

## Assessment of the Mothers' Knowledge in Oral Prevention

Research Article

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### Abstract

**Introduction:** In this study, we aimed to evaluate the mothers' knowledge in oral prevention. Our secondary objective was to know if there was a particular category of parents to better inform. We also aimed to evaluate the role of the dentist in prevention according to mothers and future mothers.

**Methods:** The sample included 160 women aged between 16 and 48 years and hospitalized at the center of maternity and neonatology, Tunis. The evaluation was carried out by a questionnaire divided into 3 parts. The first part included design information, the second and third part included 19 questions that assess knowledge of women in oral prevention.

The answers were evaluated following different recommendations.

Anova test was used to analyze the correlation between mothers profile and knowledge. Entry and data analysis were done by SPSS statistics software 22.

**Results:** Twelve questions were about the schematics of Keyes and got seven correct answers. Three questions focused on the transmission of caries and we got for the majority two correct answers. The majority of mothers gave wrong answers about the role of the dentist. Mothers are aware about effects of thumb sucking. Indeed, one question was asked and we got 80.64% of the answers correct.

**Conclusion:** The overall average mark is 9.05 correct answers out of 19. This confirms that the level knowledge of Tunisian mothers in oral dental prevention remains inadequate. The evaluation of knowledge shows that the best answers was in brushing and transmission of carious disease. There were significant and positive correlations between mothers' educational level, occupations, socio-economic level and the average marks.

**Keywords:** Prevention; Epidemiological Survey; Oral Health; Knowledge; Child; Pregnancy; Alimentation; Brushing; Decay.

### Introduction

Mothers have a crucial role in preventing caries disease. In fact, they transmit the habits and rituals. To be effective they must have a good knowledge of oral prevention. Mothers' overall attitudes and the attitudes towards their child's oral health have been linked with caries occurrence and oral hygiene status [1] and positive maternal attitudes have been associated with an increase in the

child's tooth brushing, a decrease in carious lesions and good oral hygiene in their children [1, 2].

In this study, we aimed to evaluate the mothers' knowledge of oral prevention. Our secondary objectives were to know if there was a particular category of parents to better inform and to evaluate the role of the dentist in prevention according to mothers and future mothers.

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## Methods

Data collection was conducted between September 12, 2015 and December 9, 2015. The sample included 160 women aged between 16 and 48 years hospitalized at the center of maternity and neonatology of Tunis. The evaluation was done by a questionnaire divided into 3 parts. The first part included design information, the second and third part included 19 questions that assessed knowledge of women of oral prevention. The answers were corrected following the recommendations of the AFSAPS (French Agency safety of health products (now ASNM) the HAS (Health Authority), UFSBD (French union of oral health) and AAPD (the American Academy of Pediatric Dentistry). The Anova test was used to analyze the correlation between mothers profile and knowledge. The confidence interval is selected with a risk of  $\alpha=5\%$ . Entry and data analysis were done by SPSS statistics software 22.

## Results

### Sample Description

Mothers' mean age is 32 years with a standard deviation of 15.5. 7.5% of mothers are illiterate, 29.4% had a basic education in primary school, 23.75% in college, 21.25% in secondary school and 18.12% went to University.

68% are housewives, 13% occupy the middle management positions, 19% have their own business, 9.5% are factory girls and one holds the senior position.

All the women interviewed had already the experience of pregnancy with 28.75% once, 31.8% twice, three times 18.75 and 20% four or more times.

### Knowledge of Mothers: Results By Question

Question 1: How many times we must brush our teeth?

94.37% of mothers answer that we must brush at least twice a day.

Question 2: When should you brush your teeth?

94.4 % of mothers think that we must brush our teeth after meals.

Question 3: What is the effective brushing time?

66.87% of mothers answer that the effective brushing time is 2 minutes or more.

Question 4: Is caries a bacterial pathology?

Only 11.8% of mothers think that the origin of caries is bacterial.

Question 5: Has the poor hygiene a role in tooth decay?

78.12 of mothers confirm the role of the poor hygiene in the formation of cavities.

Question 6: Is tooth decay a communicable disease?

83.12% have a right answer about the transmission of caries.

Question 7: Does snacking has a role in tooth decay?

More than the half of mothers know the role of snacking in the formation of caries.

Question 8: Can chewing gum prevent against tooth decay?

The majority (95.63%) of mothers misunderstands the role of chewing gum.

Question 9: after 6 months of age, should we keep feeding at night?

The majority of mothers (93.12%) keep breastfeeding at night

after age of six months.

Question 10: Is milk cariogenic?

73.12% of mothers do not think that the milk is cariogenic.

Question 11: Is breast milk cariogenic?

The vast majority of mothers (98.75) believe that breast milk has no cariogenic effect.

Question 12: Can you dip pacifiers in honey?

67.5% of mothers are aware that we must not soak pacifiers in honey.

Question 13: Should you use the child's spoon to test food temperature?

78.13% of mothers use another spoon to check the temperature of food for their babies.

Question 14: How old should you start brushing your child's teeth?

60% for brushing from 2 years, only 6.25% of mothers give a good answer.

Question 15: Which tooth brush, should you use for your child?

Most of mothers (96.25%) give a correct answer, 3.13% reported a large one and 0.63% use for their child a brother or a parent tooth brush.

Question 16: What type of toothpaste should you use for the child?

80% know that they must use a toothpaste suitable for the age.

Question 17: What is the ideal age of first dentist consultation?

0.63% of mothers are for an initial consultation before one year age old and 88.75% consult in case of pathology.

Question 18: What rate of consultation?

38% have a good answer about the frequency of dental consultation (once a year). For 95.63% of mothers a consultation is linked to symptoms.

Question 19: At what age it is not recommended to leave the child sucking his/ thumb her pacifier?

80.64% of mothers report the need for a cessation of sucking at 4 years old or before this age.

After collecting the questionnaires, scores were attributed. The overall average rating was 9.05 out of 19 with a minimum score of 2 and a maximum score of 15, Figure 1.

The grid answers (Table1)

### Analysis

- Analysis notes based on mothers' characteristics

Age does not seem to have relevance on answers of mothers (Table 2).

The average mark significantly varies depending on the level of study ( $p: 0.001$ )(Table 3).

The job of the mother significantly influences the average mark ( $p: 0.004$ )(Table 4).

The number of children has no influence.

The average mark depends on socioeconomic level ( $p: 0.001$ )(Table5).

- Questions and mothers' characteristics

We studied the answers to some questions according to the profile and characteristics of mothers.

Question 10: Is milk cariogenic?

Figure 1. Histogram of Ccores.

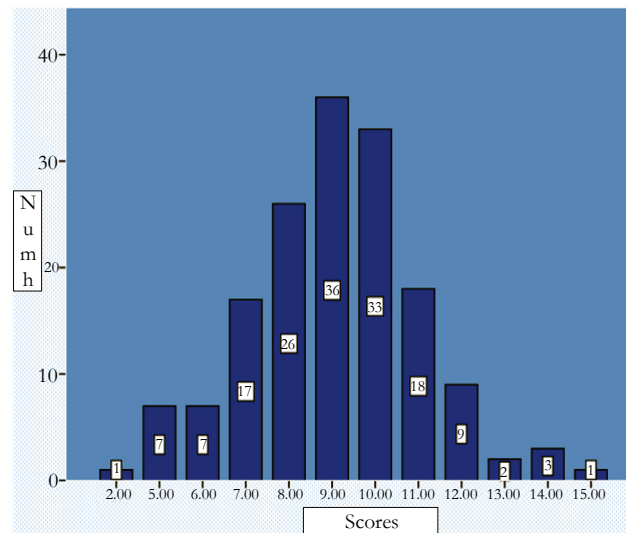


Table 1. The Grid Answers.

Questions	Correct Answers	Incorrect Answers
How many times we must brush our teeth?	151 [94.37%]	9 [5.63%]
When should you brush your teeth?	107 [66.87%]	53 [33.13%]
What is the effective brushing time?	107 [66.87%]	53 [33.13%]
Is caries a bacterial pathology?	19 [11.87%]	141 [88.13%]
Has the poor hygiene a role in tooth decay?	125 [78.12%]	35 [21.88%]
Is tooth decay a communicable disease?	133 [83.13%]	27 [16.87%]
Does snacking has a role in tooth decay?	89 [55.62%]	71 [44.38%]
Can chewing gum prevent against tooth decay?	7 [4.38%]	153 [95.63%]
After 6 months of age, should we keep feeding at night?	11 [6.87%]	149 [93.13%]
Is milk cariogenic?	43 [26.87%]	117 [73.13%]
Is breast milk cariogenic?	2 [1.25%]	158 [98.75%]
Can you dip pacifiers in honey?	108 [67.5%]	52 [32.5%]
Should you use the child's spoon to test food temperature?	125 [78.13%]	35 [21.88%]
How old should you start brushing your child's teeth?	10 [6.25%]	150 [93.75%]
Which tooth brush, should you use for your child?	154 [96.25%]	6 [3.75%]
What type of toothpaste should you use for the child?	128 [80%]	32 [20%]
What is the ideal age of first consultation with dentist?	1 [0.63%]	159 [99.37%]
What rate of consultation?	7 [4.38%]	153 [95.63%]
At what age, it is not recommended to leave the child sucking his thumb / her pacifier?	129 [80.64%]	31 [19.38%]

Table 2. Average of Marks by Age. Age Does Not Seem To Have Relevance on Answers of Mothers.

Age	Average	N	SD
16- 20	9	1	
21-24	8.2	5	1.48
25-29	9.37	53	1.84
30-34	9.27	47	2.27
35- 39	8.6	41	1.96
40-44	9.9	11	1.81
45-48	6.5	2	2.12
Total	9.04	160	2.01

**Table 3. Average of Marks by Level of Study, The Average Mark Depends Significantly on the Level of Education of Mothers P = 0.001.**

EducationLevel	Average	N	SD
Illiterate	7.7500	12	2.09436
Primaryschool	8.4286	49	1.73205
Middle school	8.7568	37	1.80132
Secondarieschool	9.4848	33	1.82211
university	10.5517	29	2.04566
Total	9.0563	160	2.01643

**Table 4. Average of Marks by Job. The Occupation of the Mother Significantly Influence the Average Ratings P = 0.004.**

Job	Average	N	SD
House wife	8.9040	125	1.98146
Factory Girl	8.0000	9	1.58114
Medium management	10.8000	15	1.65616
Senior	10.0000	1	.
Own account	9.2000	10	2.14994
Total	9.0563	160	2.01643

**Table 5. Average Rating According to the Socio-Economic Level: The Average Mark Significantly Varies by Socioeconomic Characteristics P = 0.001.**

	Average	N	SD
Low	8.4937	79	1.99919
Medium	9.6053	76	1.89792
high	10.6667	3	1.52753

**Table 6. Milk Cariogenicity by Level of Study. Level of Study have an Influence on the Knowledge of Milk Cariogenicity P=0.002.**

	Illiterate	Primary school	Middle school	Secondary school	university
Yes	8.33%	22.45%	13.51%	39.39%	44.86%
No	91.67%	77.55%	86.49%	60.61%	55.17%

Age does not seem to have relevance on knowing the carcinogenicity of milk (P = 0.21)

Level of study has an influence on this question (P = 0.002) (Table 6).

Question 14: How old should you start brushing your child's teeth?

Age does not seem to have relevance on the answer to this question (P = 0.79).

Level of study has no influence on this question. (P = 0.012).

Question 17: What is the ideal age of first consultation with dentist?

The knowledge of the ideal age for the first dentist consultation has no connection with age (P = 0.59).

The level of study has no influence on this question (P = 0.45).

## Discussion

### Knowledge of the Oral Prevention

This part of the questionnaire includes questions about:

- \* The nature of caries disease etiology and transmission.
- \* Oral hygiene brushing and chewing gum use.
- \* Food Hygiene.

**Cariou Disease:** The majority of mothers answered incorrectly: 12% know that the caries disease is bacterial and 17% that caries is transmitted, but we must also note that most women know that poor hygiene plays an important role in the formation of caries (78%).

**Oral Hygiene:** 94.37% of mothers know that we must brush our teeth at least twice a day. This percentage is quite high in comparison with other surveys in the world. At Michigan, according to a survey conducted in 2005 on 105 mothers who came to consult the pediatric dentistry center, 70.5% are correct [3].

It is lowest in [Tehran] Iran 46% according to a survey conducted in 2005 on 457 mothers and their children 9-year-old [2].

According to a study done in newZealand on 670 questionnaires more than 75% give a correct answer concerning the most important tooth brushing time [4].

33.13% of mothers brush their teeth before meals and it is essentially the morning when getting up.

94.4% of the mothers know that they must brush their teeth after meals.

For effective brushing time 66.87% gave a correct answer. In Victoria, Australia, a sample of seven mothers with a pre-school aged child was gathered using purposive and network sampling to describe a mother's perception in Dental Health shows that according to them morning is a particularly difficult time to brush due to work commitments [4].

Regarding the role of chewing gum containing xylitol in preventing tooth decay, this role remains unknown by the majority. Only 4.36% of mothers responded yes. According to AAPD studies suggest that the use of xylitol at least 2 to 3 times a day by the mother has a significant impact on the transmission of mother to child SM and reduces caries in children [5].

Many studies have discussed the effect of xylitol on caries development. Since the work of Mäkinen in the 1970s, research has been conducted worldwide, from America to French Polynesia [study conducted from 1981 to 1984 under the auspices of the World Health Organization [WHO] [6]. All studies show a systematic decrease in the incidence caries following the consumption of xylitol [7]. Hayes carried out fourteen clinical studies from 1966 to 2001 which showed a decrease in the rate of dental caries by 30% to 60% for people consuming xylitol compared to the control group [8]. Mäkinen did the same for studies conducted from 1975 to 2000 and found a decrease in the decay rate of 30% to 85% [9].

**Food Hygiene:** More than half of women reported the role of snacking in the formation of cavities [55.6%].

Studies have shown that the increased risk of caries is associated with an increase in cariogenic sugar consumption frequency such as glucose and fructose [more than four times a day] without evident and direct relationship between amount of sugar consumed and the development of caries [10].

### Knowledge of Children's Oral Prevention

This section includes questions about:

- \* Child's food hygiene.
- \* The oral hygiene of children and fluoride.
- \* Visit of dentist.
- \* Transmission of bacteria from mother to child
- \* The parafunctions: thumb sucking.

**Food Hygiene in Children:** The responses of mothers show that their knowledge of food hygiene are insufficient. 6.88% know that we should not keep feeding at night for a baby older than 6 months, 26.88% know that milk is cariogenic, 1.25% that breast milk is cariogenic and 67.5% that pacifiers should not be soaked in honey.

In Michigan, 91% said that the child should not take a bottle containing milk or a sweet drink at bedtime [12].

More than 90% of mothers in Teheran thought that Restricting eating of biscuits, chocolate, candies and other sugary snacks helps prevent dental caries [3].

Our survey shows that the cariogenic effect of milk consumed in night is unknown and that the notion of damage caused by sugar is better understood (67.5% announced that we should avoid dipping pacifiers in honey).

**The Oral Health of Children:** Concerning the age, when we should start brushing a child's teeth, 60% of mothers think we have to start brushing at 2 years old and only 6.25% from the eruption of teeth in mouth. In Teheran more than 90% of mothers know that Regular tooth-brushing helps prevent gum problems [3], In New Zealand 80% give a correct answer about the age to start brushing their child's teeth [12].

Knowledge of the nature of the toothbrush and toothpaste turn out better. For 96.25% of mothers child's toothbrush is small and 80% for toothpaste must be adapted to the age of the child.

Few women know the age of onset of teeth cleaning, yet the American Academy of Pediatric Dentistry (AAPD) recommended in 2014 brushing at the time of the eruption of the first primary tooth. The latest recommendations of the HAS tell that we must begin brushing until the age of 18 months. Parents assure themselves baby hygiene with gauze or a soft toothbrush daily.

**Dentist Consultation:** Only one mother think that the first visit to the dentist should be at one-year-old(0.63%) and 88.75% think that this first visit is done in pathology cases. In New Zealand, 60% of mothers of preschool children give correct answer [12]. About the rhythm of consultation, 95.63% connect the visit to the dentist by the presence of symptoms. Only 4.36% assure that the visit must be done once year with absence of symptoms.

Mother's perception in Victoria reveal that they perceived that dental visits cost too much or they felt it would be too traumatic for their children. These perceptions meant that the mothers were less likely to take their child to a dental professional for a preventative check-up [11].

More than 95% of mothers in Teheran said that it is beneficial to visit a dentist for regular check-ups [12].

Dentist consultations is rare compared to pediatrician or the general practitioner are much more frequent during the First Years of Life, Including mandatory visits During the first six years of life, following the immunization schedule. However, parents may not consult dentist if doctor did not refer them. Therefore, the pediatrician seems to play a very important role in the dissemination of information on the oral prevention in children.

HAS recommended in 2010 a consultation with a dentist at the age of one year to determine the caries risk of young children and to assess the need for fluoride supplementation [13]. Similarly, in 2014 the AAPD recommends first dental visit at age 12 months [14].

**The Transmission of Bacteria from Mother to Child:** Among the bacteria responsible of the formation of caries was the streptococcus mutans (SM) and lactobacilli, a review published in 2010 confirms that the presence of SM in saliva and the child's plaque is an early childhood caries risk indicator since they are involved in the initial carious lesions [15]. Another systematic review pub-



lished in 2013 concluded that maternal factors such as the high rate of cariogenic bacteria influences bacterial acquisition of the little child and colonization appears as the result of certain behaviors and habits [9].

This vertical transmission from mother to child is done either indirectly through the spoon directly by kissing.

Our sample is well aware that the caries disease is transmissible. The majority thinks that we should not taste with the child's spoon (78.13% of mothers).

In Teheran More than 60% of the mothers acknowledged that microbial plaque can cause dental and gingival diseases [2].

**Parafunctions: Thumb Sucking:** The majority of mothers (80.62%) are aware of the necessity to stop thumb sucking at 4 year old or before.

In Michigan, 73.3% said that thumb sucking is bad for the teeth [3].

The French Federation of Orthodontics alert parents about the sucking of the thumb or pacifier after 4 years old.

Ideally, we must stop around 6 months when started oral communication.

To avoid damaging consequences on orofacial structures, the sucking habit should be abandoned at 3 years of age, when all baby teeth have appeared. If sucking persists after 4 years or after 6 years, the consequences often need to widen the upper jaw. The AADP also recommends stopping sucking before 4 years.

### Marks Based on Mothers' Characteristics

The overall average mark is 9.05 correct answers out of 19. This confirms that the knowledge of Tunisian mothers in terms of oral health of children remain insufficient.

**Age:** There is no significant difference between different age groups concerning the overall marks ( $p = 0.235$ ) (Table 2). However, the score varies between 6.5 to mothers of 45-48 years old and 9.9 for mothers aged 40-44 years.

**Level of Study:** There is a significant difference between scores by level of study ( $p = 0.001$ ).

We find that the higher the level of study, the higher score of the questionnaire is high. In fact 7.7 for illiterate women and 10.55 for women with a higher degree.

A study in New Zealand confirms that women with a university degree have better oral knowledge level [14] (Table 3).

**The Work:** The difference is significant  $p = 0.004$ . The highest score is for senior and middle managers (Table 4).

**The Socio - Economic Level:** There is a significant difference by socioeconomic level ( $p = 0.001$ ), with a higher score for women with easy level (Table 5).

This problem does not interest only Tunisia. Worldwide, several studies have shown that the socio-economic level greatly influ-

ences the degree of knowledge of mothers and therefore the prevalence of dental caries in children [14].

### Conclusion

Several studies around the world show that there is a correlation between oral knowledge level of mothers and the state of oral health of children.

In light of our findings, it seemed interesting to make some recommendations to improve the level of knowledge of mothers and subsequently decrease the prevalence of early childhood caries and the cost of care.

It is important to:

- Deliver the right information to parents of children aged less than 6 months, on the main risk factors of caries with particular emphasis on the bacterial origin, its transferable nature and effect cariogenic of the night and extended breastfeeding [issues where we found the lowest score].
- Give prevention messages on early childhood especially in key period of the child between 6 months and 1 year [first teeth erupt] and between 1 and 2 years [passage of semi-liquid diet to a solid diet].
- Organize, as part of volunteering, oral instruction campaigns to improve knowledge
- Better support socially disadvantaged groups and lower socio-economic in oral health since there is a correlation between socioeconomic level and knowledge of mothers
- Invite pregnant women to perform a complete oral examination and the necessary care.
- Train all health professional in contact with parents and children [pediatricians, general practitioners, , nurses ..] about oral health and invite them to refer the child to a dentist from an early age to better multidisciplinary management
- Put the point on the interest of a rich and balanced diet and the harmful effects of foods rich in carbohydrates.
- Explain the value of a visit to the dentist at least once every 6 months.
- Include the first dental consultation in health book mainly because the vast majority of mothers are unaware of the value of an early first consultation with a dentist.

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