



Original article

Children's oral health and parents' education status in Benghazi, Libya: a cross-sectional study

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ABSTRACT

Aim: The study aims to evaluate the impact of parents' education on the promotion of child dental care.

Methods: Data were collected via a questionnaire survey among parents who brought their children to the Pediatric Dental Department of the Faculty of Dentistry, University of Benghazi, Libya. The data were logged and analyzed using IBM-SPSS for Windows version 29.0 (SPSS Inc., Chicago, IL). Frequencies and percentages were measured to assess the influence of parental education on the dental knowledge of their children's oral care.

Results: More than two-thirds (69.2%) of parents sought dental care for their children when they expressed pain. More than half of parents (59%) reported the importance of deciduous teeth and its impact on successor teeth. Only 16% started brushing when the first primary tooth erupted, and 40% of their children brushed at least twice a day. In addition, only 39% of parents knew the correct time of the first permanent molar eruption. The frequency of parents who reported the correct total number of primary teeth, preferred treatment of primary teeth rather than extraction and asked their children to brush once daily increased with increasing the parents' education levels.

Conclusion: The present study displayed that a high parents' educational level does not directly subscribe to good oral health care for their children. The parents need further attention by presenting more programs dealing with dental health which will be useful in improving their children's oral health.

Key Words: *Parents, Education, Child, Dental health, Questionnaire, Oral hygiene*

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INTRODUCTION

Awareness of parents can play an important part in preserving dental health habits amongst children.¹ Unfortunately the proper management of primary teeth is not considered a main issue in most of the population as it is thought that deciduous teeth will fall out as the child grows, without influencing permanent teeth. Primary teeth are essential for meeting children's basic needs, and the health of permanent dentition relies on them. The treatment of primary teeth is crucial, as it is vital for proper eating, speech, and aesthetics, and also plays a significant role in building a child's confidence. The development and improvement of children's oral hygiene habits are most influenced by their immediate environment.² Parents are usually the main factor

affecting children's progress of routine oral health habits. They are responsible for caring for their children and making important decisions on their behalf. Therefore, they should be aware of primary teeth, and their health.³ Children's dental hygiene benefits significantly from educated parents who instill positive oral health habits.³ Children's dental health benefits more from highly educated parents, while less-educated parents show less concern for dental care.^{4,5} A study conducted among Libyan children found that dental caries incidence decreases as parents' educational levels increase.⁶ Anyway, the aim of the previous study was different from our aim, the main aim of this study⁶ was to assess the experience and prevalence of dental caries among school children aged 8 to 10 years, in addition, the questionnaire in the previous study was not similar to the one of our study. Therefore, further study is needed to investigate the parent's education level and knowledge regarding the oral health of their children. Children's dental health is significantly influenced by their parents' awareness and education levels. Dental management typically involves parental approval. Moreover, parental education is a common indicator of

socioeconomic status in studies on children's dental health^{7,10}

Several research in industrialized nations have shown an association between parents' education level and their children's dental habits.^{4,11-14} However there are inadequate studies on the association between the parents' education level and their children's dental health behavior in developing countries. Unfortunately, there is few studies display if parental education level impacts on their preferences for oral care of their offspring.⁶

In Benghazi, it is assumed that education may play a vital part, which has been barely being evaluated. In light of this, the present study aimed to assess, through a questionnaire survey completed by parents, the prevalence of specific habits influencing their children's oral health. Additionally, it sought to investigate the relationship between parental education levels and their knowledge regarding their children's oral healthcare.

MATERIALS AND METHODS

Ethical approval was gained from the research ethical committee of the University of Benghazi. In addition, written informed consent was studied and accepted by the University's ethics committee and signed by all the parents before starting the study. Because there is no governmental classification of areas based on socioeconomic information in Libya, parents' education levels could be considered as a proxy measure of parental dental knowledge, attitudes, and awareness. A convenient sample of parents was included. The participants were enrolled from parents attending with their children aged between 2 to 12 years for dental treatment at the Pediatric Dental Department of the Faculty of Dentistry, University of Benghazi from 15th November 2022 to 20th February 2023. Inclusion criteria were parents of a healthy child who have primary or mixed dentition. Exclusion criteria for participation were parents of unhealthy children with permanent dentition only.

A self-designed questionnaire was prepared in English and then translated into simple Arabic language and validated in a previous study.¹⁵ A questionnaire survey was used to gather the information in the form of 15 close-ended multiple-choice questions. The questions were easy to read and answer with two options (yes and no), multiple-choice questions, and ranking questions using agree, disagree, and don't know. The first part of the questionnaire survey included questions on demographic data such as name, age, sex, parental education qualification and child's age. The levels of parents' education were categorized as elementary school, intermediate school (high school), university degree and post-graduate degree. The second part contained questions that evaluated the parental

knowledge and awareness of different treatment options regarding the frequency of habits affecting the dental health of their children, such as the frequency of tooth brushing, when they started tooth brushing, regular visits to the dentist, the importance of primary teeth, what they prefer extract or treat the primary teeth, if their children have previous bad dental experience, what is the total number of primary teeth and when the first permanent tooth erupts. The questionnaire was printed and copied according to the sample size. The researcher asked the parents to tick the most correct answer from the set list of answers in order to assess the effect of their education levels on their kids' oral health.

Data entry and statistical analysis were done using Statistical Package for the Social Sciences IBM-SPSS for Windows version 29.0 (SPSS Inc., Chicago, IL). The Chi-square test was utilized to compare percentages in order to assess variations in parental knowledge and practices based on their education level and to investigate the impact of parental education on their children's dental knowledge. The confidence level was set at 95%. A $P \leq 0.05$ was considered statistically significant.

RESULTS

Responses obtained from the parents were tabulated and the findings of the questionnaire were stated as frequency distribution and calculated in percentages. The questionnaires were excluded if they were either incomplete or if more than one answer was selected. Total number of sample size selected was 117 parents between 20 and 49 years of age. Out of the sample selected, 39.3% ($n=46$) were aged 20 to 29 years old, 35.9% ($n=42$) were aged 30 to 39 years and 24.8% ($n=29$) were aged 40 to 49 years old. The parents aged 20 to 29 were the highest percentage of the study sample. About 54.7% ($n=64$) of the sample were mothers and 35.9% ($n=42$) were fathers, 9.4% ($n=11$) were guardians. The children's ages were 2–12 years.

In the present study, the education level of parents was divided into four categories. According to parents' education Level, 57.3% ($n=67$) of the parents in this survey had a university degree followed by 16.2% ($n=19$) for respondents with a higher educational level (postgraduate degrees), similar percentage 16.2% ($n=19$) of respondents had up to elementary school level, and only 10.3% ($n=12$) had up to high school. Education level distributions of parents are given in Figure 1.

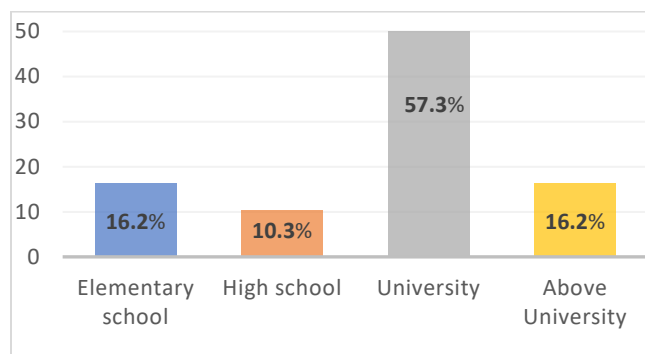


Figure 1. Distribution of the population sample according to education level

Regardless of parents' education level, of the total sample, about 40.2% of the parents stated that their children brush their teeth twice or more daily, 35.9% reported one time daily, while 15.4% reported one time weekly, and 8.5% reported that their children having no brushing habit. When parents were asked about when their children started tooth brushing, 68.4% of parents reported that once the primary molars erupted, 16.2% reported the correct answer, when the first primary tooth erupts, and 15.4% reported that their children don't brush their primary teeth. Of the sample, more than two-thirds 69.2% of parents reported visiting the dentist only for pain or an emergency and about 24.8% of parents reported taking their children to dental visits more than once per year. When the parents were asked if their child had previous bad dental experience, 55.6% reported no and 44.4% yes. When parents were asked about the importance of primary teeth in their children, most of them had an awareness of the importance of primary teeth. More than half of parents (59%) stated the importance of primary teeth and their impact on permanent teeth while 41% of the parents reported disagree or don't know. Around 83.8% of the parents prefer treatment of the primary teeth and 16.2% of them prefer extraction of these teeth. When the parents were asked about the total number of primary teeth, 38.5% reported the correct answer (20 teeth), 37.6% reported

not knowing the answer and 24% of them reported the wrong answer. Among the sample, less than half (39.3%) of the parents correctly reported that the first permanent molar erupts at 6-7 years of age. Regarding parents' education levels, as the level of education increased, so did the frequency of parents who correctly reported the total number of primary teeth. Additionally, the frequency of parents who reported their children brushing their teeth once daily also increased with higher educational levels. Notably, none of the parents with post-graduate education reported that their children had no brushing habits. As the parents' educational level increased, the frequency of parents who reported the correct time for starting tooth brushing, after the first primary tooth erupts, decreased. Parents' education level showed no significant correlation with the frequency of children's dental visits. Most parents reported taking their children to the dentist only when they experienced pain. Restoration was the most commonly accepted treatment for primary teeth. As parents' education levels increased, the preference for treating primary teeth over extraction also increased. Conversely, lower education levels among parents corresponded with a higher preference for extracting primary teeth rather than treating them. Conversely, as the education level of the parents decreased, the frequency of parents who preferred the extraction of primary teeth over treatment increased. The study found no significant link between parents' education levels and their knowledge of when the first permanent molar erupts and less than half of the parents knew the correct timing. Anyway, more than half of parents with different education levels reported that their children have no previous bad dental experience. The current study showed that the level of parents' education has no positive effect to contribute good oral care of their children.

Table 1: The analysis of the questionnaire section regarding the influence of parents' education level on their child's oral health

Question	Parents' Education Level				Total	χ^2
	Post-graduate	graduate Level	Inter-mediate school	Elementary school		
	(%)	(%)	(%)	(%)		
Do primary teeth affect permanent ones?						
Agree	57.9	58.2	66.7	57.9	59.0	1.68
Disagree	15.8	19.2	25.0	21.1	19.7	
I don't know	26.3	22.4	8.3	21.1	21.4	
When do you take your child to visit the dentist?						
Once /year	10.5	4.5	8.3	0.0	05.1	9.28
More than once/year	15.8	23.9	33.3	31.6	24.8	
When feeling pain	73.7	71.6	58.3	63.2	69.2	
Never	00.0	00.0	00.0	05.3	00.9	0.41
Does your child have previous bad dental experience?						
Yes	47.4	38.8	41.7	63.2	44.4	3.66
No	52.6	61.2	58.3	36.8	55.6	0.31
What do you prefer extract or treat primary tooth?						
Extraction	15.8	11.9	25.0	26.3	16.2	3.09
Treatment	84.2	88.1	75.0	73.7	83.8	0.39
What is the total number of primary teeth?						
20 teeth	36.8	44.8	25.0	26.3	38.5	10.18
28 teeth	05.3	11.9	16.7	15.8	12.0	
32 teeth	05.3	14.9	00.0	15.8	12.0	
I don't know	52.6	28.4	58.3	42.1	37.6	0.34
How many times does your child brush his teeth?						
Once/day	52.6	34.3	41.7	21.1	35.9	10.70
Twice or more/day	21.1	44.8	33.3	47.4	40.2	
Once/week	26.3	11.9	08.3	21.1	15.4	
Never	00.0	09.0	16.7	10.5	8.5	0.30
When did your child start brushing?						
When the first primary tooth erupted	5.3	11.9	25.0	36.8	16.2	9.79
When the primary molars erupted	78.9	71.6	66.7	47.4	68.4	
Doesn't brush his primary teeth	15.8	16.4	08.3	15.8	15.4	0.13
When does first permanent molar erupt?						
6-7 years	31.6	38.8	41.7	47.4	39.3	10.30
10 year	26.3	28.4	16.7	31.6	27.4	
12 years	00.0	01.5	08.3	10.5	03.4	
18 years	05.3	04.5	08.3	0.0	04.3	0.59
I don't know	36.8	26.9	25.0	10.5	25.6	

DISCUSSION

In the current study, most parents (59%) recognized the significance of primary teeth regardless their educational level. Our results did not agree with the findings of another study conducted in India, which found that 82% of the parents were unaware of the importance of primary teeth and 96% of them had no awareness of them.¹⁶ On the contrary, another study indicated that parents who acknowledged the significance of deciduous teeth positively impacted their children's oral health.¹⁷

About 38.5% of the sample was aware of the correct number of primary teeth. However, as the education level of parents increases, the proportion of parents who correctly identified the total number of primary teeth (20) also increases. A similar proportion (30%) was observed in an Indian study.¹⁸

In this study, when evaluating the impact of parents' education on the importance of maintaining primary dentition in their children by asking about preferred treatment choices for decayed primary teeth, most parents (83.8%), regardless of educational level, preferred treatment of primary teeth over extraction. Additionally, as the education level of the parents increased, the frequency of parents who preferred the treatment of primary teeth also increased. This might be due to the fact that children from families with highly educated parents had more opportunities to receive restorative management. Our results align with the findings of another study, which found that 86% of parents preferred to have these teeth filled.¹⁸ Conversely, our figure exceeded that reported in an Indian study, where 53% of parents believed it was crucial to restore primary teeth.¹⁹ Moreover, another study conducted in the United Kingdom reported that only 47% of parents stated a preference for having a decayed primary tooth restored, where 28% chose having the tooth extracted and 15% wanted the tooth left alone.²⁰ Additionally, in the current study, as the parents' educational level decreased, the frequency of parents who prefer extraction of primary teeth increased. However, our result (16%) did not align with the findings of another study, which found that 61% of parents would prefer to have these teeth extracted rather than restored.¹⁶

One study found higher education levels may increase interest in health education programs,²¹ while another linked tooth brushing frequency to parents' education.²² Our study found no significant correlation between parents' education level and the frequency of their children's tooth brushing. In this study, 40.2% of parents reported that their children brush their teeth twice or more daily. This figure is significantly lower than those reported in Denmark (78%) and Switzerland (85%), but it aligns with the percentages reported in Finland

(40%)²³ and Turkey (40.5%).¹⁵ Conversely, another study reported that 91.1% of parents only asked their children to brush once per day.¹⁶

Regular visits to the dentist every six months are essential for maintaining good dental health.²⁴ Our study revealed that none of the parents with higher education levels had ever arranged for their child to visit a dentist; however, the frequency of regular dental visits among educated parents was low. Most parents only visited the dentist when their child experienced pain or an emergency. Upon inquiry regarding the motivation for seeking dental care, the findings indicated that parents' awareness of dental care is not influenced by their education level. Anyway, our findings were in line with other studies indicating that most parents took their children to dental services only in cases of pain.^{16,19,25} The explanations for evading regular dental visits may comprise fear, anxiety, difficulty of accessibility to dental clinics, and lack of knowledge about the significance of regular dental visits. Our findings contrast with those of a previous study, which claimed that children of parents with higher education levels more frequently utilized dental services.²⁶

Regardless of parents' educational level, this study found that adequate dental health knowledge was not observed among parents. Of the total surveyed, only 39.3% of parents were aware of the correct age of eruption of the first permanent molar. However, no correlation was found between the parents' education levels and how often they correctly answered when the first permanent molar erupts. The correct age (6-7 years) of first permanent molar eruption was not recognized at least among more than half of the parents. However, their awareness was not significant in this regard. A lack of parental knowledge about the timing of tooth eruption increases the risk of dental caries due to factors like frequent carbohydrate consumption between meals and inadequate oral hygiene practices. Additionally, parents who are not aware of the correct age of eruption may not supervise their children's tooth brushing, putting these teeth at high risk for dental caries. Our result was higher than the findings of another study in Iran, which reported that only 30.0% of mothers knew the eruption time of the first permanent molar.²⁷ Our result was higher compared to the 18% reported by another study, which found that parents' education did not affect their awareness of the eruption time for the first permanent molar.²⁸ Similarly, another study found that parents had limited information about when the first permanent molar erupts.²⁹ This indicates that even educated parents need to learn more about first permanent molar's eruption time.

Parents' education is crucial in maintaining good dental health and hygiene by influencing the frequency of dental check-ups, dentist visits, and the adoption of essential oral health practices, which consequently impacts children's quality of life and educational progress.³⁰ The education of the parents is a main obstruction in preserving dental health and hygiene for their children

The three-way relationship between the parent, child, and dentist plays an important role in preserving and improving dental health, and efforts to instill good dental habits in children can positively impact their overall health as well.

The results of this study indicate that children in Benghazi require additional assistance to develop effective oral health habits, irrespective of their parents' education levels. This may be because parents' awareness does not always translate into action. Knowledge and educational programs should be established for parents to inspire them to seek preventive primary teeth health care and specialized oral health advice immediately even before the primary teeth erupt. This current study has certain limitations; the sample size was small, and the study didn't assess different regions in Benghazi. The use of a convenient small sample makes it difficult to generalize the results of the study to the city of Benghazi and Libyan population however this study may be used as a baseline for future studies.

CONCLUSION

This present study displayed proof that high parents' educational level does not directly provide good dental health habits of their children. Still, an increase in awareness will inspire parents to offer improved dental health to their children. Further research is necessary to evaluate the parental education level as a proxy measure of socioeconomic status and parental awareness concerning dental health of their children in different regions in Libya.

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