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

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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 was conducted, with anonymous structured questionnaires distributed to 800 pregnant women who were chosen at random from attendants of three maternity and child health centres 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 44% reported having dental pain, and about 40% women felt that her oral health was poor. About 60% reported having heard about the possible connection between pregnancy and the oral health. About 94% of the women were brushing their teeth at least once a day. More than half of the women (58.3%) visited the dentist during their most recent pregnancy, mostly for dental pain. *Conclusions:* A large proportion of the pregnant women in this study had oral health problems; however, more than 40% of those women had not visited a dentist during their pregnancy, and the majority of those utilized dental services when they had dental pain only. To provide better oral health care, more knowledge needs to be made available to the pregnant women and the medical community.

Key words: dental attendance; oral hygiene habits; periodontal disease; pregnancy

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 preterm 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.

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The bacteria responsible for periodontal disease are capable of producing a variety of inflammatory mediators, such as prostaglandins and interleukins (1, 6, 7). As 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 (13–15). 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 centres 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 six questions on age, level of education, occupation, ethnicity and pregnancy characteristics. Section II included five questions that 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 and dental caries) and self oral health satisfaction. Section IV included two questions that dealt with knowledge concerning the relationship between oral health and pregnancy, whether the pregnant women 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 Cronbach's 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 centres was 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 5 days a week from Sunday to Thursday as Friday and Saturday are 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 questionnaire before they handed it to the nurses working in the health centre. After 3 months, all returned questionnaires were coded and analysed. Results were expressed as number and percentage of respondents for each question and were analysed using SPSS version 13.0 (SPSS Inc., Chicago, IL, USA). The 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 in during the study, and therefore, the sample considered consisted of 750 pregnant women. The mean age of the participating 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, whereas 14.9% were with a primary level of

Table 1. **Characteristics of the mothers**

Characteristics	*n* (%)
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)
Multigravidae	489 (65.2)

education. The study also showed that the majority (72.1%) of them were unemployed. Less than a 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 94% of the respondents reported brushing their teeth, while around 40% of the respondents reported the use of other means of cleaning such us dental floss, miswak and mouthwash (Table 2). Almost a quarter (23.5%) of the participating women reported having gum problems, while 46.3% reported having carious teeth. More than 44% reported having dental pain, and about 40% were unhappy about their oral health (Table 3).

Table 4 presents results concerning mothers' knowledge of possible association between pregnancy and oral health. About 60% reported having heard about the possible connection between pregnancy and oral health. Of the total samples, 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, 32.8% reported that the main reason for the visit was dental pain. In the bivariate analysis (Table 6), the only factors significantly associated with more-than-once-a-day brushing were as follows: university-educated women 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.

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

Characteristics	*n* (%)
Toothbrushing	
No	44 (5.9)
Yes	706 (94.1)
Frequency of brushing per day	
Once	207 (27.6)
Twice	336 (44.8)
Thrice 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**

Questions	*n* (%)
Do you have any gum problem?	
No	490 (65.3)
Yes	176 (23.5)
Do not know	84 (11.2)
Do you have any carious tooth?	
No	363 (48.4)
Yes	347 (46.3)
Do not 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	*n* (%)
Visiting the dentist during pregnancy	
Yes	437 (58.3)
No	313 (41.7)
Reason for dental visit	
For check-up	108 (14.4)
When having pain	246 (32.8)
Other reasons	83 (11.1)

Table 6. **Variables that showed a significant association with the use of toothbrush**

Characteristics	*n* (%)	*P*-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)	
Do not know	72 (9.6)	
Do you have any carious teeth?		
No	356 (47.6)	<0.001
Yes	317 (42.3)	
Do not 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 having pain	195 (26.0)	
Other reasons	113 (15.0)	

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 are important to control and maintain periodontal health (17). This is of special importance in pregnant women who may show exaggeration of periodontal disease compared with non-pregnant women (17). The findings of the current study showed that pregnant women who have good oral hygiene habits perceive better oral health, visit dentist during pregnancy and are 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 sociodemographic variables. Fortunately, the majority of the studied population had quite favourable toothbrushing habits (brushing on daily basis), which is in agreement with the study from Kuwait (18). Maintaining good oral hygiene before and during pregnancy is crucial for preventing gingivitis and periodontitis. Prevention of and treatment for periodontal infection are 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 1 year in 1990 (13) and 61% did the same in the United Kingdom, while 35–43% of pregnant women visited the dentist in the USA (14, 15), 90% in Denmark (20) and 50% in Kuwait (18).

In a study conducted in Germany, 84% reported having dental care if problems appear (13). Only very rarely did they seek an appointment for check-up; this is in agreement with the findings of this study in which 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 United Kingdom, 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 for periodontitis in pregnant women is safe and should be performed to improve the oral health of women (23).

Perceived periodontal problems or dental pain did not make a difference as to whether the mother scheduled an appointment with a dentist. A significant proportion of the women experienced dental pain during their pregnancy and one-fourth of them claimed to have periodontal problem currently. However, self-reported periodontal status was not confirmed by clinical or radiographic examination, nor checked from dental files, which is a limitation of this study.

The present study highlighted the limited periodontal health knowledge of pregnancy women with regard to the 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 obtain and retain correct information than other women. Maternity care centres can be found in all emirates across the UAE, and they focus on prenatal and postnatal care of pregnant women and their infants. The nature of these centres made them very useful for spreading information to very large sectors 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 whether 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, behaviour and opinions about periodontal disease and its relationship with adverse pregnancy outcomes. Forty-eight per cent responded (n = 204). Of those respondents, 63% reported looking in the patient's mouth to screen for oral problems at the initial visit. Twenty per cent felt that their knowledge of periodontal disease was current, and all agreed that their discipline should receive instruction regarding periodontal disease. Ninety-five per cent felt that a collaborative effort between the healthcare provider and the oral healthcare 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 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. 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 hygienists can play a major role in providing oral health information to women during pregnancy. It is recommended that oral preventive programmes including effective brushing and interdental cleaning, and home use of fluoride and antimicrobial rinses be started prenatally and carried out throughout pregnancy to reduce the possible risk of periodontal disease in 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 40% of these women had not visited a dentist during their pregnancy and the majority of them utilized dental services when they had 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 hygienists in these programmes.

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