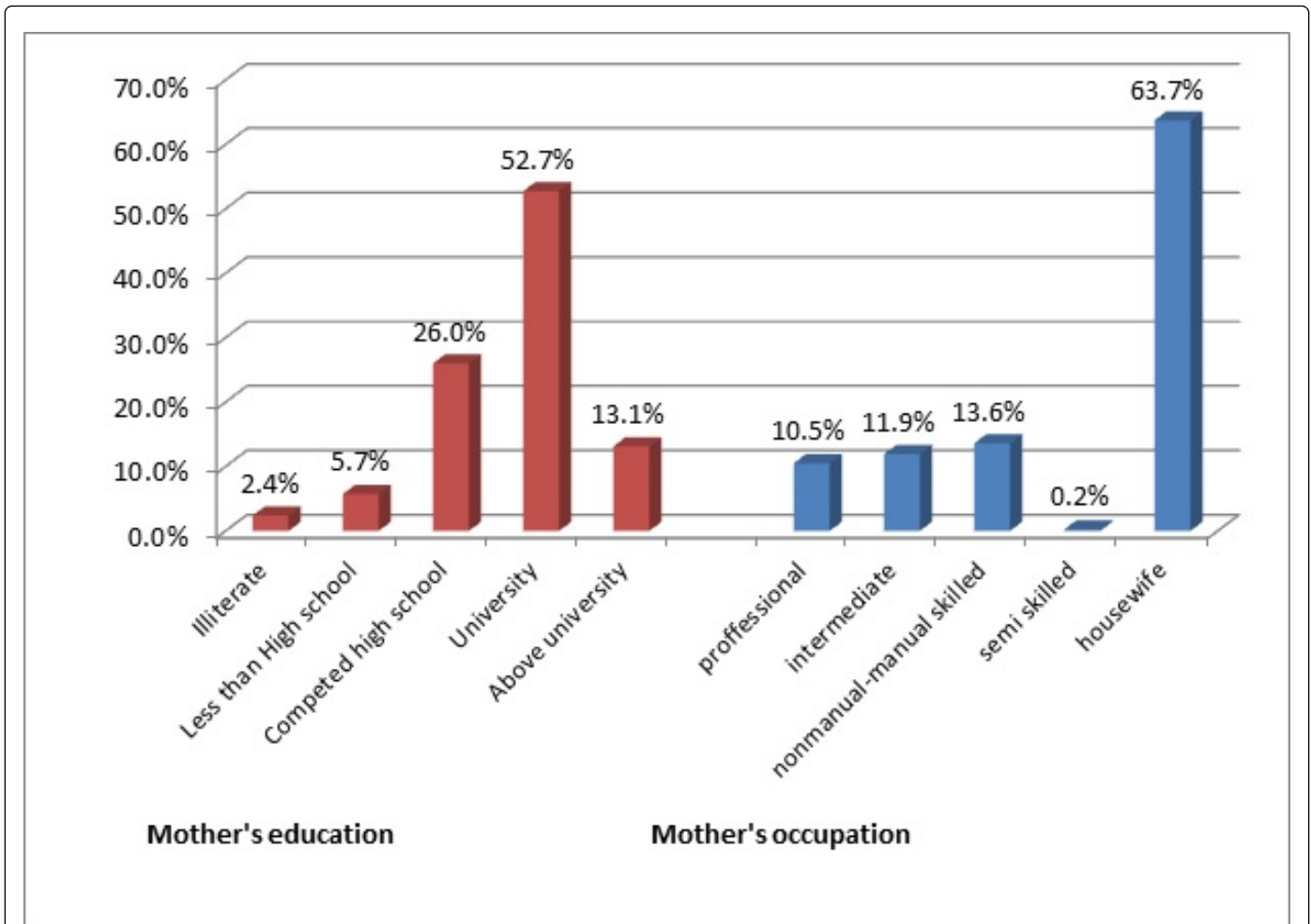


Figure 2: Distribution of mother's education and occupation.

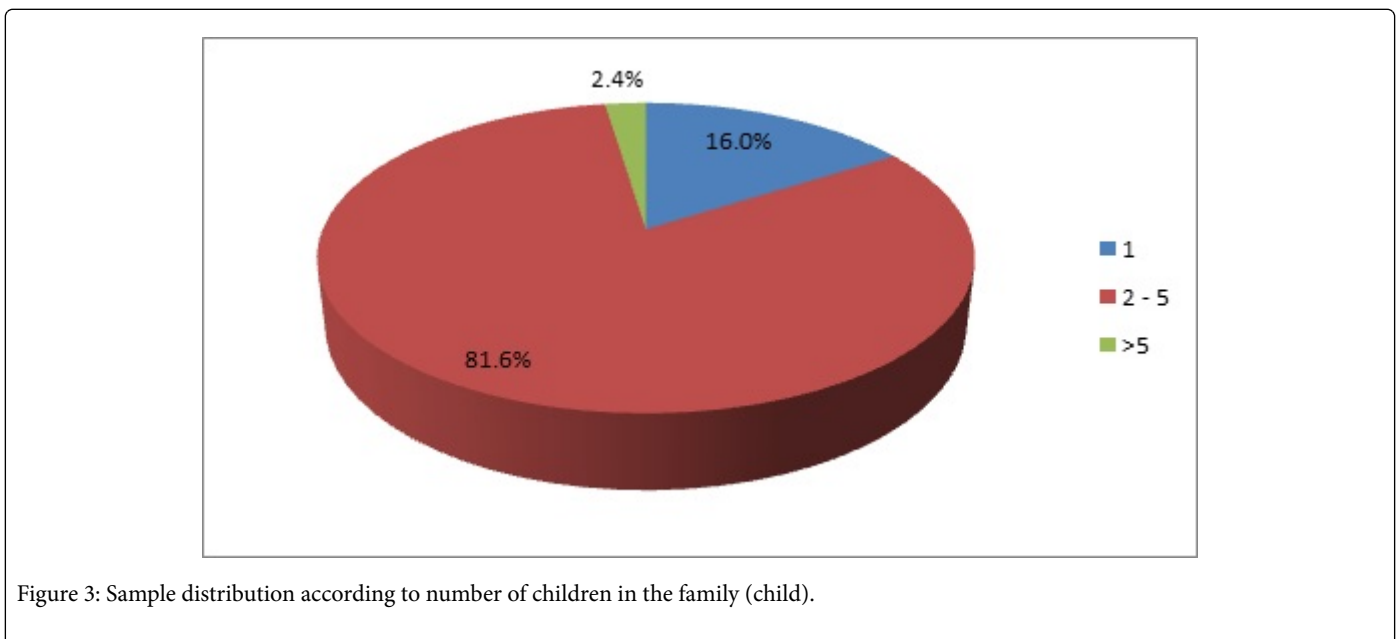


Figure 3: Sample distribution according to number of children in the family (child).

## Dental Health Knowledge and Practices

The percentage of participants who correctly answered individual knowledge and practice questions was shown in Figure 4.

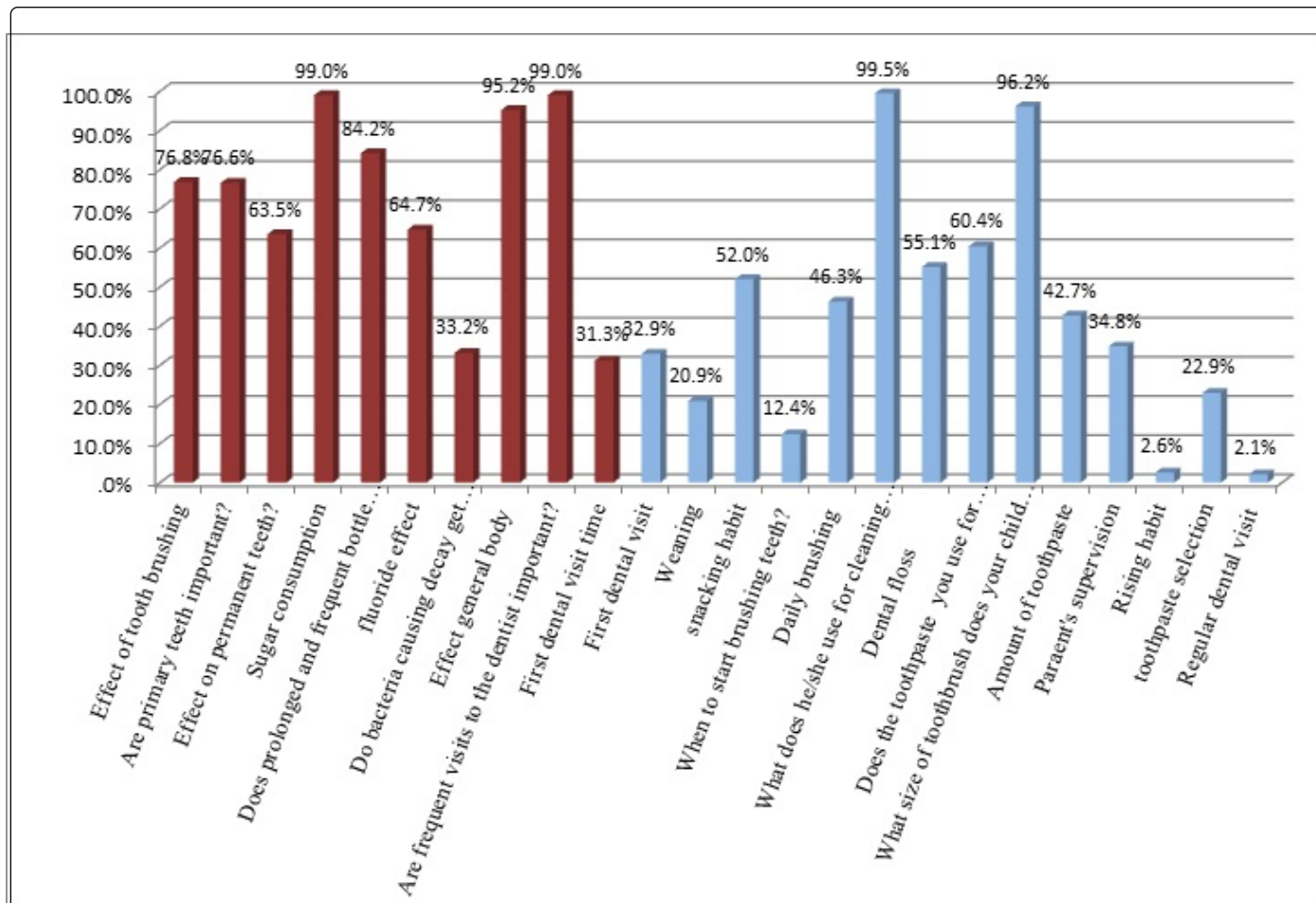


Figure 4: Dental health knowledge and practice among mothers.

### Dental health knowledge

The overall mean knowledge score were  $7.22 \pm 1.42$ . The knowledge scores ranged between 0 and 10. In general, participant showed good knowledge regarding dental health especially in areas of the effect of prolonged bottle feeding and the importance of frequent dental visits. Almost all Mothers answered correctly when asked about the effect of frequent exposure to sweets and sticky food on dental health (99%), the importance of frequent dental visits (99%), the effect of oral health on general body health (95.2%) and the effect of prolonged bottle feeding (84%).

Concerning the prevention of dental caries by tooth brushing, 76.8% of the mothers gave correct answers. About the importance of primary teeth, 76.6% of mothers agreed that the treatment of primary teeth is essential. The role of fluoride in preventing tooth decay was supported by 64.7%. Mothers were largely unaware that bacteria involved in dental caries could be transmitted from mothers to their children, only 33.2% of subjects agreed to this fact. Less than one third 31.3% of the mothers were awareness about the first dental visit ought to 12 months of age.

### Dental health practices

The overall mean practice score was  $41.3 \pm 11.8$ . In contrast to the knowledge, participant generally showed poor practices except for the use of tooth brush and paste and the amount of paste dispensed.

**Dental visiting:** Results of the mothers questionnaire regarding dental health practice revealed that 281 (67.1) of the participating children never visited a dentist. Regular dental visiting was reported only by 9 (2.1%) of the participants and the majority 95 (22.7%) visiting the dentist when in pain or trouble.

**Feeding and dietary habits:** More than half of children (59.4%), had been bottle fed and (21.2%) of weaned after two years of age. Regarding snacking habit (52%) of children exposed to sugary snacks once to twice a day.

### Oral hygiene practices

Concerning brushing 34.3% of interviewed mothers recorded that brushing of children teeth under the age of two years was not done at

all. Whereas, (50.6%) brush teeth only once a day, and no one reported the use of neither dental floss nor other aids to clean teeth.

More than half of the mothers (55.1%) stated that their children use children's tooth paste while (44.6%) used adult's tooth paste. While 197 (42.7%) of the mothers dispensed the recommended amount (pea size) of the tooth paste for their children and (34.8%) of the mothers assisting their children during brushing.

### Factors influencing mother's dental health knowledge and practices

This study concentrated on maternal age, educational level, occupation and family size and their relation to knowledge and practice.

#### Factors influencing mother's dental health knowledge

Mother's education was highly correlated to their dental health knowledge. Mothers with a university educational level or higher had significantly better overall knowledge scores than less educated mothers ( $P = 0.000$ ). In contrast, no significant correlation had been found between knowledge and mother's age ( $P = 0.141$ ) and number of children in the family ( $P = 0.327$ ). Correlation between knowledge and mother's occupation was highly negative ( $P = 0.00$ ) (Table 1).

Maternal variables	Knowledge score			Comments
	Correlation Coefficient	P-value	N	
Age	0.072	0.141	419	No significant correlation
Mother's Occupation	-0.292	0.000	0.419	Highly negative significant correlation
Number of children in the family	- 0.048	0.327	419	No significant correlation

**Table 1:** Spearman's correlation between mother's age education, occupation and number of children with knowledge.

#### Factors influencing mother's dental health practices

The result revealed highly significant correlation between mother practices and their educational level ( $p = 0.000$ ). Mothers with a university degree or above had much better practices scores than less educated mothers. No significant correlation was found between neither mother's age ( $P = 0.224$ ), occupation ( $P = 0.06$ ) nor number of children in the family ( $P = 0.099$ ) with the dental health practices (Table 2).

Maternal variables	Practice score			Comments
	Correlation Coefficient	P-value	N	
Age	0.06	0.224	419	No significant correlation
Mother' education level	0.183**	0.000	419	Highly positive significant correlation
Mother's Occupation	-0.135**	0.060	0.419	Highly negative significant correlation

Number of children in the family	0.081	0.099	419	No significant correlation
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**Table 2:** Spearman's correlation between maternal age education, occupation and number of children and practice score.

### Discussion

The main result found in the present study was the significant correlation between dental health knowledge and practices of mothers and their educational level ( $p = 0.00$ ). This was very consistent with findings from earlier studies [3,8,14-16]. Moreover, mother age, occupation and the family size had no significant correlation with either dental health knowledge or practices. Similarly, Nigerian study showed weak correlation between maternal age and maternal dental health knowledge [3].

The results of the current study also revealed some areas of strength and weakness in the knowledge of participating mothers. A great majority of the mothers (99%) were knowledgeable about the cariogenicity of sugary food, which was consistent with previous studies in Kuwait [8], Saudi Arabia [5], India [4] and Malaysia [17]. In contrast, a study among urban Mexican American and immigrant Latino mothers reported limited depth of knowledge on frequency of sugar consumption [18].

Concerning the importance of frequent dental visits, 99% of mothers were aware about the importance of frequent visits to the dentist, which came in agreement with studies among Kuwaiti [8] and American [14] mothers. However, Indian mothers were disagreeing with the result of the present study. [13,19] A similar high percentage (95.2%) of the mothers agreed that the dental health had effect on general body health. This was in line with the previous studies [8,14,20,21], although another Indian study showed less knowledge. [13] Mother's knowledge about the importance of primary teeth and the effectiveness of tooth brushing in preventing dental caries were 76.6 % and 76.8% respectively, which in consistence with previous studies. [4,5,8,13,17,22,23] Knowledge on importance of primary teeth was much better among Canadian [21] and Australian mothers [24].

The results of present study showed weakness in the knowledge of the effect of carious deciduous teeth on the permanent teeth (63.5%), mothers tend to neglect the care for primary teeth as they will be replaced. Mother's knowledge regarding the role of fluoride in caries prevention was also weak (64.7%) in agreement with Studies in other parts of the world [13,22,23,25]. Other studies showed satisfactory knowledge about fluoride. [5,20,21] The questions about transmissibility of bacteria causing caries had the least knowledge scores 33.2%. The same disappointing result reported in many studies [4,17,18,24,25]. Although one Brazilian study reported better knowledge regarding caries transmissibility [26].

According to AAPD "the first dental visit should be with the eruption of the first primary tooth and no later than twelve months of age" [2]. The results of the present study showed maternal knowledge (31.8%) about the ideal time for first dental visit, came in agreement to the other studies [8,13,14,25,27] whereas Canadian and Saudi mothers had better knowledge [5,21].

In spite of the relatively good dental health knowledge, the knowledge has not been fully reflected on practice. This finding was consistent with previous studies [28,29]. In the current study, most of



participating children (67.1%) never visited a dentist before. The same result found in earlier studies. [25,29] When asked about the reason, 84.6% of the mothers claimed that their children did not complain, giving a clue that most Sudanese parents did not take their children to a dentist unless there is pain or trouble. This could be attributed to pressure on families to allocate financial resources to other matters.

In the current study weaning from bottle was after two years age, which inconsistent with recommendations of the AAPD to wean the infant from the bottle between 12-18 months of age. Similar findings of prolonged bottle feeding up to 2 years of age were also reported previous studies [18,23,29]. In contrast, Schroth et al. reported that Canadian mothers agreed that bottle feeding beyond 12 months of age could harm primary teeth [21].

Regarding snacking habit, 52% of children exposed to sugary snacks once or twice a day. Tooth brushing was commenced by the age of two years in 34% of mothers. In regarded to frequency, 50.6% brush their teeth once a day.

In this study 59.8% of mothers observe their children while brushing, whereas, 42% of them dispense pea size amount of tooth paste > however all answers were far away from latest AAPD recommendations. [2] The result of the present study was comparable with the studies from UAE [29], India [12] and Kosovo [25] showed relatively lower practice scores, on the other hand, some previous studies showed more positive results [8,17,24].

Fluoride content of the tooth paste and the use child's tooth paste were not ascertained more than half mothers in the present study, 55% of children using children's tooth paste. The same were noted by Indian [4], American [27] and Chinese mothers [23] whereas the Australian mothers were more ascertained [24].

## Conclusion

Mothers seemed to have weak knowledge and practice in relation to the oral health of preschool children. The data may be of meaning in the evaluation of the past and planning of future oral health prevention and treatment programmes targeting preschool children.

## Strengths and limitations of the study

This was the first study in Sudan in concern to mother's dental health knowledge. All children included in the study were given a written referral to dental clinic as needed. The use of face to face interview to assess knowledge and practice has the possibility of introducing interviewer bias. Questions regarding weaning and commencement of tooth brushing may introduce a recall bias.

## Recommendations

Oral health education programmes should centre of attention on mothers of preschool children. Further studies with larger sample size and different areas in Sudan may give more representative results.

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