

ASSESSMENT OF EXPECTED MOTHERS' KNOWLEDGE, ATTITUDE AND PRACTICE REGARDING THEIR ORAL HYGIENE AND INFANTS' ORAL HEALTH

Nada H. Jaafar* and Sherine B. Y. Badr**

ABSTRACT

Objectives: To assess the knowledge, attitude and oral hygiene practice of expectant mothers regarding infant's oral health and their own oral hygiene practices, in Beirut, Lebanon.

Material and methods: Questionnaires were randomly distributed to 390 expectant mothers, in their 12-40 weeks of pregnancy, aged above 18 years in the department of gynecology of 2 private hospitals, and 4 private maternity clinics in the Beirut and its suburbs. The questionnaire was divided into two parts. The first was concerned with the demographic background, and the second part included 18 close-ended questions.

Results: The overall score revealed that majority of expected mothers had fair knowledge, attitude and oral hygiene practices towards their infants and their own oral hygiene. Expected mothers' educational qualification had a significant influence on the mentioned parameters. However, no significant differences were found in these parameters in relation to age, trimester of pregnancy and number of pregnancies.

Conclusion: Within the limitation of this study, it was concluded that prior to or during pregnancy, most pregnant women do not receive adequate education or information about the importance of maintaining good dental care and proper oral health practices.

KEY WORDS: Knowledge, Attitude, Practice, Expected mothers, Infant's oral health.

INTRODUCTION

Evidence-based literature suggests that if pregnant females were offered proper dental care

and maintained a good oral health during the period of pregnancy their quality of life will be improved, together with the reduction of complications during pregnancy and the risk of developing early

* BDS, MSc, Clinical instructor, Division of Pediatric Dentistry, Department of Developmental Sciences, Faculty of Dentistry, Beirut Arab University, Beirut, Lebanon.

** BDS, MSc, PhD, DPHE, Associate Professor of Pediatric Dentistry, Faculty of Dentistry, Beirut Arab University, Lebanon, Faculty of Oral and Dental Medicine, Cairo University, Egypt.

childhood caries in their children in the future. Researchers believe that the lack of knowledge and attitude about infant oral health among parents is the main reason for the infant's poor oral health.¹

Maternal oral flora and oral health are major indicators of childhood oral flora and oral health. It was found that, there is a strong relationship between maternal oral health and child oral health caused by the vertical transmission of *Streptococcus* mutants from the mother to her child. Therefore, the child will be in an increased risk of developing caries, if his mother has caries. Furthermore, pregnant mother behaviors' including dietary habits and attention to oral hygiene practices will affect this risk.² Maintaining a good oral health, through regular brushing and the use of mouthwash containing fluoride, diet modification, use of xylitol chewing gums, having regular dental checkups and receiving needed dental treatment help in decreasing bacterial transmission and ultimately minimize the risk of early childhood caries³. Since the preventive strategies should begin at birth, it is therefore important to explore the parent's knowledge, attitudes and practices on that matter and offer adequate prenatal oral health education⁴. Such education and preventive measures help to reduce the need for future complex interventions. However, for this information and instructions to be effective and have a great impact, it must target the pregnant women at the exact time, and must be delivered in a form that they can be easily understood.³ For the above stated reasons this study was conducted, in order to explore and assess the expected mothers' knowledge, attitudes, and preventive practices regarding infant's oral health and their own oral hygiene practice in Beirut, Lebanon.

MATERIALS AND METHODS

A cross-sectional, one-to-one interview questionnaire-based survey was randomly distributed to 390 expectant mothers in a period of 2 months. For

a pregnant female to be included in this study she should be during her 12-40 weeks of pregnancy, and aged above 18 years. The study sample was collected at the department of Gynecology in 2 private hospitals, and 4 private maternity clinics in the Beirut city and its suburbs. Pregnant women known to have any systemic condition or on any medical treatment that might affect their oral health were excluded from the study. Sample size was determined using Raosoft online calculator, URL: <http://www.raosoft.com/samplesize/htm>, considering the effect size of 5% with $\alpha=0.05$ and 80% power. Ethical approval was obtained from the institutional review board, Beirut Arab University (IRB) (code: 2016H-0044-D-R-0178). Expected mothers who accept to participate voluntarily in this study were informed in details about the study and were asked to sign a consent form before filling the questionnaire. The questionnaire was prepared in both English and Arabic versions.

The questionnaire was divided into two parts. The first part addressed the demographic backgrounds of the expectant mothers; their number of pregnancies, their education, age, occupation and trimesters of pregnancy. The second part included 18 close-ended questions, 13 were about knowledge, and five on the attitude and oral hygiene practice of the expectant mothers. A pilot survey on 45 parents was performed to assess the reliability, validity and feasibility of the questionnaire before conducting the study. Data was collected and statistically analyzed using SPSS software version 20 (SPSS Inc., Chicago, IL, USA). Chi-square test, frequency distribution test and one-way analysis of variance (ANOVA) were used. In all these tests, a P value of 0.05 or less was set for statistical significance.

The Questionnaire:

- 1- Good oral and dental health during pregnancy is not important for healthy baby teeth.
- a) Agree b) Disagree c) Neutral

- 2- Healthy diet has no effect on development of baby and adult teeth.
a) Agree b) Disagree c) Neutral
- 3- Frequent, prolonged and night-time bottle/breast feeding can cause tooth decay.
a) Agree b) Disagree c) Neutral
- 4- Tooth decay is caused by bacteria that are transmitted from mother to child by kissing or sharing feeding utensils.
a) Agree b) Disagree c) Neutral
- 5- Children are more likely to have decayed teeth if their mothers' have decayed teeth.
a) Agree b) Disagree c) Neutral
- 6- Cleaning your baby's mouth is not important before the teeth come in.
a) Agree b) Disagree c) Neutral
- 7- It is not necessary to treat cavities in baby teeth.
a) Agree b) Disagree c) Neutral
- 8- A child's teeth shouldn't be brushed/ cleaned after each meal.
a) Agree b) Disagree c) Neutral
- 9- Regular dental visits can prevent problems in your child's teeth and mouth.
a) Agree b) Disagree c) Neutral
- 10- The child can achieve effective cleaning of their teeth by five years of age.
a) Agree b) Disagree c) Neutral
- 11- Swallowing a large amount of toothpaste will not harm the child.
a) Agree b) Disagree c) Neutral
- 12- You should take your child to the dentist by the age of 1 year.
a) Agree b) Disagree c) Neutral
- 13- Prolonged use of a pacifier can affect the normal development of child's teeth.
a) Agree b) Disagree c) Neutral
- 14- Do you feel it's important to improve your dental health knowledge?
a) Agree b) Disagree c) Neutral
- 15- Do you bite the food into small pieces before giving it to the child?
a) Yes b) No c) Sometimes
- 16- Do you supervise your child's tooth brushing?
a) Yes b) No c) Sometimes
- 17- Do you use pacifier dipped into sweet liquid for the child?
a) Yes b) No c) Sometimes
- 18- Do you visit your dentist regularly?
a) Yes b) No c) Sometimes

RESULTS

A total of 390 pregnant women with age range between 18 and 43 years old participated in this survey; 81(20.8%), 145(37.2%) and 164 (42.1%) aged between 18-25, 26-30 and above30 respectively. The 18 different answers of each completed survey were recorded and electronically tabulated by assigning (0) value for false answer or a (1) value for correct answer. So, each variable or question was represented by a 0-1 code referring to false or correct answer respectively. Total correct answers for each question among all the interviewed expected mothers were ranged from 132 (33.8%) to 279 (71.5%) respectively. (Table 1).

The total score being the sum of all the 18 answers for each participant was calculated and distributed into three categories; poor (score of correct answers is less than 8), fair (score of correct answers is between 8 and 13), and good (score of correct answers is between 14 and 18). Based on the total score category calculation the results showed that, most of the expected mothers 271(69.5%) had fair, while 68(17.4%) had poor, and 51(13.1%) had good knowledge, attitude and practice regarding their oral hygiene and infants' oral health. (Figure 1)

TABLE (1) Frequencies and percentages of correct answers for the 18 different questions among the 390 expected mothers.

Studied Section	Studied Item	Correct answers	
		N	Percentage
Knowledge	Good oral and dental health during pregnancy is not important for healthy baby teeth	261	66.9
	Healthy diet has no effect on development of baby and adult teeth	279	71.5
	Frequent, prolonged and night-time bottle/breast feeding can cause tooth decay	234	60
	Tooth decay is caused by bacteria that are transmitted from mother to child by kissing or sharing feeding utensils	206	52.8
	Children are more likely to have decayed teeth if their mother has decayed teeth	170	43.6
	Cleaning your baby's mouth is not important before the teeth come in	220	56.4
	It is not necessary to treat cavities in baby teeth	248	63.6
	A child's teeth shouldn't be brushed/ cleaned after each meal	245	62.8
	Regular dental visits can prevent problems in your child's teeth and mouth	256	65.6
	The child can achieve effective cleaning of their teeth by five years of age	169	43.3
	Swallowing a large amount of toothpaste will not harm the child	244	62.6
	You should take your child to the dentist by the age of 1 year	200	51.3
	Prolonged use of a pacifier can affect the normal development of child's teeth	246	63.1
Attitude and Oral Hygiene Practice	Do you feel it's important to improve your dental health knowledge?	275	70.5
	Do you bite the food into small pieces before giving it to the child?	169	43.3
	Do you supervise your child's tooth brushing?	215	55.1
	Do you use pacifier dipped into sweet liquid for the child?	196	50.3
	Do you visit your dentist regularly?	132	33.8

TABLE (2) Count and percent of total score categories according to demographic characteristics in the sample.

Demographic characteristics		N	Percent	Poor (%)	Fair (%)	Good (%)	P*
Age Category	18 - 25 years	81	20.8	22.2	67.9	9.9	0.568
	26 - 30 years	145	37.2	17.9	67.6	14.5	
	> 30 years	164	42.1	14.6	72.0	13.4	
Educational Level	No High School	56	14.4	25.0	67.9	7.1	0.003*
	High School	170	43.6	21.8	69.4	8.8	
	University Degree	126	32.3	11.9	70.6	17.5	
	Postgraduate degree	38	9.7	5.3	68.4	26.3	
Trimester of pregnancy	First	99	25.4	17.2	67.7	15.2	0.684
	Second	107	27.4	20.6	65.4	14.0	
	Third	184	47.2	15.8	72.8	11.4	
Number of Pregnancies	First	31	7.9	25.8	58.1	16.1	0.329
	More than one	359	92.1	16.7	70.5	12.8	

*: Chi-square test, $P < 0.05$ at confidence level of 95%

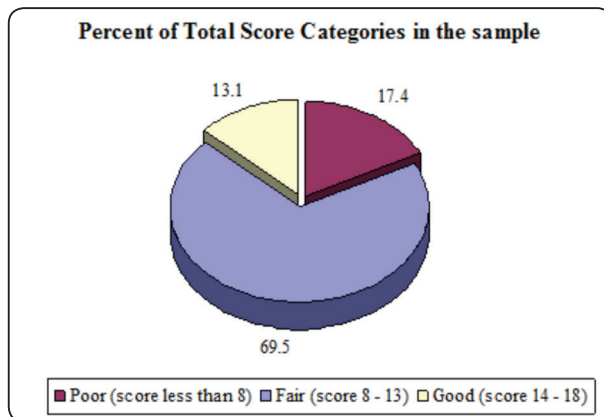


Fig. (1) Percentages of total score categories.

Table 1 and Figure 2 showed the total score distribution per age, educational level, trimester of pregnancy, and number of pregnancies. Only the educational level has a significant effect on the total score since, per the Chi-square test, it has a P-value less than 0.05 at the confidence level of 95%. There

was no significant effect on the total score by age category, trimester of pregnancy and numbers of pregnancies where, the P-values were equal to 0.568, 0.684 and 0.329 respectively. That's to say, significant differences were found in the expectant mothers' knowledge and attitude toward infant oral health and their oral hygiene practices, based on their educational qualification as represented by total score distribution. However, no significant differences were seen in the knowledge, attitude, and oral hygiene practices with variation in the age, trimester of pregnancy and number of pregnancies category. One-Way ANOVA statistics results shows that there were significant differences in the mean scores between educational level groups since all the p-values were much lower than 0.05 so, at the confidence level of 95% there were significant differences in scores values between at least two of the four studied educational level groups; no high school, high school, university degree and postgraduate degree. (Table 3)

TABLE (3) One-Way ANOVA results between the mean scores values and the educational level groups according to the studied parameters.

Studied Section	Studied Educational Level	N	Mean	Mean Percentage	Std. Deviation	F (ANOVA)	P*
Total Score	No High School	56	9.52	52.88	3.07	9.205	0.000**
	High School	170	9.62	53.43	2.81		
	University Degree	126	10.70	59.44	2.69		
	Postgraduate Degree	38	11.82	65.64	2.50		
	Total	390	10.17	56.48	2.87		
Knowledge Score	No High School	56	7.45	57.28	2.75	6.088	0.000**
	High School	170	7.25	55.79	2.34		
	University Degree	126	7.83	60.26	2.18		
	Postgraduate Degree	38	8.97	69.03	2.16		
	Total	390	7.64	58.74	2.38		
attitude and O.H. Practice Score	No High School	56	1.50	37.50	1.11	5.139	0.002**
	High School	170	1.72	42.94	0.99		
	University Degree	126	2.07	51.79	1.00		
	Postgraduate Degree	38	1.97	49.34	1.20		
	Total	390	1.83	45.64	1.05		

*: One-Way ANOVA test, $P < 0.05$ at confidence level of 95%

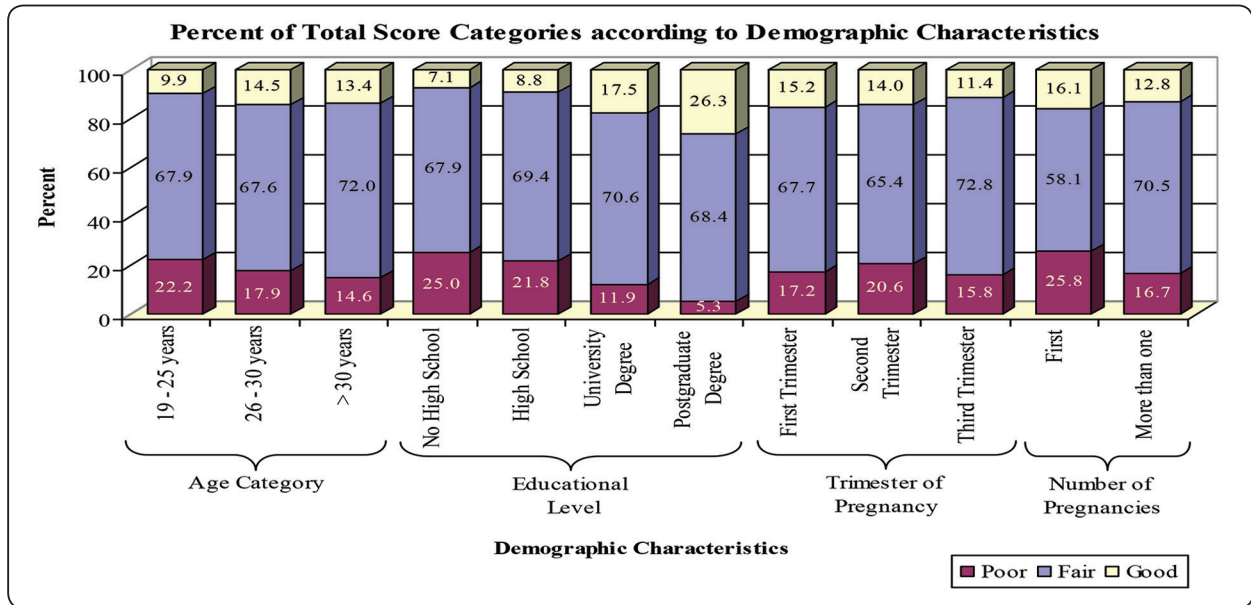


Fig. (2) Percent of total score categories according to demographic characteristics

DISCUSSION

In 1980, the National Health Interview Survey (NHIS) documented that 1.57 million school days were lost because of dental related problems. Moreover, Waldman 1984 found that children and adolescents aged younger than 18 years had almost 5 million restricted activity days, from which more than 1.6 million days in bed, and more than 1.7 million missed school days because of acute dental pain. The U.S. Department of Health and Human Services in 2010 estimated that more than 51 million school hours were lost each year because of dental-related health problems, making it the number one reason for missing school. Moreover, children can't concentrate properly if they attend school while having dental pain⁵. For this reason this study was conducted to assess expected mothers' knowledge, attitude and practice regarding their oral hygiene which is for sure reflected on their children's oral health later.

A survey was randomly distributed to the expected mothers aged 18 years and more, as 18 is the minimum age for marriage approved by the Lebanese government. The sample was collected from the gynecology clinic as it is the place where

expected mothers are visiting regularly. However, these clinics don't concentrate on the oral health aspect of those mothers, as previously reported that only 14% of pregnant women were referred to their dentist for regular checkup⁶. The questionnaire that was used in the current study was short with simple, direct and closed-end questions to be convenient for different educational background. In this study, it was found that most participated mothers were aware of the importance of maintaining good oral and dental health during pregnancy for achieving healthy baby teeth which reflect good level of awareness (66.9%). Meanwhile, 71.5% of expected mothers didn't realize that healthy diet can affect the development of their babies' teeth. Similarly Nagarajappa, *et al.*, 2013 in India found that 69.8% were aware of such fact. Majority of expected mothers' agreed that frequent, prolonged and night-time bottle/breast feeding can cause tooth decay (60%) compared to 43% in Nagarajappa, *et al.* 2013. This reflects more awareness of the Lebanese pregnant females concerning this issue.

Moreover, the results showed that 43.6% were aware that their children are more likely to have decayed teeth if their mothers had decayed teeth.

Compared to only 26.2% and 25.3% in the studies conducted in India.^{3,8} This again reflects more awareness of the fact that increased incidence of dental caries in their oral cavity will intern increase the caries risk factor in their infants. Regarding the knowledge of transmission of caries-causing bacteria from mother to child by kissing and sharing utensils, it was found that 52.8% of the responded mothers were aware about this mode of transmission. However, it was quite higher compared to the surveys ^{3,8} conducted by Chacko *et al.*, 2013 and Thomas *et al.*, 2015 in India which were 35.6% and 22.2% respectively. In general, this difference in knowledge might be due the wide range of differences between the two countries, as the culture, environment, education, awareness, governmental care services, and many other reasons. Concerning attitude and oral hygiene practice the results of this study showed that 70.5% of expected mothers feel it's important to improve their dental health knowledge, this reflects a high community need. However, Nagarajappa, *et al.*, 2013 in India found that 40.9% only have that feeling. As for practice questions the results of this study showed that 43.3% of expected mothers do bite the food into small pieces before giving it to their children, 51.5% do supervise their children during brushing and 50.3% do used pacifier dipped into sweet liquid. This was in accordance with Nagarajappa, *et al.*, 2103 where he found similar percentages in India 46.6%, 42.6% and 43.8% respectively. This reflects that those habits and practices are commonly observed worldwide.

This survey demonstrates a comprehensive assessment of the maternal knowledge, attitude and practice regarding their oral hygiene and infants' oral health. In this context, the results obtained from the study as represented by the total score revealed that the majority 17.4% & 69.5% of the expectant mothers had poor and fair knowledge attitude and practice toward infant oral health respectively and only 13.1% showed good level. The probable reasons behind this result could be due to

the lack of awareness campaigns that enrich their knowledge and influence their attitude about importance of self-oral practice and the infant oral health. The expected mothers' age did not significantly affect their knowledge, attitude, and oral hygiene practices. This may be due to the fact that most of the mothers received a similar level of dental education, and awareness at the community level. This was similar to the finding reported in a survey conducted in Michigan USA by Akpabio *et al.*, in 2008.⁹ These results drew attention that, the dental care providers should target expected mothers at all ages.

Furthermore, the mothers that had a graduate or postgraduate education demonstrated a better knowledge, attitude, and oral hygiene practices. This was in accordance with the results of the studies conducted by Sufia *et al.*, 2011 and Mascarenhas *et al.*, 1998 such results make sense as in general it is expected that whenever the level of education increase the knowledge, attitude and hygiene practices improve.^{10,11} This emphasizes on the urgent need of directing the dental healthcare providers to augment their educational effort towards mothers of low educational background in the community.

Finally, the results showed, there was no significant difference in the knowledge, attitude and oral hygiene practices among different trimesters of pregnancy or the number of pregnancies. This clearly highlights that the common belief, that mother's knowledge and attitude toward infant health improves with more than one pregnancy based only on life experience is completely wrong. Thus, mothers should receive proper educational programs no matter how many children they have. On the other hand, Thomas *et al.*, 2015 in India found that expectant mothers in their first pregnancy had a better knowledge and attitude and also followed better oral hygiene practices compared to expectant mothers in their second and third pregnancy.⁸ Probably this was due to the stressful life conditions with more than one child in that population.

CONCLUSION

Within the limitation of this study, it can be concluded that prior to or during pregnancy, most pregnant women do not receive sufficient education or information about the importance of maintaining good dental care and proper oral health practices which will be reflected on the oral health of their children.

RECOMMENDATION

This survey reflects the community needs to direct regular awareness campaigns towards expected mothers to improve their knowledge, attitude and oral hygiene practice. Gynecologists should be aware of the importance of guiding expected mothers to the importance of their oral hygiene.

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