

Maternal knowledge, Attitude and Possible Risk Factors of Early Childhood Caries among Preschool Children in Mansoura City

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Abstract:

Objective: ECC is a big problem facing our children in Mansoura city so this study was done to evaluate the knowledge and attitude of mothers toward ECC, determine the possible risk factors of ECC and determine the relationship between the caries experience of the mothers and the ECC experience of their children. **Materials and Methods:** A cross sectional study was done among 1500 mother and their children aged 1-4 years old. This study was based on close ended questionnaires interview, in addition to salivary samples collection from 150 mothers and their children to detect the Streptococcus mutans counts in saliva. **Results:** About half of mothers or sometimes more significantly reported correct knowledge regarding most of the questions ($p=0.001$). Significant percentage of mothers had positive attitudes regarding all questions except for visiting the dentist for pain only and the main reason for visiting the dentist. Regarding the bacterial count, only 21.3% of the mothers had high bacterial counts with no statistical difference. As for children, 34% of them had high count with no statistical difference. **Conclusion:** Correct knowledge of the mothers is considered relatively low, while the positive attitude is considerably fair.

Introduction

Dental caries affects humans of all ages throughout the world and remains the major dental health problem among children globally. Tooth decay has become epidemic among young children. A rapid form of tooth decay known as early childhood caries (ECC), is a widely spread disease that affects children in a wide range. A research shows that ECC can cause lasting harm to a child's dental and systemic health, it also affects the social and intellectual development^{1,2}.

Since parents are the primary social factor that influences the child development in the early childhood years, it appeared that interventions targeting parental beliefs and practices known to be associated with ECC, may be beneficial in the prevention of ECC.³

Early childhood caries has been associated with demographic characteristics, parental attitudes, educational status of mother, oral hygiene practices and frequent use of medications. In addition, it may be attributed to feeding habits, maternal nutrition, psychosocial issues, mouth breathing habit, pacifiers dipped in honey, and children with long standing illness or special health needs. Most affected children belong to low socioeconomic society, whereby they are less vulnerable to visit the specialist in the field⁴⁻⁶.

The other rationale could be detailed as being related to lack of knowledge by the guardians or caretakers regarding the disease. The cause of non concern to ECC may be that it affects primary teeth which will be replaced by the permanent successors⁷.

A previous clinical study has failed to isolate mutans streptococci from the mouths of normal predentate infants.

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The microorganisms responsible for dental caries apparently can be transmitted from one individual to another⁸. Other one has indicated that mothers can unknowingly transmit S. mutans to their infants and children⁹.

Children whose mothers had low concentrations of salivary S. mutans rarely harbored these microorganisms. On the other hand, children whose mothers exhibited high salivary levels tended to be infected and those having the highest salivary levels tended to have the highest caries experience¹⁰.

ECC is a big problem facing our community, as its prevalence in Mansoura City was 41.8% in 2008¹¹ and raised to 61.8% in 2018¹². Since there is shortage in studies that assess parents' knowledge and attitude and the possible risk factors toward ECC in Mansoura city, so this study was done to evaluate the knowledge and attitude of mothers toward ECC, determine the possible risk factors of ECC and determine the relationship between the caries experience of the mothers and the ECC experience of their children.

Materials and Methods:

This study was a descriptive, cross sectional research design based on close ended questionnaires interview, in addition to clinical examination of mothers and children and salivary samples collection.

Materials:

One thousand five hundred healthy children aged 1-4 and their mothers were randomly selected for this study. They were selected from children attending preschool kindergartens in Mansoura city. The kindergartens were randomly selected from a list of both private and public kindergartens in Mansoura city.

I) Questionnaire:

A well structured questionnaire based on review literature was used to determine the maternal knowledge and attitude of toward ECC and possible risk factors of ECC.^{11,13}

Mothers were asked to answer a self-administered questionnaire, which were distributed in Arabic language and collected from mothers after about 20 minutes. Questionnaires were evaluated for completeness, and the uncompleted forms were either returned to the mother for completing, and if not possible, they were discarded.

It consisted of 3 parts:

A) Socio demographic data:

This part Included mother's (age – employment status – level of education) and child's (age – sex – birth order – type of child delivery)

B) Knowledge about ECC:

This part included questions on the knowledge about presence of caries (at this age – in child), first time to take child to dentist, knowledge about pediatric dentists, knowledge about cariogenic and healthy food, knowledge about causes of ECC and knowledge about type and effect of tooth paste.

C) Attitude of parents toward ECC

This part included attitude toward oral health priority, responsibility toward ECC, priority of visiting dentist, attitude toward early primary teeth extraction, safety of dental treatment at young age and dealing with ECC.

II) Saliva Collection:

Salivary samples were collected from 150 mothers and their children. From each mother and child an unstimulated saliva sample (0.5ml) was collected with a sterile plastic pipette and then transported into a sterile plastic Eppendorf¹⁴.

Children and mothers with little salivation were asked to spit into plastic cups and saliva samples were taken from cups and emptied into plastic Eppendorf, the collection of saliva was done between 9 and 12 am.

The samples were transferred to the medical microbiology and immunology department, Faculty of Medicine, Mansoura University within one hour of collection for culturing.

Data were analyzed using the Statistical Package of Social Science (SPSS) program for Windows (Standard version 21). The normality of data was first tested with one-sample Kolmogorov-Smirnov test.

For all above mentioned statistical tests done, the threshold of significance was fixed at 5% level. The results were considered significant when $p \leq 0.05$.

Results:

Knowledge of mothers about ECC

Table (1) reveals the knowledge of mothers about ECC, it illustrated that significantly higher number of mothers had correct knowledge that their children can be affected at young age (1344) (89.6%), whether their children had carious teeth or not (996) (66.4%), the presence of pediatric dentist (1035) (69.0%), sweets can cause caries (1461) (97.4%). Additionally, significantly higher percentage of mothers were aware about most of the cariogenic foods (1137) (75.8%), caries can affect aesthetic appearance of the child (1344) (89.6%), vegetables and fruits are better for teeth (1470) (98.0%), the main cause of ECC (1140) (76.0%) and that the child should have his own brush (1419) (94.6%) ($p \leq 0.05$).

Table (1) Knowledge of the mothers about ECC

Knowledge of mothers about ECC	Correct n (%)	Incorrect n (%)	P value
Do any one kiss babe from lips	762 (50.8%)	738 (49.2%)	0.896
Do you share utensils with your child	696 (46.4%)	804 (53.6%)	0.556
Do you know that you child can have caries at this young age	1344 (89.6%)	156 (10.4%)	0.0001**
Do you know whether you child have caries or not	996 (66.4%)	504 (33.6%)	0.007*
When did you take your child for his first dental examination	93 (6.2%)	1407(93.8%)*	0.0001*
Are you aware that there is pediatric dentist	1035 (69.0%)	465 (31.0%)	0.002**
Do you know that sweets cause teeth caries	1461 (97.4%)	39 (2.6%)	0.0001**
The most cariogenic food for caries	1137 (75.8%)	363 (24.2%)	0.0001**
Does caries have effect on your child aesthetic appearance	1344 (89.6%)	156 (10.4%)	0.0001**
Which is better for teeth	1470 (98.0%)	30 (2.0%)	0.0001**
Should your child have his own tooth brush	1419 (94.6%)	81 (5.4%)	0.0001**
Main cause of ECC	1140 (76.0%)	360 (24.0%)	0.0001**
What is the effect of tooth paste and brushing	1029 (68.6%)	471 (31.4%)	0.002**
The most important thing in tooth paste selection for child	645 (43.0%)	855 (57.0%)	0.252

*n= no of cases in each variable, % the percentage, *significant $p \leq 0.05$, **highly significant $p \leq 0.01$*

Attitude of mothers toward ECC

Table (2) brings out attitude of mothers toward ECC, it illustrated that significantly higher number of mothers had correct attitude toward considering oral health as a priority (1458) (97.2%), considering themselves responsible for preventing their children caries (1074) (71.6%), believing their children painful tooth should not be extracted at this young age (1233) (82.2%), considering dental treatment for

their children is safe at this age (1182) (79.0%). Additionally, significant higher percentage of mothers will deal correctly with their children to stop caries (1383) (92.2%), will take their children to pediatric not general dentist (1230) (82.0%) and advice their children to brush their teeth (1221) (81.4%). But significant high number of mothers had incorrect attitude toward when to visit dentist (1023) (68.2%) ($p \leq 0.05$).

Table (2): Attitude of mothers towards ECC

Attitude of mothers toward ECC	Positive attitude n (%)	Negative attitude n (%)	P value
Do you consider oral health as a priority	1458 (97.2%)	42 (2.8%)	0.0001**
Do you think that you are responsible for preventing ECC	1074 (71.6%)	426 (28.4%)	0.0001**
Do you believe that visiting dentist is necessary only if child has pain	600 (40.0%)	900 (60.0%)	0.102
Do you believe that your child painful tooth should be extracted at this young age	1233 (82.2%)	267 (17.8%)	0.0001**
You will visit dentist when	477 (31.8%)	1023 (68.2%)*	0.003**
Do you think that dental treatment for child is safe	1182 (79.0%)	315 (21.0%)	0.0001**
If you notice your child caries, what will you do to stop caries	1383 (92.2%)	117 (7.8%)	0.0001**
If you are taking your child to dentist	1230 (82.0%)	270 (18.0%)	0.0001**
What is the main reason for not going to dentist	588 (39.2%)	912 (60.8%)	0.077
Do you advice your child to brush his teeth	1221 (81.4%)	279 (18.6%)	0.0001**

n= no of cases in each variable, % the percentage. *significant $p \leq 0.05$, **highly significant $p \leq 0.01$.

Mothers' and children's bacterial count

Table (3) illustrates the bacterial count for mothers and children. The streptococcus mutans bacterial count was measured among 150 mothers and their children.

Regarding the mother bacterial count, only (21.3%) mothers had high bacterial count ($>10^6$) CFU/ml. While the medium (10^5 - 10^6) CFU/ML and low bacterial count (10^4 -

10^5) CFU/ml were comparable (38.7% and 40.0% respectively) with no statistically significant difference ($p=0.076$)

Regarding the children bacterial count, 34.0% of the children had high bacterial count, 21.3% had medium bacterial count, while 44.7% had low bacterial count. There was a significant difference only between the low and medium counts ($p=0.043$).

Table (3): Bacterial count for mothers and children

Bacterial count	Study group (N=150) n (%)	P value
Mother Bacterial count		
Low	60 (40.0%)	0.076
Medium	58 (38.7%)	
High	32 (21.3%)	
Child Bacterial count		0.043*
Low	67 (44.7%) a	
Medium	32 (21.3%) a	
High	51 (34.0%)	

N=total number of mothers and children, n= no of cases in each variable, % the percentage, * p value is significant at level $p \leq 0.05$, similar letters mean significant difference within the same variabl.

Discussion:

Early childhood caries (ECC) has become a significant health problem especially in all populations. A greater level of knowledge and a more positive attitude towards oral

health among caregivers are prerequisites for favorable behavior for the oral health of their children and themselves, especially regarding the preventive oral health related behavior. If the caregivers have a more positive attitude, they will reveal more and better oral health related

preventive behavior to the child they care for. This positive attitude originates from proper knowledge. Adequate knowledge of oral health is the promoting factor for positive attitude of a caregiver.¹⁵⁻¹⁷

In the present study, more than half of children shared utensils with others (53.6%). This may happen as a result of mothers' unawareness of the possibility of cariogenic bacteria transmission by such act. This result is near to that found by Petrauskienė et al.,¹⁸ as (45.9%) shared spoon and (52.6%) shared plates or mugs with their children. On the other hand, Saini et al.,¹⁹ reported decreased prevalence of sharing utensils (23.3%) in Kota region.

Very few numbers of mothers (6.2%) only thought that they should visit dentist when their children teeth erupted. This can be attributed to the unawareness of mothers (10.4%) who knew that teeth can be affected by caries at this young age. This result is near to that found by Saini et al.,¹⁹ 2020 (8.3%). Also, in the present study 60% of mothers thought that they should take their child to visit dentist only in case of pain. While Mahmoud et al.,²⁰ showed increased number of mothers (22.7%) in Sharjah UAE taking their children to dentist when teeth erupted

This study showed increased prevalence of mothers (76%) who identified the main causes of ECC, while Chellai et al 2020²¹ showed less prevalence (48%)

This study showed an increased prevalence of maternal knowledge about most cariogenic food, 75.8% of mothers in our study chose sticky sweets as most cariogenic food and about 97.4% of mothers knew that sweets can cause caries, this result is in accordance with Banihani et al 2020²² who found that 92.0% of arabian mothers in Jordan knew cariogenic food.

Less than half of mothers in the current study (43%) knew that fluoride is the most important factor in tooth paste selection, Pawar et al.,²³ also reported that 56% of caregivers knows that using fluoridated tooth paste is good for their children's teeth. On the other hand, Salama et al.,²⁴ reported that 76% of mothers knew different forms of toothpaste could be used for their child dental care in Menoufia Egypt.

This study showed that 97.2% of mothers consider oral health of their children as a priority and is important as their general health. Mahat²⁵ reported near result (95.4%). Also, in New Delhi kumar et al.,²⁶ found that 93.8% of parents considered oral health as a priority and has impact on general health.

This study showed that 82.2% of mothers believed that their child painful tooth shouldn't be extracted at this young age. This result is slightly higher than that reported by Setty et al.,²⁷ in India, in which 76% of mothers believed that it is important to save the infected primary teeth if possible. Moreover, Saini et al.,²⁰ reported less percentage of mothers (72%) believing that primary tooth should be treated.

Regarding to children's bacterial counts, this study showed that 34.0% of the children had high bacterial count, 21.3%

had medium bacterial count, while 44.7% had low bacterial count. These results contrasted the result of Priyadarshini et al.,²⁸ who found that 44.4% of children had a high MS count and 55.6% had a low MS count.

Regarding the Mothers Bacterial counts, the current study showed that 21.3% mothers had high bacterial count, 38.7% had medium and 40.0% low bacterial count. On the other hand, Priyadarshini et al.,²⁸ reported that 55.6% of mothers had a high MS count and 44.4% had a low MS count.

Finally, it is appropriate to consider the strengths and limitations of the present study. The strengths of the study lie in the geographically diverse sample regarding to Mansoura city, the high consent rate within the study sample, the relatively large number of subjects, and the broad range of topics explored in the questionnaire.

Conclusion:

1. Correct knowledge of the mothers is considered relatively low, while the positive attitude is considerably fair.
2. Implementing health education programs targeting mothers and expectant mothers is recommended, specially at the maternal and child health care centers, to increase their knowledge about ECC, and how to maintain the oral health of their children.

Educating the teachers and caregivers at the preschool nurseries and primary health care units is recommended, to increase awareness about the healthy foods and how to clean the children's teeth.

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