ORIGINAL ARTICLE

PERCEIVED KNOWLEDGE AND AWARENESS OF PERIODONTAL HEALTH AMONGST ANTE-NATAL MOTHERS

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ABSTRACT

Introduction: Physiological changes in the oral cavity and dental-related complications may occur during pregnancy. These intraoral changes that occur during pregnancy combined with lack of routine dental check-ups and delays in treatment for oral disease, place pregnant women at higher risk for dental infections. The objectives of this study was to assess the knowledge and awareness of pregnant women on periodontal disease and its effect on pregnancy, to investigate the relationship of their knowledge and awareness with level of education and the barriers of oral healthcare utilization among pregnant women.

Methodology: A self-administered questionnaire with an introductory letter and consent form were given to pregnant women who came for their routine maternity check-up at the Obstetrics and Gynecology Clinic, Kuala Lumpur Hospital. Data entry and analysis was done using Statistical package for Social Sciences (SPSS) version 12.

Result: Ninety-two pregnant women responded to the questionnaire. Only 23.9% answered correctly to the question on what is plaque. However, 45.7% knew that plaque can cause gum disease and a majority of the respondents 72.8% also knew that bleeding gum is an indication to inflamed gums. The result shows that, although 59.8% of the respondents were aware that it is necessary to brush their teeth frequently during pregnancy, only less than half of the respondents (44.6%) were aware that dental plaque and poor plaque control may cause periodontal disease among pregnant women. The majority (33.7%) feels that the long waiting time in the clinic would be their main barrier in seeking dental treatment.

Conclusion: A majority of pregnant women have limited knowledge and poor awareness on periodontal disease and its effect on pregnancy.

Keywords: Periodontal disease, pregnancy, dental treatment.

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INTRODUCTION

Physiological changes in the oral cavity and dental-related complications may occur during pregnancy. There are various clinical studies shown that oral tissues can be affected by pregnancy. Hormonal effects on the gingival mainly due to estrogen may cause increased tooth mobility and pregnancy gingivitis[1.] Characteristics of pregnancy gingivitis are that the gingival is dark red, swollen, smooth and bleeds easily[2]. These intraoral changes that occur during pregnancy combined with lack of routine dental check-ups and delays in treatment for oral disease, place pregnant women at higher risk for dental infections (3, 4).

Antenatal mothers are one of the target groups focused by the Ministry of Health Malaysia in providing oral healthcare (5). An oral health programme for antenatal mothers has been place since the early 1970's. Antenatal mothers attending medical clinics for their check-ups are referred to the dental clinic for an oral health examination and oral health education. Mothers who are examined are either given immediate treatments or appointments. However the utilization of the services by the antenatal mothers was the least of all the target groups (5). Moreover, there have been few earlier studies on periodontal health among pregnant women and their utilization of the oral healthcare services in Malaysia. The role of mothers in imparting oral health knowledge and in influencing the attitude and practice of other members of the family are important, they are considered as agents of primary socialization.

Hence, the objectives of this study were to assess the knowledge and awareness of pregnant women on periodontal disease and its relationship with level of education and also to investigate their barriers of oral healthcare utilization.

MATERIALS AND METHODS

The study was approved by and registered with the National Medical Research Register. Permission to carry out this survey was also obtained from the Director of Kuala Lumpur Hospital and the Head of Department Obstetrics and Gynecology. Following the conformation of these supports, this cross-sectional study was carried out on pregnant women who came for their routine maternity check-up at the Obstetrics and Gynecology Clinic, Kuala Lumpur Hospital. A self-administered questionnaire with an introductory letter and consent form were given to the respondents. The exclusion criteria for the respondents are non-Malay literate. Ninety-two pregnant women consented for the study. The collection of the questionnaire was carried out between September-October 2007. Resource constraints prevented us from distributing and collecting more questionnaires.

The self-administered questionnaire used in this study has four sections with 16 items of close-ended questions. The questions were developed from literature reviews of several relevant articles (6, 7, 8). The questions were translated to Malay language. The first section is on personal details which include age, ethnicity, level of education, stage of pregnancy and number of pregnancy. The second section has five questions on knowledge of periodontal disease. The questions included are on their knowledge on 'what is plaque', 'the effect of plaque', clinical signs of periodontal disease and prevention of periodontal diseases. The third section has five questions to assess on periodontal disease and general health awareness during pregnancy. The questions include the causes of periodontal disease among pregnant women, frequency of tooth brushing during pregnancy, effect of smoking to the mother and fetus, relation of periodontal disease and premature labor and the effect of frequent snacking to oral health during pregnancy. Lastly, the fourth section asked on the barriers of dental attendance among pregnant women. The questionnaire was pretested and validated before the actual conduct of the study.

Data entry and analysis was done using Statistical package for Social Sciences (SPSS) version 12. Means and standard deviations were calculated for continuous variables, and frequency and percentages for categorical variables. Independent t-test was used to compare mean differences and chi-square test for categorical data between two groups with the level of significance set at 0.05. Subjects were divided by age into those less than or those equal to thirty-five years and those greater than or equal to thirty-six years. Subjects were classified as belonging to Malay, Indian, Chinese or other ethnic groups. Subjects socioeconomic status was grouped into their highest educational levels either primary school, secondary school, diploma or university degree. Subjects were classified by the stages of pregnancy into first trimester, second trimester or third trimester. Subjects

were also grouped into those in their first pregnancy or those in their second pregnancy or more.

RESULTS

Socio-demographic background

Table 1 reports the socio-demographic background of the respondents. Ninety-two pregnant women responded to the questionnaire. Among the respondents, sixty-one (66.3%) were aged between 21 and 35 years. Most of the respondents (82.6%) were from the Malay ethnic background. The majority of the subjects (54.3%) had finished secondary school, 20.7% had diplomas and 15.2% graduated from university. 47.8% of the respondents were in their third trimester, 42.4% were at the second trimester and 3.3% at the first trimester. More than half of the respondents (73.9%) were in their second pregnancy or more.

Table 1 Characteristics of the study population (N=92)

Variables	**n (%) ***
Age :	
≤35	61(66.3)
>36	28 (30.4)
Ethnic group:	
Malay	76 (82.6)
Chinese	4(4.3)
Indian	10 (10.9)
Others	1(1.1)
Education level :	
Primary	8(8.7)
Secondary	50 (54.3)
Diploma	19 (20.7)
University	14(15.2)
Stage of pregnancy :	
First trimester	3 (3.3)
Second trimester	39(42.4)
Third trimester	44(47.8)
Frequency of pregnancy:	
First time	23(25)
Second time or more	68(73.9)

*Denominators vary due to missing information

Knowledge of periodontal (gum) disease

Table 2 reports the responses to the basic knowledge of periodontal disease questions. Only 23.9% answered correctly to the question on what is plaque. However, 45.7% knew that plaque can cause gum disease and a majority of the respondents 72.8% also knew that bleeding gum is an indication to inflamed gums. Most of the respondents (71.7%) knew that brushing and flossing can prevent gum disease and 62% agreed that before going to bed is the effective time for tooth brushing.

Table 2 Distribution of responses to knowledge of periodontal disease

Questions	**Total n (%)**
1. What is plaque?	
a. soft deposition on tooth surface*	22(23.9)
b. hard deposition on tooth surface/c. tooth staining /d. don't know	69(75)
2. What can plaque cause?	
a. tooth discoloration/ b. tooth malformation /d. don't know	49(53.3)
c. gum disease*	42(45.7)
3. Bleeding gum indicates…?	
a. inflamed gums*	67(72.8)
b. healthy gums/c. gum recession/ d. don't know	24(26.1)
4. How can you prevent gum disease?	
a. By taking soft diet/b. by taking vitamin C/ d. Don't know	25(27.1)
c. by brushing and flossing*	66(71.7)
5. When is the effective time for tooth brushing?	
a. In the morning/b. At noon/ d. no specific time	35(38)
c. before going to bed*	57(62)

* correct response
**Denominators vary due to missing information

Table 4 presents the responses to the knowledge of periodontal disease questions by level of education. None of the responses showed any significant differences to knowledge of periodontal disease between the levels of education. Half of the respondents with university education correctly answered plaque as soft deposition on tooth surface. However, most of the respondents (65.2%) responded that plaque is either a hard deposition on tooth surface or a tooth staining indicating poor knowledge on dental plaque regardless of their educational level.

Awareness of periodontal disease

In table 3, the result shows that, although 59.8% of the respondents were aware that it is necessary to brush their teeth frequently during pregnancy, only less than half of the respondents (44.6%) were aware that dental plaque and poor plaque control may cause periodontal disease among pregnant women. A majority of the respondents (95.7%) believe that smoking has an effect to the mother and fetus, while only 39.1% believe that there is a relationship between periodontal disease and

premature labour. However, more than half of the respondents (56.5%) did not think that snacking during pregnancy will have an effect to their oral health.

Table 5 shows no significance difference in response on awareness of periodontal disease questions between the levels of education.

Table 3 Distribution of responses on awareness of periodontal disease questions

Questions	**Total n(%)**
1. Causes of periodontal disease among pregnant women	
a. dental plaque/b. hormone changes/c. did not brush teeth/ e. don't know	50(54.4)
d. dental plaque and did not brush teeth*	41(44.6)
2. Is it necessary to have frequent tooth brushing during pregnancy?	
Yes	55(59.8)
No	36(39.1)
3. Do you think there is a bad effect of smoking to the mother and fetus?	
Yes	88(95.7)
No	4(4.3)
4. Do you think that there is a relationship between periodontal disease and premature labour?	
Yes	36(39.1)
No	29(31.5)
Don't know	27(29.3)
5. Do you think there is an effect of snacking on oral health during pregnancy?	
Yes	31(33.7)
No	51(56.5)
Don't know	9(9.8)

*correct response
**Denominators vary due to missing information

Table 4 Distribution of responses to knowledge of periodontal disease questions by level of education

Questions	**Education level**				**Total**	**p-value**
	Primary (n=8)	**Secondary (n=50)**	**Diploma (n=19)**	**University (n=14)**		
1. What is plaque?						
a. soft deposition on tooth surface*	1 (12.5)	10(20.0)	4(22.2)	7(50.0)	22	0.2
b. hard deposition on tooth surface/c. tooth staining / d. don't know	7(87.5)	40(80.0)	14(77.8)	7(50.0)	59	
2. What can plaque cause?						
a. tooth discoloration/ b. tooth malformation /d. don't know	6(75.0)	31(63.3)	5(26.4)	6(42.8)	48	0.068
c. gum disease*	2(25.0)	18(36.7)	14(73.7)	8(57.1)	42	
3. Bleeding gum indicates…?						
a. inflamed gums*	4(50.0)	37(75.5)	14(73.7)	11(78.6)	66	0.2
b. healthy gums/ c. gum recession/ d. don't know	4(50)	12(24.4)	5(26.4)	3(21.4)	24	
4. How can you prevent gum disease?	4(50.0)	12(24.5)	3(15.8)	3(21.4)	25	0.5
a. By taking soft diet/ b. by taking vitamin C/ d. Don't know						
c. by brushing and flossing*	4(50.0)	34(69.4)	16(84.2)	11(78.6)	65	
5. When is the effective time for tooth brushing?	5(62.5)	19(38.0)	8(42.1)	2(14.3)	34	0.13
a. In the morning/ b. At noon /d. no specific time						
c. before going to bed*	3(37.5)	31(62.0)	11(57.9)	12(85.7)	57	

* correct response, **Denominators vary due to missing information.

Table 5 Distribution of responses on awareness of periodontal disease questions by level of education

Questions	Education level				Total	p-value
	Primary (n=8)	Secondary (n=50)	Diploma (n=19)	University (n=14)		
1. Causes of periodontal disease among pregnant women						
a. dental plaque/ b. hormone changes/ c. did not brush teeth/ e. don't know	6(75.0)	29(59.2)	10(52.7)	4(28.6)	49	0.2
d. dental plaque and did not brush teeth*	2(25.0)	20(40.8)	9(47.4)	10(71.4)	41	
2. Is it necessary to have frequent tooth brushing during pregnancy?						
Yes	8(100)	28(57.1)	11(57.9)	8(57.1)	55	0.1
No	0(0)	21(42.9)	8(42.1)	6(42.9)	36	
3. Do you think there is a bad effect of smoking to the mother and fetus?						0.6
Yes	7(87.5)	48(96.0)	18(94.7)	14(100)	87	
No	1(12.5)	2(4.0)	1(5.3)	0(0)	4	
4. Do you think that there is a relationship between periodontal disease and premature labour?						
Yes	2(25.0)	18(36.0)	11(57.9)	5(35.7)	36	0.5
No	2(25.0)	17(34.0)	5(26.3)	5(35.7)	29	
Don't know	4(50.0)	15(30.0)	3(15.8)	4(28.6)	26	
5. Do you think there is an effect of snacking on oral health during pregnancy?						0.3
Yes	4(50.0)	19(38.0)	5(26.3)	3(21.4)	31	
No	3(37.5)	24(48.0)	14(73.7)	10(71.4)	51	
Don't know	1(12.5)	7(14)	0(0)	1(7.1)	9	

*correct response; **Denominators vary due to missing information

Barriers to dental services during pregnancy

Table 6 reports the responses to barriers perceived by the respondents in receiving dental treatment during pregnancy. The majority (33.7%) feels that the long waiting time in the clinic would be their main barrier in seeking dental treatment. Twenty-four respondents feel that they do not have any dental problems, 19.6% say they are busy, 8.7% feel afraid, and 6.5% feels that dental problem is not important.

Table 6 Barriers to receive dental treatment during pregnancy

BARRIERS	RESPONSE N(%)*
No dental problems	24(26.1)
Busy	18 (19.6)
Long waiting time	31 (33.7)
Need regular attendance	7 (7.6)
Fear	8 (8.7)
Dental problems are not important	6 (6.5)

- Denominators vary due to missing information

DISCUSSION

There are very few data published on knowledge and awareness on periodontal disease among pregnant women in Malaysia. Periodontal disease was not considered as important as dental caries in terms of providing treatment and dental health education. There was also no data on gingivitis or periodontal disease prevalence of Malaysian pregnant women available.

In comparison with the results from Alwaeli & Al-Jundi (6), the respondents' knowledge on plaque was below one-third, 23.9% and 16.4% respectively. In this study, the question on what can plaque cause were almost equally responded, with the correct answer 45.7% (n=42) and the wrong answer 44.6% (n=41). However, more than half of the respondents answered correctly on the questions on 'what do bleeding gums indicate', 'how can you prevent gum disease' (71.7%) and 'when is the effective time for toothbrushing'. This suggests that pregnant women at Obstetrics and Gynecology Clinic, Kuala Lumpur Hospital did not receive adequate dental health education on dental plaque and what can plaque cause.

Dentists have a role in providing information and promoting oral health and periodontal disease prevention to pregnant women in maternity care centers. In this study, about less than half of the pregnant women were aware that periodontal disease is caused by dental plaque and also not brushing their teeth. Despite that more than half are aware that frequent toothbrushing during pregnancy is necessary. A majority of them perceived that smoking has a bad effect to the mother and fetus. This shows that oral health was not perceived as important as general health to pregnant women. Proper nutritious diet is very important to pregnant women during their gestational periods for optimal development of the fetus (1, 9). However, from this study, pregnant women did not think that snacking would have a bad effect to their oral health during pregnancy. Improper oral hygiene practices and diet intake may place pregnant women at higher risk for dental infections.

Most women do not see the importance of oral care during pregnancy, while others experience barriers to care. From this study, 'the long waiting time' and 'do not having any dental problems' are the major barriers of attendance to dental clinics. In contrast to the study by Alwaeli & Al-Jundi (6), fear from the dentist is the major barrier. This shows that lack of knowledge and awareness among pregnant women on periodontal disease and its relation to pregnancy. This is probably due to limited oral health program for antenatal mothers at the maternity center. Thus, there is a need to direct and intensify oral health promotion efforts and to overcome perceived barriers to utilization of oral healthcare among pregnant women. This also means that, collaboration between the healthcare providers and the oral health care providers is needed to support these efforts.

CONCLUSION

This study has revealed that a majority of pregnant women have limited knowledge and poor awareness on periodontal disease and its effect on pregnancy. Pregnant women need more information about periodontal health and good dietary guideline during pregnancy to improve their maternal and child health. There is no significant relation between the levels of education and having good knowledge and awareness on periodontal disease. Oral healthcare programs for the pregnant women should be in cooperated during their maternity check-ups in order to improve and increase the uptake of dental care among them.

SUGGESTIONS FOR FUTURE STUDIES

An epidemiology study on the oral disease prevalence mainly periodontal disease and dental caries among pregnant in Malaysia should be carried out. There is not many at this moment. An evaluation of the existing oral healthcare for pregnant women should be done in order to see its effectiveness and utilization of the services.

REFERENCES

1. Mills LW, Moses DT. Oral Health during Pregnancy. *MCN Am J Matern Child Nurs*. 2002 ; 25(5):275-80.
2. Laine MA. Effect of pregnancy on periodontal health and dental health. *Acta Odontol Scand*. 2002; 60(5):257-64.
3. Russell SL, Mayberry LJ. Pregnancy and oral health: a review and recommendations to reduce gaps in practice and research. *MCN Am J Matern Child Nurs*. 2008; 33(1):32-7.
4. Breedlove G. Prioritizing oral health in pregnancy. *Kans nurse.* 2004; 79(10):4-6.
5. Oral Healthcare in Malaysia. Oral Health Division Ministry of Health Malaysia. 2008; 27-28.
6. Alwaeli HA, Al-Jundi SH. Periodontal disease awareness among pregnant women and its relationship with sociodemographic variables. *Int J Dent Hygiene* 3, 2005; 74-82.
7. Honkala S, Al-Ansari J. Self reported oral health, oral hygiene habits, and dental attendance of pregnant women in Kuwait. *J Clin Periodontol* 2005; 32:809-14.
8. Christensen LB, Jeppe-Jensen D, Petersen PE. Self-reported gingival conditions and self-care in the oral health of Danish women during pregnancy. *J Clin Periodontol* 2003; 30:949-53.
9. Fitzsimons D et al. Nutrition and oral health guidelines for pregnant women, infants and children. *J Am Diet Assoc*. 1998; 98(3): 264.