

ORIGINAL ARTICLE

## KNOWLEDGE, PERCEPTION, AND ATTITUDE OF PARENTS TOWARD DENTAL TREATMENT GIVEN TO THEIR PRIMARY SCHOOL STUDENTS IN TRIPOLI, LIBYA

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### ABSTRACT

*Dental treatment is an important topic, especially for primary school students. Parents' knowledge, attitudes, perceptions, and socioeconomic status are potentially significant factors in improving dental treatment. In 2021, parents of ten primary school students in Tripoli participated in a survey of their children during school time. A cross-sectional descriptive study was conducted in ten randomly selected primary schools across Tripoli, the capital of Libya. A total of 293 respondents were approached using a systematic sampling technique. A previously validated and published questionnaire was used with minimal modifications. Knowledge, attitudes, and perceptions were analyzed using a scoring system based on the number of correct or favorable answers provided by parents. According to our results, parents of primary school students exhibited a high knowledge score of 60.4% regarding dental treatment. Approximately 41.7% of participants displayed a positive attitude towards dental treatment, while 40.2% held a negative attitude. Most parents practiced poor oral health care for their children, with 52.2% individuals scoring poorly, indicating that 52.2% had inadequate dental treatment practices. In general, the variables explained a total of 61.6% of the variation in dental treatment. The findings of this study demonstrate the positive impact of knowledge ( $B=0.192$ ,  $P\text{-value}<0.05$ ), attitude ( $B=0.339$ ,  $P\text{-value}<0.05$ ), income ( $B=0.161$ ,  $P\text{-value}<0.05$ ), and education ( $B=0.134$ ,  $P\text{-value}<0.05$ ) on dental treatment. However, position and perception had an insignificant effect. Respondents varied based on their socioeconomic status, with high education and income respondents differing from those with low education and income. This study highlights the implications and limitations of the research and provides suggestions for future research after the COVID-19 pandemic. The COVID-19 pandemic has given rise to numerous psychological problems among healthcare workers, which are directly related to inadequate knowledge, incorrect attitudes, and inadequate perception. Nevertheless, timely interventions and accurate information have the potential to safeguard the mental well-being of healthcare professionals during the novel coronavirus epidemic.*

**Keywords:** knowledge, attitudes, perception, Libya, Dental Treatment.

### INTRODUCTION

A critical aspect of overall health for both children and adults is dental health (1). Therefore, parents and children play pivotal roles in their children's well-being, especially before and after school. According to Omara et al., dental issues are common among children and may be the primary cause of unhealthy teeth as they grow. However, children may not recognize these problems and rely on their parents for dental health guidance. Consequently, parents' knowledge, perception, and attitude regarding dental issues during early childhood are essential in preventing dental problems (2). Recognizing the importance of dental health, several researchers have

endeavored to assess parents' levels of knowledge, attitude, and perception and their impact on safeguarding children's teeth. For instance, in a study by Ningthoujam in 2019, the focus was on parents' knowledge of dealing with dental issues and methods for addressing their children's dental problems (3). The study found that a small percentage of parents were aware of emergency management techniques for dental issues in their children, while the majority lacked knowledge in this area. Nonetheless, most parents expressed a keen interest in learning and acquiring knowledge on the subject.

In a study conducted by Ramakrishnan et al. in 2019, the researchers aimed to understand

parents' knowledge and attitude towards maintaining their children's dental health in India (4). The primary concern was parents' lack of awareness and knowledge regarding dental issues that children face at a young age, particularly during the process of tooth replacement. The findings indicated that parents were generally aware of and knowledgeable about maintaining dental health, but this awareness decreased among those who only visited the dentist when their child complained of dental pain. A previous study revealed that parents often lack awareness regarding primary dentition and dentist visits for children in their first 12 months of life (5). Thus, this study sought to determine the reasons for a child's first visit to the dentist and the child's age during that visit. The findings revealed that the first dentist visit typically occurred between the ages of 6 and 9, with the primary reason being dental decay. However, the results also showed that awareness of dental issues and knowledge about addressing them remained low.

Despite increasing awareness about dental health, the level of awareness and knowledge in the Middle East remains low. For instance, over 60% of children in Libya suffer from dental caries (6). Local studies have also indicated a lack of awareness and a casual attitude toward children's oral health (7). Given that parents bear responsibility for their children's well-being, the health of children significantly depends on the attitudes, perceptions, and knowledge of their parents. Moreover, socioeconomic status plays a crucial role in shaping parents' behavior concerning their children's dental health (8, 9). Thus, this study aims to examine parental behavior and assess their knowledge, awareness, and perceptions regarding dental treatment. Furthermore, this study aims to provide public health decision-makers with a reference that can be used to enhance knowledge, awareness, and perceptions related to dental treatment for children. Additionally, this study aims to investigate how various variables influence children's dental care. The literature indicates that sociocultural factors have a significant impact on parents' knowledge, perceptions, and attitudes.

## MATERIALS AND METHODS

### Study design

This study is guided by the Theory of Reasoned Action (TRA) (10) and the Theory of Planned Behavior (TPB) (11) to elucidate the development of conceptual frameworks. These theories are employed to elucidate human and social interaction behaviors. According to TRA, human behavior towards a specific action is determined by attitudes and subjective norms. Attitude represents the positive or negative feelings towards taking that action. The TPB posits those attitudes and subjective norms, along with perceived behavioral control, influence individuals' behavior. Perceived behavioral control refers to people's perceptions of their ability to perform a given behavior (11). In this study, a self-administered questionnaire was employed. The participants in the survey were parents of primary school students in Tripoli, the capital of Libya. The ten primary schools were requested to provide a list of students' parents and instruct the students to distribute the questionnaires to their parents.

### Study sample

The research was conducted in Tripoli, the capital of Libya, an African country located within the Maghreb region. The study sample comprises parents from ten primary schools in Tripoli, specifically parents from ten primary schools located in Tripoli, Libya, which represents the largest proportion of model primary schools in Tripoli. Systematic sampling was employed for participant selection. The sample size was calculated using the Sekaran and Bougie formula:  $n = \frac{x^2 * N * P * (1-P)}{(ME^2 * (N-1)) + (X^2 * P * (1-P))}$  (12). A systematic sampling technique was employed to ensure representation of the population, and this method is considered a probabilistic sampling approach.

### Study Tools

The author of this study utilized a self-administered questionnaire, adapted from previous studies (13). The questionnaire does not collect any personal information, and all data collected were used for statistical purposes and treated with confidentiality. The first section included general information, such as the age and gender of the child, parents' education, occupation, and total family income. The second part of the questionnaire comprised

27 questions related to knowledge, attitude, and practices concerning children's oral health. Of these, ten questions pertained to knowledge, eight to attitude, and nine to practices. Responses to attitude questions were rated as (1) Agree, (2) Uncertain, and (3) Disagree, while knowledge and practice questions were assessed based on the correctness of answers. A scoring system was developed to evaluate the questionnaire responses, with scores determined by the number of correct or favorable answers provided by parents (Knowledge - Good: >7, Fair: 4-6, Poor: <3; Attitude - Good: >6, Fair: 3-5, Poor: <2; Practices - Good: >7, Fair: 4-6, Poor: <3). Before initiating data collection, the instrument was translated into Arabic.

**Statistical analysis**

Statistical Package for Social Sciences software version (SPSS 23) was employed for coding and analyzing the collected survey data to ensure completeness. Descriptive analysis was conducted, focusing on frequencies and percentages. Additionally, hypotheses were tested using ANOVA to identify differences between respondents and their levels of knowledge, attitude, and perception, and regression analysis was carried out to investigate the impact of knowledge, attitude, perception, and socioeconomic factors on dental treatment for primary school students.

**RESULTS**

**Demographic characteristics**

A total of 293 parents from ten primary schools in Tripoli, Libya, participated in the survey. The majority of participants (66.9%) were female, while 33.1% were male. Their ages ranged from 27 to 67 years old. In terms of education, more than three-quarters (78.2%) held a university degree, 13.1% had a high level of education, and only 8.7% had completed high school. Regarding income, the majority (82.9%) reported incomes between 1001-5000 LD, with 10.9% earning less than 1000 LD and 6.1% earning between 5001-10,000 LD. In terms of employment, the majority (82.9%) were employed in the public sector, followed by top management level employees (6.1%), employees in the private sector (5.8%), and managerial level employees (4.9%).

**Knowledge, Perception, and Attitude Towards Dental Treatment**

The results regarding the level of knowledge indicated that the majority (60.4%, n = 177) of parents exhibited good knowledge. Approximately 41.7% (122 out of 293) of participants displayed a positive attitude towards oral health and dental treatment for their children. However, a significant number of parents (153) had poor dental treatment practices for their children, accounting for 52.2% of the total, as presented in Table 1.

**Table 1: Level of Knowledge, Perception, and Attitude Towards Parental Dental Treatment**

		Frequency	Precent
knowledge	Good ≥7	177	60.4%
	Fair 4-6	65	22.2%
	Poor ≤3	51	17.4%
Attitude	Positive ≥6	122	41.7%
	Fair 3-5	53	18.1%
	negative ≤2	118	40.2%
Practice	Good ≥7	86	29.4%
	Fair 4-6	54	18.4%
	Poor ≤3	153	52.2%

Table 2 summarizes parental knowledge levels regarding the dental treatment of primary school students in Tripoli. More than half of the participants correctly answered all questions. However, the questions related to the role of fluoride had the lowest correct response rate,

with only 41.6% identifying fluoride as a preventive measure for tooth decay. Additionally, about 37.9% of participants believed that tooth decay was the most common dental disease in children.

**Table 2: Results of Parental Knowledge Levels Regarding Dental Treatment of Primary School Students in Tripoli**

Items		Number	Percentage
1. The Number of milk teeth in child's mouth	22	15	5.2%
	20	270	92.1%
	18	8	2.7%
	I don't know	0	0.0%
2. Does the toothpaste contain fluoride?	Yes	177	60.4%
	No	24	8.2%
	I don't know	92	31.4%
3. What is the role of the fluoride in the toothpaste?	Prevents tooth decay	122	41.6%
	Prevents gum problems	90	30.7%
	Gives freshness	69	23.6%
	I don't know	12	4.1%
4. What is the most common dental disease in the child?	Tooth decay	111	37.9%
	Bleeding gums	55	18.8%
	Discoloured tooth.	99	33.8%
	I don't know	28	9.5%
5. Which of the following food items can lead to tooth decay?	Chocolates.	170	58.0%
	Bakery products.	0	0.0%
	Soft drinks	0	0.0%
	All the above	123	42.0%
	I don't know.	0	0.0%
6. Which of the following do you think prevents the tooth decay?	Restricting sweets.	13	4.4%
	Tooth brushing.	20	6.8%
	Regular dental visits.	0	0.0%
	Fluoridated toothpaste.	0	0.0%
	All the above	210	71.7%
	I don't know.	50	17.1%
7. Causes for gum disease?	Improper brushing.	200	68.3%
	Tartar.	33	11.2%
	All the above.	10	3.4%
	I don't know.	50	17.1%
8. Which of the following do you think prevents the gum disease?	Regular brushing and mouth wash.	41	15.0%
	Professional cleaning.	19	7.0%
	All the above	199	72.9%
	I don't know.	14	5.1%

Items		Number	Percentage
<b>9. Which of the following can lead to irregular teeth?</b>	Thumb sucking/tongue thrusting/mouth breathing.	193	65.9%
	Runs in the family.	26	8.9%
	All the above	60	20.5%
	I don't know.	14	4.8%
<b>10. Can irregular teeth be aligned in the correct position?</b>	Yes	230	78.5%
	No	63	21.5%
	I don't know	0	0.0%

In terms of attitude, all participants agreed that mothers should be responsible for cleaning their child's teeth, and a majority (93.2%) recognized the importance of healthy milk teeth for proper food chewing. Furthermore, 89.8% of respondents believed it was crucial to clean a child's teeth after every meal. About 65.9%

believed that good oral health was related to good general health, but 58% mistakenly thought that milk teeth did not require special care since they would eventually fall out. Additionally, 55.1% were aware that night-time bottle feeding could lead to dental caries, as shown in Table 3.

**Table 3: Results of Parental Attitude Levels Regarding Dental Treatment of Primary School Students in Tripoli**

Items	Agree	undecided	Disagree
<b>1. I'm aware that night-time bottle feeding can cause dental caries.</b>	150 (51.2%)	50 (17.1%)	93 (31.7%)
<b>2. cleaning of the child's teeth should be done by mothers.</b>	293 (100%)	0 (0)	0 (0)
<b>3. It is necessary to take the child for regular dental visits.</b>	53 (18.1%)	47 (16.0%)	193 (65.9%)
<b>4. Healthy milk teeth are essential for children to chew the food properly</b>	273 (93.2%)	13 (4.4%)	7 (2.4%)
<b>5. It is important to clean child's teeth after every meal.</b>	263 (89.8%)	13 (4.4%)	17 (5.8%)
<b>6. Milk teeth do not require good care as it is going to fall anyway.</b>	220 (75.1%)	17 (5.8%)	56 (19.1%)
<b>7. Good oral health is related to the good general health</b>	193 (65.9%)	55 (18.8%)	45 (15.3%)
<b>8. Attend programs related to oral health counselling.</b>	50 (17.1%)	50 (17.1%)	193 (65.8%)

Regarding practices, a significant portion (92.1%) had not yet taken their child for their first dental visit. More than half (53.6%) of parents only took their children to the dentist when problems arose, and 41.6% began cleaning their child's teeth after all milk teeth had erupted. Over 80% of parents used toothbrushes and toothpaste to clean their children's teeth. The majority (58%) brushed their children's teeth

once a day, and 71.1% replaced their child's toothbrush once the bristles wore out. Nearly all (95.6%) used toothpaste for cleaning. Most respondents (67.9%) were unsure if their child rinsed their mouth after eating or drinking, and 65.9% of parents only restricted sugary food intake to mealtimes, as presented in Table 4.

**Table 4: Results of Parental Perception Levels Regarding Dental Treatment of Primary School Students in Tripoli**

Items		Number	Percentage
<b>1. When was the child's first dental visit?</b>	6 months after birth	0	0.0%
	After the eruption of first milk tooth	15	5.2%
	1 year after birth.	8	2.7%
	Not yet visited.	270	92.1%
<b>2. When do you take your child to visit the dentist?</b>	Only during problems	157	53.6%
	Every 6 months	0	0.0%
	Every 1 year	44	15.0%
	Not particular	92	31.4%
<b>3. When did you commence the cleaning of your child's teeth?</b>	after first milk tooth eruption	15	5.2%
	After 4-6 milk teeth eruption	75	25.5%
	After all milk teeth eruption	122	41.6%
	After first birthday of the child	12	4.1%
	Don't remember	69	23.6%
<b>4. Which of the following aids are used to clean your child's teeth?</b>	Finger	55	18.8%
	Toothbrush	210	71.7%
	Twig	8	2.7%
	Any other	20	6.8%
<b>5. How many times do you brush your child's teeth?</b>	Once in a day	170	58.0%
	Twice in a day	73	24.9%
	After every meal	50	17.1%
	Not particular	0	0.0%
<b>6. When do you change your child's toothbrush?</b>	Once in 15 days.	10	3.4%
	Once in a month	50	17.1%
	Every 2-3 months	23	7.8%
	Once the bristles fray out	210	71.7%
	Not particular	0	0.0%
<b>7. What material do you use to clean your child's teeth?</b>	Toothpaste	280	95.6%
	Tooth powder	13	4.4%
	Any others	0	0.0%
<b>8. Does your child rinse the mouth after eating/drinking?</b>	yes	40	14.7%
	No	20	7.3%
	Sometimes	14	5.1%
	I don't know.	199	72.9%
<b>9. At what time do you give the sugary food items to your child?</b>	With meals	193	65.9%
	In between meals	86	29.4%
	Before going to bed	0	0.0%
	Not particular	14	4.7%

**Results of the Effect of Socioeconomic Status on Dental Treatment**

The study aimed to assess the impact of socioeconomic status on dental treatment, with

socioeconomic status encompassing three variables: income, position, and education. The results of the hypothesis testing are summarized in Table 5.

**Table 5: Results of Socioeconomic Factors**

Coefficients		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Label
Model		B	Std. Error	Beta			
H	(Constant)	.135	.061		2.574	.007	
H1a	Income	.161	.072	.163	2.242	.026	Supported
H1b	Position	.006	.067	.006	.093	.926	Rejected
H1c	Education	.134	.055	.148	2.427	.016	Supported

a. Dependent Variable: Dental Treatment

The findings reveal that the influence of socioeconomic status on dental treatment is multifaceted. Regarding income, H1a hypothesized that income would significantly affect dental treatment. The results support this hypothesis, indicating a positive effect of income on dental treatment (B=0.161, p-value<0.05). Thus, income plays a crucial role in dental treatment, confirming H1a. On the other hand, H1b posited that position would significantly affect dental treatment. However, the findings indicate that parents' positions did not have a significant effect on dental treatment, as it showed an insignificant effect (B=0.006, p-value>0.05). Therefore, H1b is not supported. For H1c, which focused on parents' education, the results corroborate this hypothesis, as shown in Table 5. Parents' education significantly impacts dental treatment (B=0.134, p-value<0.05). Thus, H1c is supported, emphasizing the critical role of parents' education in the dental health and treatment of children.

**Results of Differences Between the Perception, Attitude, and Knowledge of Parents Regarding Dental Treatment of Primary School Students in Tripoli, Libya, Based on Socioeconomic Status**

The study also explored variations in perception, attitude, and knowledge among parents regarding the dental treatment of primary school students in Tripoli, Libya, based on their socioeconomic status. Once again, ANOVA analysis was employed for this purpose, as it enables the comparison of differences between several groups on a single dependent variable, in line with Pallant (2016) recommendation (14),

the following sections elucidate these differences based on socioeconomic status.

**Differences Based on Income**

H1a proposed variations based on attitude, perception, and knowledge related to income. Differences were observed among respondents in terms of their perception, knowledge, attitude, and dental treatment, and these differences were attributed to income levels. Income was categorized into five groups: less than 1000 LD, 1,001 LD - 5,000 LD, 5001 LD-10,000 LD, 10,001 LD-20,000 LD, and more than 20,000 LD. The ANOVA analysis revealed that respondents exhibited variations in income levels, and statistically significant differences were identified in knowledge with a significance level of p-value <0.05. Similar statistically significant differences were also observed between respondents regarding attitude and perception regarding dental treatment.

**Differences Based on Position**

H1b hypothesized differences among respondents based on their attitudes, perceptions, and knowledge, considering the parents' positions. The differences among respondents based on position are outlined in Table 5. Positions were divided into six groups: employees in the public sector, employees in the private sector, managerial-level employees, top management-level employees, self-employed individuals, and others (please specify). The results demonstrated variations within and between these groups concerning position. Notably, statistically significant differences were only observed in knowledge, where the p-value was less than 0.05. Therefore,

respondents did not differ significantly based on their positions in terms of attitude and perception regarding dental treatment.

#### **Differences Based on Education**

H1c proposed differences among respondents based on their education, encompassing knowledge, attitude, and perception, but not dental treatment. Education levels ranged from high school or less to a PhD. The results indicated that respondents did differ based on their education levels concerning knowledge, attitude, and perception. However, no significant differences were observed in terms of dental treatment. Hence, highly educated respondents exhibited variations from those with lower educational backgrounds.

## **DISCUSSION**

The study engaged two hundred and ninety-three parents from ten primary schools in Tripoli, Libya, to gain insights into their knowledge, attitudes, and practices regarding dental treatment. The demographic profile of the participants reveals that a majority of respondents were females (66.9%), with the remaining 33.1% being males. The age range of the participants spanned from 27 to 67 years. Regarding education levels, a substantial 78.2% held a university degree, 13.1% had attained a high level of education, while only 8.7% had completed high school. In terms of income distribution, a significant 82.9% fell within the 1001-5000 LD, with 10.9% earning less than 1000 LD and 6.1% earning between 5001-10,000 LD. Occupational distribution revealed that a majority (82.9%) were employed in the public sector, followed by top management-level employees (6.1%), private sector employees (5.8%), and managerial-level employees (4.9%).

Regarding knowledge, the study found that most parents (60.4%,  $n = 177$ ) possessed good knowledge. However, there were specific areas of concern, particularly related to the role of fluoride, where knowledge was lacking. This is consistent with previous studies (15, 16). On the contrary, some studies (17-19) have reported good knowledge about fluoride. Most parents correctly identified tooth decay as the most common dental issue in children, aligning with findings in other studies (15, 19-21), where most parents displayed awareness that sugary items like chocolates could lead to dental caries. However, there was a limited understanding of

the various sugary items that can harm teeth, highlighting inadequate knowledge regarding the relationship between different forms of sugar consumption and dental caries. Furthermore, knowledge regarding preventive caries methods, causes, and prevention of gum disease and malocclusion was also low, consistent with a previous study by Suresh et al (16).

Approximately half of the participants exhibited a positive attitude toward oral health and dental treatment for their children. However, many parents believed that proper care for baby teeth was unnecessary because these teeth would naturally fall out. This perception was similar to findings in a study by Suresh et al (16). The majority of parents in this study initiated brushing their children's teeth only after all primary teeth had erupted, which contrasts with a study conducted by Gussy et al., where 95% of parents in rural Australia believed that tooth brushing should commence when the first tooth appears (22). Nevertheless, a positive aspect was the unanimous agreement among parents that cleaning their child's teeth is essential. A significant portion of parents displayed poor practices related to their children's oral health, indicating that 52.2% had a deficient dental care perception. Additionally, a majority of respondents restricted their children's consumption of sugary foods to mealtimes only, in line with reports obtained by Blinkhorn et al (23). Conversely, studies conducted by Moulana et al. and Chan et al. demonstrated that parents are often unaware of the importance of timing sugar intake (15, 21).

The study findings highlighted the substantial influence of socioeconomic factors, such as income and education, on dental health treatment attitudes, knowledge, and perceptions. This observation is consistent with a Polish study that reported lower-educated parents tend to possess lower levels of oral health knowledge (24). It is suggested that parents with a higher level of education may have better access to appropriate information sources and a more comprehensive understanding of that information. The study also revealed a significant association between knowledge, attitude, practice scores, and socioeconomic status, corroborating previous studies that showed parents with lower education levels tend to have poorer dental

knowledge and attitudes (16, 25, 26). Parents with higher education levels may exhibit more positive health attitudes and pay closer attention to their child's health. Overall, while parents in this study demonstrated good oral health knowledge and attitudes, their practical dental care behaviors were lacking. In light of evolving societal attitudes, it is crucial to plan targeted oral health programs that cater to specific groups and focus on improving overall perception, ultimately influencing oral health behavior.

## CONCLUSION

This study, conducted in Tripoli, Libya, aimed to explore the influence of socioeconomic status, attitudes, knowledge, and perceptions on dental health treatment. Data were gathered from 293 parents using a questionnaire. The findings indicate that attitudes, knowledge, and socioeconomic factors, particularly income and education, significantly impact dental health treatment. While positive attitudes and knowledge were observed, there was a notable lack of perception regarding dental treatment. Importantly, parents exhibited statistically significant variations in knowledge, attitudes, and perceptions based on their socioeconomic status. Therefore, it is crucial to devise targeted oral health programs tailored to different parent groups, aligning with the evolving societal attitudes. Enhancing parents' perceptions could potentially lead to better care for their children's dental health.

## Competing Interests

The authors declare no conflicts of interest.

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