

Running Title: SELF-REPORTED ORAL HEALTH AMONG PREGNANT WOMAN

ORIGINAL ARTICLE

Self- reported oral health, oral hygiene habits and dental service utilization among pregnant woman in United Arab Emirates.

Raghad Hashim

Ajman University, Ajman, United Arab Emirates *

*

Corresponding Author:

Dr. Raghad Hashim

Assistant Professor,

Head of Growth and Development Department

College of Dentistry, Ajman University of Science & Technology

Ajman University, P.O.Box 346 Ajman, UAE

Phone: +9716 705 6394

Fax: +9714 367 8034

Email: raghad69@yahoo.co.nz

Keywords: Periodontal disease; Pregnancy; Oral hygiene habits; Dental attendance.

Abstract

Aim: The aim of this study was to describe self-reported oral health, oral hygiene habits, and frequency of visits to a dentist among pregnant women visiting maternity hospitals in the United Arab Emirates.

Material and methods: A cross-sectional study with an anonymous structured questionnaires were distributed to 800 pregnant women who were chosen at random from attendants of three maternity and child health centers from various geographical areas of UAE, during January - March 2010.

Results: The response rate was 93.7% (n=750). Less than quarter of the participated pregnant women were in their first trimester. Almost a quarter 23.5% of the women believed that they had periodontal problem currently, while 46.3% reported having carious teeth. More than forty four percent reported having dental pain, and about forty percent woman felt that her oral health was poor. About sixty percent reported having heard about the possible connection between pregnancy and the oral health. About ninety-four percent of the women were brushing their teeth at least once a day. More than half of the woman 58.3% visited the dentist during their most recent pregnancy, mostly for dental pain.

Conclusions: A large proportion of the pregnant woman in this study had oral health problems; however, more than forty percent of those women had not visited a dentist during their pregnancy and the majority of those utilized dental services when they have

dental pain only. To provide better oral health care, more knowledge needs to be made available to the pregnant woman and the medical community.

Introduction

Pregnancy involves complex physical and hormonal changes that have a significant impact on almost every organ system, including the oral cavity. Oral problems associated with pregnancy primarily include gingivitis and periodontal infection (1). The incidence of gingival inflammation in pregnant women has been reported to range from 36% to 100% (2, 3). Hormonal and vascular changes associated with pregnancy can exaggerate the response of the gingiva to bacterial plaque (4, 5). It has been estimated that periodontal disease of the mother might cause more than 18% of all pre-term birth (PB) and low birth weight in infants (6). Consequently, it is obvious that oral health and dental care of women during pregnancy are important for both the mother and the baby.

The bacteria responsible for periodontal disease are capable of producing a variety of inflammatory mediators, such as prostaglandins and interleukins (1, 6, 7). Since these molecules appear to be endogenous mediators of normal labour onset, their increased production in women with severe periodontal disease has been implicated in inducing PB (6, 7). This hypothesis is further supported by the fact that, in interventional studies, periodontal therapy significantly reduced the rates of PB in women with periodontal disease (8, 9); however, a more recent study did not confirm these findings (10).

Good oral hygiene practices, however, can minimize gingival disease during pregnancy (5, 11). Therefore, it has been recommended that all women should have a dental examination and appropriate dental hygiene care at least once during their pregnancy (12). However, many women in a number of countries do not visit dentist during their

pregnancy (13, 14, 15). Most authors concluded that gingival problems during pregnancy can be reduced considerably if the subgingival plaque is kept at a low level, and they suggest that dentists play an important role offering oral health education and plaque control to their pregnant patients (16).

Meanwhile, systematic data on the self-assessment of gingival conditions among pregnant women are very limited and no information is found on self-care practices of pregnant women in relation to perceived signs of gingival or periodontal disease in UAE. The aim of this study was to describe self-reported oral health, oral hygiene habits, and frequency of visits to a dentist among pregnant women visiting maternity hospitals in the UAE.

Methods

In this cross-sectional survey, structured questionnaires were distributed to 800 pregnant women who were chosen at random through computer-generated program from attendants of three maternity and child health centers from the emirates of Dubai, Sharjah and Ajman of UAE.

A structured, anonymous questionnaire was designed by the author in English and then translated from English to Arabic; the accuracy of translation was verified by reverse translation. The questionnaire included 17 multiple choice questions in four sections. Section I included seven questions on age, level of education, occupation, ethnicity and

pregnancy characteristics. Section II included three questions which dealt with oral health habits (toothbrushing, other oral hygiene aids and dental visits).

Section III included four questions on perceived oral health (dental pain, gum problem, dental caries) and self oral health satisfaction. Section IV included two questions which dealt with knowledge concerning the relation between oral health and pregnancy, whether the pregnant woman believe in the statement “a tooth for a baby”.

After preliminary construction of the questionnaire, it was distributed to six dentists to test its validity; their suggestions regarding some modifications in the design of some of the questions were taken into account. Subsequent to the final construction of the questionnaire, 90 pregnant women filled it up during the pilot study. These filled questionnaires were used to measure the reliability of the test using Crombach-alpha test; the coefficient of reliability was 0.87 which meets the purpose of this study.

Informed verbal consent from all pregnant women and the directors of the health centers were obtained prior to participation. The study was approved by the ethical committee in Ajman University of Science & Technology. All women entered the study voluntarily, following an explanation of its purpose and objectives. The questionnaire distribution was conducted five days per week from Sunday to Thursday since Friday and Saturday are an official holidays, from the beginning of January to the end of March 2010. It took the majority of the participants 5–10 min to complete the questionnaires before they hand it to the nurses working in the health center. After 3 months all returned questionnaires were coded and analyzed. Results were expressed as a number and percentage of

respondents for each question and were analyzed using SPSS version 13.0. Chi-square test was used to evaluate the differences between the different variables, and the level of significance was set at $P < 0.05$.

Results

In the current study, 750 of the 800 distributed questionnaires were properly filled out during the study, and therefore the sample considered consisting 750 pregnant women. The mean age of the participated pregnant women was 25 ± 7.2 years. Table 1 shows that 60.8% of those women were Arabs and about one-third of the respondents 34.1% had university level of education, where 14.9% with a primary level of education. The study also showed that the majority 72.1% were unemployed. Less than quarter of the participated pregnant women were in their first trimester. Mothers who have two or more children accounted for 65.2% of this sample.

About ninety-four percent of the respondents reported brushing their teeth, while around forty percent of the respondents reported the use of other means of cleaning such as dental floss, miswak and mouth wash (Table 2). Almost a quarter 23.5% of the participated women reported having gum problem, while 46.3% reported having carious teeth. More than forty four percent reported having dental pain, and about forty percent were unhappy about their oral health (Table 3).

Table 4 present result concerning mothers' knowledge of possible association between pregnancy and oral health. About sixty percent reported having heard about the possible connection between pregnancy and the oral health. Out of the sample, 44.4% believed in the statement saying "a tooth for a baby". Of the 750 respondents, more than half 58.3% reported a visit to the dentist during their most recent pregnancy (Table 5). Among mothers who reported having a dental visit during their pregnancy, the main reason for the visit was dental pain 32.8%. In the bivariate analysis, (Table 6) the only factors significantly associated with more-than-once-a-day brushing were: university educated woman clearly brushed more than others, no gum problem, no dental caries, no current pain, they were more satisfied with their oral health, and they use to utilize the dental service more frequently.

Discussion

Periodontal diseases are silent infections that have periods of exacerbation and quiescence that often go undiagnosed until irreparable damage occurs to the teeth and oral structures. Therefore, knowledge and awareness of periodontal disease is important to control and maintain periodontal health (17). This is of special importance in pregnant woman who may show exaggeration of periodontal disease compared with non-pregnant woman (17). The finding of the current study showed that pregnant women who have good oral hygiene habits perceives better oral health, visit dentist during pregnancy and more satisfied with their oral health.

To our knowledge, this is the first published study conducted in the UAE assessing the level of awareness among pregnant women and its relationship with socio-demographic variables. Fortunately, the majority of the studied population had quite favorable toothbrushing habits (brushing on daily basis). Which is in agreement with study from Kuwait (18). Maintaining good oral hygiene before and during pregnancy is crucial for preventing gingivitis and periodontitis. Prevention and treatment of periodontal infection is aimed at controlling the bacterial biofilm, arresting progressive infection, and restoring lost tooth support (19). Dental professionals can facilitate this level of oral health through assessment, education, and proper treatment planning. Verifying the hormonal status and other risk factors for periodontal diseases and poor pregnancy outcomes of women during the medical history process will enable the provider to customize the treatment plan and oral hygiene instructions.

More than half of the participated women had visited a dentist during their current pregnancy. Studies showed that 49% of pregnant women in Germany visited a dentist during a study period of one year in 1990 (13), 61% did the same in the United Kingdom, while 35-43% of pregnant women visited the dentist in the USA (14, 15), and 90% in Denmark (20), and 50% in Kuwait (18).

In study conducted in Germany, 84% reported having dental care if problems appear (13). Only vary rarely did they seek an appointment for check-up, this is in agreement with the finding of this study were only 14.3% of the pregnant women visited the dentist for check-ups. Similar results were also obtained from a study among pregnant women

in the USA (14). In the UK, 39% did not visit a dentist during pregnancy, even though dental care is free of charge for pregnant women (21) reasons for not seeing a dentist were the feeling that it was not necessary, fear, or not liking the dentists.

In 2004, the American Academy of Periodontology (AAP) issued a position statement regarding dental care for pregnant women. The AAP recommended that all women who were pregnant or planning a pregnancy should receive preventive dental care, including a periodontal examination, a prophylaxis, and restorative treatment. They also proposed that scaling and root planning should be completed early in the second trimester and that any presence of acute infection or abscess should be treated immediately, irrespective of gestational age. Treating infection as early as possible will remove a potential source of infection that could be harmful to the mother and the baby (22). In 2006, after a treatment trial (10) failed to show an effect of scaling and root planning on birth outcomes, the AAP confirmed that treatment of periodontitis in pregnant women is safe and should be performed to improve the oral health of the woman (23).

Perceived periodontal problems or dental pain did not make a difference as to whether or not the mother scheduled an appointment with a dentist. A significant proportion of the women experienced dental pain during their pregnancy and every fourth claimed to have periodontal problem currently. However, self-reported periodontal status was not confirmed by clinical or radiographical examination or checked from dental files, which is a limitation of this study.

The present study highlighted the limited periodontal health knowledge of pregnancy woman with regards to possible connection between oral health and pregnancy, especially among women with low education level. This can be explained by the fact that highly educated women seemed to be more able to get and retain correct information than other women. Maternity care centers can be found in all emirates across the UAE, they focus on pre and post-natal care of pregnant women and their infants. The nature of these centers made them very useful for spreading information to very large sector of the society. To provide better oral health care, more knowledge needs to be made available to the medical community. Few studies have tried to determine if the medical community has the knowledge to help educate patients about the importance of better oral care. In a recent study conducted in North Carolina, 504 nurse practitioners, physician assistants and certified nurse midwives were surveyed. The survey assessed the knowledge, behavior, and opinions about periodontal disease and its relationship to adverse pregnancy outcomes. Forty eight percent responded (n=204). Of those respondents, 63% reported looking in the patient's mouth to screen for oral problems at the initial visit. Twenty percent felt that their knowledge of periodontal disease was current, and all agreed that their discipline should receive instruction regarding periodontal disease. Ninety-five percent felt that a collaborative effort between the health care provider and the oral health care professionals was needed and would reduce the patient's risk of having an adverse pregnancy outcome (24). It is clear from the lack of studies available regarding oral health knowledge in the medical community that further studies are needed. More education is needed within the medical community to help achieve better oral health care.

As mothers play a crucial role in transferring and demonstrating health habits to their children (25), pregnant women should be a target group for oral health education. In the current study showed that university educated women did brush more frequently than the less educated, which is in accordance with earlier studies (18, 26). Dental hygienist can play a major role in providing oral health information to women during pregnancy. It is recommended that oral preventive programs including effective brushing and interdental cleaning and home use of fluoride and antimicrobial rinses be started prenataly and carried out all through pregnancy to reduce the possible risk of periodontal disease on pregnant woman and her offspring (27).

Conclusion

In this study, a large proportion of the pregnant women in the UAE reported oral health problems; yet, more than forty percent of those women had not visited a dentist during their pregnancy and the majority of those utilized dental services when they have dental pain only. Efforts should be made to educate pregnant women in oral health especially, preventive oral self-care. This can be accomplished through the involvement of dental hygienist in these programs.

REFERENCES

1. Gajendra S, Kumar JV. Oral health and pregnancy: a review. *NY State Dent J*. 2004; **70**:40-44.
2. Jensen J, Lilijmark W, Bloomquist C. The effect of female sex hormones on subgingival plaque. *J Periodontol*. 1981; **52**: 599-602.
3. Ferris GM. Alteration in female sex hormones: their effect on oral tissues and dental treatment. *Compendium* 1993; **14**: 1558-1570.
4. Zachariassen RD. The effect of elevated ovarian hormones on periodontal health: oral contraceptive and pregnancy. *Women Health* 1993; **20**: 21-30.
5. Raber-Durlacher JE, Van Steenberghe TJ, Van der Velden U, de Graft J, Abraham-Inpijn L. Experimental gingivitis during pregnancy and post-partum: clinical, endocrinological, and microbiological aspects. *J Clin Periodontol*. 1994; **21**: 549-558.
6. Offenbacher S, Katz V, Fetik G, Collins J, Boyd D, Maynor G, et al. Periodontal infection as a possible risk factor for preterm low birth weight. *J Periodontol*. 1996; **67**:1103-1113.
7. Madianos PN, Lief S, Murtha AP, Boggess KA, et al. Maternal periodontitis and prematurity. Part II: maternal infection and fetal exposure. *Ann Periodontol*. 2001; **6**: 175-82.
8. Lopez NJ, Smith PC, Gutierrez J. Periodontal therapy may reduce the risk of preterm low birth weight in women with periodontal disease: a randomized controlled trial. *J Periodontol*. 2002; **73**: 911-24.
9. Jeffcoat MK, Hauth JC, Geurs NC, Reddy MS, Cliver SP, Hodgkins PM, et al. Periodontal disease and preterm birth: results of a pilot intervention study. *J Periodontol*. 2003; **74**: 1214-8.
10. Michalowicz BS, Hodges JS, DiAngelis AJ, Lupo VR, Novak MJ, Ferguson JE, et al. Treatment of periodontal disease and the risk of preterm birth. *N Engl J Med*. 2006; **355**: 1885-1894.
11. Gibbs RS. The relationship between infections and adverse pregnancy outcomes: an overview. *Ann Periodontol* 2001; **6**: 153-163.
12. Lief S, Boggess KA, Murtha AP, Jared H, et al. The oral conditions and pregnancy study: Periodontal status of a cohort of pregnant women. *J Periodontol* 2004; **75**: 116-126.

13. Gunay H, Goepel K, Stock KH, Schneller T. Position of health education knowledge concerning pregnancy. *Oralprophylaxe* 1991; **13**: 4-7 (in German)
14. Mangskau KA, Arrindell B. Pregnancy and oral health: utilization of the oral health care system by pregnant women in North Dakota. *Northwest Dent.* 1996; **75**: 823-828.
15. Gaffield ML, Gilbert BJ, Malvit DM, Romaguera R. Oral health during pregnancy: an analysis of information collected by the pregnancy risk assessment monitoring system. *J Am Dent Assoc.* 2001; **132**: 1009-1016.
16. Zachariassen RD. Pregnancy gingivitis. *J Gt Houst Dent Soc.* 1997; **69**: 10-12.
17. Offenbacher S, Lieff S, Boggess KA et al. Maternal periodontitis and prematurity. Part I: Obstetric outcome of prematurity and growth restriction. *Ann Periodontol.* 2001; **6(1)**: 164-174.
18. 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**: 809-814.
19. Jeffcoat MK. Prevention of periodontal diseases in adults: strategies for the future. *Prev Med.* 1994; **23(5)**: 704-708.
20. Christensen LB, Jensen D, Peterson P. Self-reported gingival conditions and self-care in the oral health of Danish women during pregnancy. *J. Clin Periodontol* 2003; **30**: 949-953.
21. Rogers SN. Dental attendance in a sample of pregnant women in Birmingham, UK. *Community Dent Health* 1991; **8**: 361-369.
22. American Academy of Periodontology. American Academy of Periodontology statement regarding periodontal management of the pregnant patient. *J Periodontol.* 2004; **75(3)**: 495.
23. American Academy of Periodontology Statement on Periodontal Disease and Preterm Low Birth weight [*homepage on the Internet*]. Chicago, (IL): American Academy of Periodontology. Available from: www.perio.org/consumer/neim-statement.htm
24. Thomas KM, Jared HL, Boggess K, Lee J, Moos M, Wilder RS. Parental care providers' oral health and pregnancy knowledge behaviors. *J Dent Res.* 2008; **87**: Spec Iss A.

25. Blinkhorn AS. Dental Preventive advice for pregnant and nursing mothers – sociological implications. *Int Dent J* 1981; **31**: 14-22.
26. Behbehani JM, Shah NM. Oral health in Kuwait before the Gulf War. *Med Princ Pract.* 2002; **11** Suppl 1:36-43.
27. Maria P. Women's health. In: Darby M, Walsh M, eds. *Dental Hygiene Theory and Practice*, 2nd edn. W.B. Saunders Co. Philadelphia. 2003: 935-938.

Table 1 Characteristics of the mothers.

Characteristic	<i>n</i>	(%)
Age group		
18-24	274	(36.5)
25-29	244	(32.5)
≥ 30	232	(30.9)
Ethnicity		
Arabs	456	(60.8)
Non-Arabs	294	(39.2)
Education		
primary school	112	(14.9)
secondary school	111	(14.8)
high school	271	(36.1)
university	256	(34.1)
Employment status		
Housewife	541	(72.1)
employed	209	(27.9)
Stage of pregnancy		
first trimester	178	(23.7)
second trimester	218	(29.1)
third trimester	354	(47.2)
Number of pregnancies		
first gravidae	261	(34.8)
multi gravidae	489	(65.2)

Table 2 Frequency distribution of the participants according to oral hygiene habits.

Characteristic	<i>n</i>	(%)
Tooth brushing		
no	44	(5.9)
yes	706	(94.1)
Frequency of brushing per day		
once	207	(27.6)
twice	336	(44.8)
trice or more	163	(21.7)
Use other means of cleaning		
no	443	(59.1)
yes		
floss	121	(16.1)
miswak	91	(12.1)
mouthwash	95	(12.7)

Table 3 Perceived oral health.

Question	<i>n</i> (%)
Do you have any gum problem?	
no	490 (65.3)
yes	176 (23.5)
don't know	84 (11.2)
Do you have any carious tooth?	
no	363 (48.4)
yes	347 (46.3)
don't know	40 (5.3)
Do you have any current dental pain?	
no	414 (55.2)
yes	336 (44.8)
Are you happy with your oral health?	
no	302 (40.3)
yes	448 (59.7)

Table 4 Mothers' responses to knowledge statement

Knowledge Statement	(%)	
	Yes	No
Have you heard about the possible connection between oral health and pregnancy?	60.9	39.1
Do you believe in the statement "a tooth for a baby"?	44.4	55.6

Table 5 Utilization of dental service during pregnancy.

Dental service	<i>n</i> (%)
Visiting the dentist during pregnancy	
yes	437 (58.3)
no	313 (41.7)
Reason for dental visit	
for check-up	108 (14.4)
when have pain	246 (32.8)
Other reason	83 (11.1)

Table 6 Variables that showed significant association with the use of tooth brush.

Characteristic	<i>n</i> (%)	<i>P</i>-value
Education Level		
primary	94 (12.5)	< 0.001
secondary	107 (14.3)	
high-school	251 (33.5)	
university	260 (34.7)	
Do you have any gum problem?		
no	482 (64.4)	< 0.001
yes	157 (21.0)	
don't know	72 (9.6)	
Do you have any carious teeth?		
no	356 (47.6)	< 0.001
yes	317 (42.3)	
don't know	39 (5.2)	
Do you have any current dental pain?		
no	404 (53.9)	< 0.001
yes	308 (4.1)	
Are you happy with your oral health?		
no	275 (36.7)	< 0.001
yes	437 (58.3)	
Visited the dentist during pregnancy?		
no	297 (39.6)	< 0.001
for check-up	107 (14.3)	
when have pain	195 (26.0)	
other reason	113 (15.0)	