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Self-reported oral health, oral hygiene habits, and dental attendance of pregnant women in Kuwait

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Abstract

Objectives: 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 in Kuwait.

Material and Methods: A cross-sectional study with an anonymous structured questionnaire was distributed among 650 pregnant women during May–June 2003, when they were admitted to the maternity ward at the largest government maternity hospital in Kuwait City. The response rate was 93% ($n = 603$).

Results: Every fourth respondent was in her first pregnancy, while 36% already had three or more children. Every fifth woman felt that her oral health was poor, and one-third of the women believed that they had periodontal problems currently. About two-thirds of the women were brushing more than once a day and almost all (94%) at least once a day. Over the previous 6 months, 40% had experienced dental pain. Half of the women had visited a dentist during pregnancy, mostly for dental pain. Most of the women had received no instructions concerning oral health care during their pregnancy.

Conclusions: A large proportion of the pregnant women in this study had oral health problems; however, half of the women had not seen a dentist during their pregnancy.

Key words: dental attendance; oral hygiene habits; perceived oral health; pregnancy

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Hormonal changes during pregnancy have been suggested to predispose women to gingivitis, affecting 25–100% (Amar & Chung 1994) or 35–100% (Raber-Durlacher et al. 1994) of pregnant women. Mainly because of the effect of oestrogen, the gums become inflamed, oedematous, and sensitive, with a tendency to bleed easily, and existing gingivitis may worsen considerably during pregnancy if the plaque is not removed (Löe & Silness 1963, Ferris 1993). Furthermore, advanced periodontal infections in a pregnant woman may pose a threat to the placenta and uterus and may increase the likelihood of pre-term delivery (Offenbacher et al. 1996, Dasanayake 1998). It has been estimated that periodontal disease of the mother might cause more than 18% of all pre-term births and low birth weight in infants (Offenbacher et al. 1996). Consequently, it is obvious that oral health and dental care of women during pregnancy are important for both the mother and the baby.

Professional plaque removal and regular follow-up combined with patient oral hygiene instructions can minimize the level of gingival inflammation and swelling (Raber-Durlacher et al. 1994). Therefore, it has been recommended that all women should have a dental examination and appropriate dental hygiene care at least once during their pregnancy (Carl et al. 2000). However, many women in a number of countries do not visit a dentist during their pregnancy (Gunay et al. 1991, Rogers 1991, Mangskau & Arrindell 1996, Gaffield et al. 2001). Preventive periodontal therapy may begin early in pregnancy with thorough removal of plaque and calculus, and with patient oral hygiene instructions. Women should be taught toothbrushing and flossing to disrupt subgingival plaque, and professional scaling and prophylaxis could be performed whenever necessary (Tarsitano & Rollings 1993).

In Kuwait, the fertility rate in 2003 was estimated to be three children/woman, resulting in 21.8 births/1000 inhabitants (CIA Factbook 2004) and a population growth of 3.3%. In spite of this high number of deliveries, there have been no earlier studies on oral

health or oral health behaviour among pregnant women. 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 a government maternity hospital in Kuwait.

Methods

The Ministry of Health maternity hospital in Kuwait City, Al-Sabaah, was selected for the study because it is the largest maternity hospital in Kuwait, and the majority of deliveries take place there. There is another government maternity hospital in Kuwait City and two smaller ones outside the capital. Also, a few small private hospitals with maternity wards exist. Al-Sabaah Hospital has 14 wards for pregnant/delivering women (284 beds), with about 29 deliveries/day (altogether over 15,000 deliveries/year). In addition, the hospital has an outpatient clinic, which approximately 278 pregnant women visit per day. This study included only the women who were admitted to the hospital wards.

A structured, anonymous questionnaire in Arabic was used for the study and addressed the following: (1) socio-demographic factors (age, nationality, number of children, education, occupation/profession); (2) perceived oral health (dental pain, periodontal disease, dental caries); (3) oral health habits (dental visits, toothbrushing, other oral hygiene aids, fluoride toothpaste, other fluoride products); (4) instructions relating to oral health care by the dentist; and (5) knowledge concerning toothbrushing, fluoride, sugar, and caries bacteria. The areas of dental caries and fluorides will be analysed and reported separately. The questionnaire was translated from English to Arabic by students of the Department of Oral and Dental Hygiene, the College of Health Sciences (CHS) and back translated by the staff. The final version of the questionnaire was based on results obtained in a pilot study conducted in April 2003 of 100 pregnant women at the same hospital, incorporating changes to the wording of two questions and the number of answer categories of one question.

The study was conducted every Saturday for 6 weeks, from May to June 2003. This once-a-week schedule ensured that different women would be present to fill out the questionnaire. Based on the experiences from the pilot study, it was estimated that a nurse could collect about 100 questionnaires each day from 14 different wards, where there were about 200 pregnant women in their third trimester (excluding mothers who had already delivered). The sample was about 50% of the pregnant women at the hospital.

One nurse from the CHS distributed all the questionnaires to a total of 650 pregnant women, and was present until its completion in order to explain the objective of the study and to clarify any possible questions participants might have had. Participation was voluntary, and the response rate was 93% ($n = 603$). The main reason for not returning the questionnaire was tiredness, and nobody was persuaded to participate. Ethical approval for the study was given by the Public Authority for Applied Education and Training.

Analysis

SPSS PC version 12.0 was used for the data analysis. Cross-tabulation with the chi-squared test was used to evaluate the differences between the different variables. Statistical significance was assumed when $p < 0.05$. Favourable toothbrushing frequency (more than once a day) was analysed by the logistic regression analysis. Odds ratios (OR) with 95% confidence intervals (95% CI) were also calculated. Only those variables showing a significant association in bi-variate analysis were included in the logistic model (i.e. nationality, education, occupation/profession, last dental visit, received toothbrushing instructions, and perceived dental pain).

Results

Socio-demographic background

The mean age of the women was 30 years (range: 18–56 years). Kuwaiti women represented 63% of the sample (Table 1). Most of the non-Kuwaiti women were Arabs from the neighbouring countries. Every fourth woman was expecting her first child, while 36% of the mothers already had three or more children. Kuwaitis clearly had more children (42% with at least three children) than non-Kuwaitis (by 25%, respectively; $p < 0.001$). The majority of the women (84%) had finished at least secondary school, 20% a professional college, and 35% had graduated from university. The majority of the expatriate women (70%) were housewives/not working, while only 30% of the Kuwaiti women had the same family situation.

Perceived oral health

Almost one out of five women (18%) felt that their current oral health was poor, 54% good, and 28% very good/excellent. A larger proportion of Kuwaiti women reported having very good/excellent dental health than non-Kuwaitis (31% *versus* 21%; $p = 0.043$) (Table 2). No difference was found according to age, education,

Table 1. Background variables according to the nationality of the pregnant women

Variable	Nationality		
	Kuwaiti (%) ($n = 382$)	non-Kuwaiti (%) ($n = 221$)	p-value
Age (years)			
18–26	34	40	
27–34	38	36	
35–56	28	24	NS
Number of children			
None	24	29	
1–2	34	46	
At least 3	42	25	<0.001
Education			
Primary/intermediate school	15	16	
Secondary school	21	42	
Professional college	27	9	
University	37	33	<0.001
Current occupation			
Housewife/not working	30	70	
Secretary, service person, etc.	26	14	
Technician	17	7	
Specialist	27	9	<0.001

NS = $p \geqslant 0.05$.

occupation, or time from the last dental visit. From those who reported poor dental health, 82% had also experienced dental pain. Every third woman felt that they had gingival/periodontal problems at the time of the questionnaire, and 40% of the respondents had experienced dental pain during the last 6 months. More than half (55%) of those who reported having problems with periodontium also reported current dental pain ($p<0.001$), and 32% felt that their general dental health was poor ($p<0.001$). Women in their first pregnancy reported having periodontal problems less often (20%) than the others did. The proportion of those women who did not know the meaning of ''periodontal problems'' was highest (31%) among the youngest women. There was no difference in perceived periodontal health between nationality groups, or according to women's education or occupational status.

Table 2. Dental variables according to the nationality of the pregnant women

Variable	Nationality		*p*-value
	Kuwaiti (%) ($n=382$)	non-Kuwaiti (%) ($n=221$)	
Perceived dental health			
Poor	21	17	
Good	58	52	
Very good	15	23	
Excellent	6	7	0.043*
Current dental pain			
Yes/no	39/61	30/70	0.042*
Dental pain last time			
Less than 6 months ago	46	47	
6–12 months ago	17	9	
1–2 years ago	16	20	
More than 2 years ago	11	12	
Never	10	12	NS
Periodontal disease now			
Yes/no	33/43	30/49	
Do not know	24	21	NS
Toothbrushing frequency			
More than once a day	71	51	
Once a day	21	39	
Less than once a day	8	9	<0.001
Toothbrushing instructions from a dentist anytime			
Yes/no	40/60	37/63	NS
Most important reason for toothbrushing			
To keep mouth fresh	31	20	
To prevent dental caries	60	71	
To prevent periodontal diseases	6	8	
Do not know	3	1	0.014*
Any other oral hygiene aids used			
No	36	56	
Dental floss	27	15	
Miswak	11	8	
Mouthwash	10	10	
Other	16	11	<0.001
Last dental visit			
Less than 6 months ago	36	27	
6–12 months ago	19	19	
1–2 years ago	25	31	
More than 2 years ago	17	19	NS
Reason for a dental visit			
For check-up	8	6	
For tooth cleaning and scaling	11	8	
When treatment is needed	46	58	
When pain	32	24	
Other reason/never	3	4	NS
Instructions for dental care during pregnancy			
Yes/no	82/18	86/14	NS

NS = $p \geqslant 0.05$.
*$p<0.05$.

Oral hygiene habits

Almost two-thirds (64%) of the women brushed more than once a day, and almost all (94%) at least once a day. Other oral hygiene aids were used by 57%, most often dental floss (23%), mouthwash (10%), and miswak (10%) (Table 2). Kuwaiti women reported brushing more than once a day more often than the non-Kuwaitis (71% *versus* 51%; $p<0.001$; Fig. 1). The women with higher education (university or professional college) clearly brushed more frequently than the others ($p<0.001$); younger women slightly more often than the older ones; housewives less often than working women ($p=0.014$); those who had visited a dentist during the last 6 months more often ($p=0.003$); and those women who had received toothbrushing instructions from a dentist more often ($p=0.002$). The number of children was not associated with toothbrushing. Those women who brushed more than once a day reported having dental pain less often than the others ($p=0.026$). Furthermore, the women brushing once a day or less often reported having only slightly more frequently periodontal problems than those brushing more than once a day.

In the logistic regression analysis, the only factors significantly associated with more-than-once-a-day brushing were: Kuwaiti nationality (OR 2.06, 95% CI 1.39–3.06), receiving toothbrushing instructions from a dentist (OR 1.79, 95% CI 1.23–2.60), and no current dental pain (OR 1.54, 95% CI 1.07–2.22) (Table 3).

Dental visits

About half of the women (52%) had visited a dentist during their pregnancy (Fig. 2). Those women who were expecting their first baby visited a dentist during the pregnancy slightly more often than the others (57% *versus* 50%), housewives less often than those having a job outside home (48% *versus* 54%). However, these differences were not statistically significant. The clear difference was found according to nationality: Kuwaiti women visited a dentist obviously more often than non-Kuwaitis (Fig. 2). The main reasons for seeking a dental appointment were ''when treatment was needed'' (50%) and perceived dental pain (30%). Only a few women visited a dentist regularly for teeth cleaning (10%) and for a check-up (7%). Those women who had dental

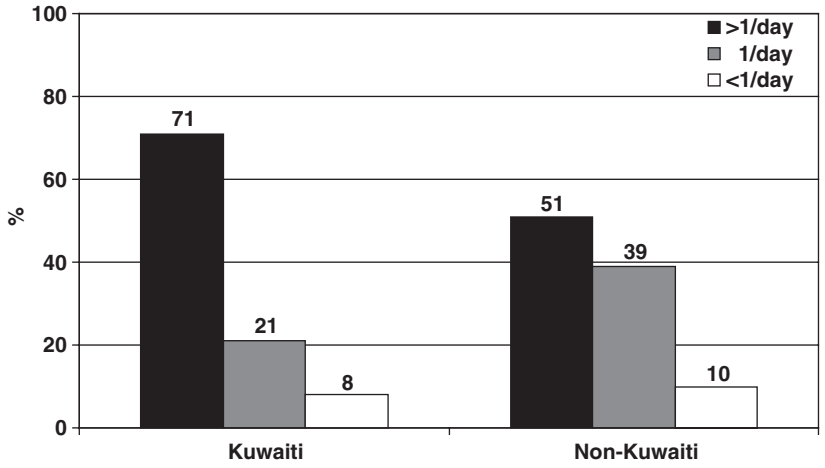

Fig. 1. Toothbrushing frequency according to the nationality of the pregnant women ($p < 0.001$).

Table 3. Percentages and number of pregnant women brushing more than once a day and odds ratios and their 95% confidence intervals for more-than-once-a-day toothbrushing

Variable	% (*n*)	OR	95% CI	*p*-value
Nationality				
Non-Kuwaiti	51 (113)	1.00		
Kuwaiti	71 (270)	2.06	1.39–3.06	<0.001
Education				
Primary/intermediate school	57 (53)	1.00		
Secondary school	60 (105)	1.56	0.91–2.69	
Professional college	70 (86)	1.52	0.82–2.82	
University	67 (142)	1.46	0.81–2.63	NS
Current job				
Housewife/not working	56 (149)	1.00		
Secretary, services person, etc.	67 (87)	1.46	0.90–2.37	
Technician	67 (55)	1.16	0.64–2.11	
Specialist	74 (92)	1.62	0.90–2.92	NS
Last dental visit				
More than 2 years ago	71 (139)	1.00		
Less than 2 but more than 1 year ago	58 (67)	1.30	0.78–2.14	
6–12 months ago	63 (104)	0.94	0.55–1.61	
Less than 6 months ago	62 (66)	1.57	1.00–2.59	NS
Instructions for dental care during pregnancy				
No	61 (307)	1.00		
Yes	74 (74)	1.47	0.88–2.46	NS
Toothbrushing instructions from a dentist any time				
No	58 (212)	1.00		
Yes	72 (167)	1.79	1.23–2.60	0.002**
Current dental pain				
Yes	58 (124)	1.00		
No	67 (259)	1.54	1.07–2.22	0.021*

NS = $p \geq 0.05$.
*$p < 0.05$; **$p < 0.01$.

pain during the pregnancy visited a dentist slightly more often than those who did not (55% *versus* 50%). No difference was found in visits when considering perceived periodontal health.

Received instructions concerning oral health care

Most of the women studied (78%) had received no instructions concerning oral health care during pregnancy. Only a few women (7%) knew that toothbrushing could prevent periodontal diseases. Toothbrushing instructions were received only occasionally from a dentist (38%), most frequently by those who had visited a dentist during the last pregnancy ($p = 0.018$). Dental health, in general, was reported to be significantly better among the women who had received toothbrushing instructions ($p = 0.003$). Receiving instructions did not have an association with perceived periodontal health.

Discussion

No studies have been conducted on oral health, perceived oral health, or oral health behaviour and knowledge among pregnant women in Kuwait. As mothers play a crucial role in transferring and demonstrating health habits to their children (Rayner 1970, Blinkhorn 1981), pregnant women should be a target group for oral health education, especially in a country such as Kuwait where the population growth is very high, and half of the population consists of children and adolescents (455,376 out of 884,550) (Ministry of Planning 2003).

The most alarming finding of the present study of pregnant women in Kuwait was that the majority had received no instructions on oral health care during their pregnancy. Similar results were found in a German study, where 71% received no information regarding oral hygiene during pregnancy (Gunay et al. 1991). In a UK study, only 25% of the women had received specific advice concerning their teeth and pregnancy, mostly related to gingival and periodontal health (Rogers 1991). In a previous study of Kuwaiti mothers of first-grade schoolchildren, most often, the dental health instructions had been gained from TV or radio, and only one-third reported having received those from a dentist (Petersen et al. 1990). Contradictory findings were reported in a recent study among students at the Health Sciences Centre (HSC), Kuwait University, where 53% of female students reported having received toothbrushing instructions, and 65% of them had received these instructions from a dentist (Al-Hussaini et al. 2003). This was a selected group of persons, however, and as students in the field of health care, they might be more interested about health issues in general and also might discuss oral health care with a dentist more easily.

As many women in this study had never received instructions concerning toothbrushing from a dentist, only very few women knew that periodontal problems could be prevented by toothbrushing. However, those who had received instructions, not necessarily

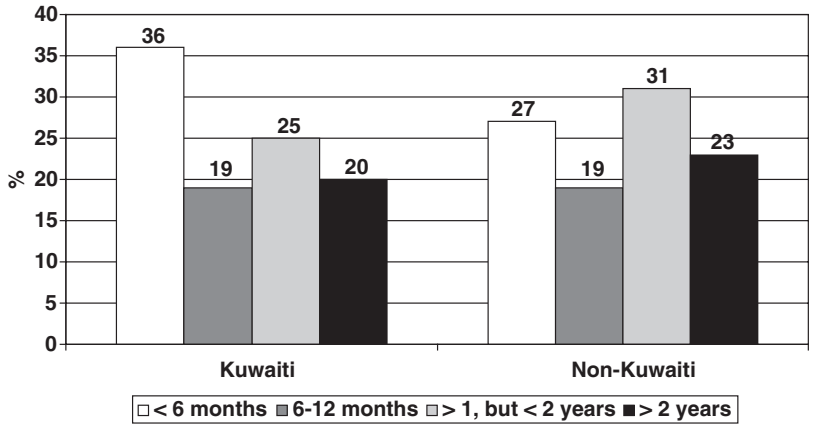

Fig. 2. Time from the last dental visit according to the nationality of the pregnant women ($p = 0.089$).

during this pregnancy but even occasionally, brushed more frequently than the others and felt that their general oral health was much better compared with the others. Fortunately, the majority of the studied population had quite favourable toothbrushing habits (brushing on a daily basis and brushing the recommended number of times per day), which coincides with an earlier study of mothers of first-graders (Petersen et al. 1990). The HSC female students' brushing frequency was even more favourable with 78% brushing more than once a day (Al-Hussaini et al. 2003). Although in some clinical studies from Nigeria, Spain, UK, and Jordan, the association between periodontal problems and low educational/occupational status was obvious (Ogunbodede et al. 1996, Machuca et al. 1999, Moore et al. 2001, Taani et al. 2003), no difference was found between perceived periodontal disease and education or occupation in this study. But the educated did brush more frequently than the less educated, which is in accordance with earlier studies (Davidson et al. 1997, Behbehani & Shah 2002, Christensen et al. 2003a).

Half of the women had visited a dentist during the current pregnancy. A study from Germany showed that 49% of pregnant women visited a dentist during the last year (Gunay et al. 1991), 61% in UK (Rogers 1991), 35–43% in USA (Mangskau & Arrindell 1996, Gaffield et al. 2001), and 90% in Denmark (Christensen et al. 2003b). In a study conducted in 1984–1985 in Kuwait (Behbehani & Shah 2002), the percentage of females between 15 and 59 years who had visited a dentist during the last 12 months was almost the same (49%) as in this study. There were no differences between nationality groups in that earlier study (Behbehani & Shah 2002), whereas in this present study, Kuwaiti women visited a dentist clearly more often than non-Kuwaitis, perhaps because dental care was free of charge for all residents of Kuwait until 2000, after which non-Kuwaitis had to pay for dental visits. However, it is up to the women themselves to seek dental appointments, because a recall system for regular dental care is not organized even for Kuwaitis. According to the previously mentioned study of Kuwaiti mothers of first-graders in 1988, only 37% had visited a dentist within the last 12 months (Petersen et al. 1990). Among the female students at the HSC, the proportion was 44%, most of the students being Kuwaitis (Al-Hussaini et al. 2003). Thus, the proportion of women visiting a dentist among different adult groups has remained about the same since the 1980s.

A significant proportion of the women experienced dental pain during the last 6 months, and every third claimed to have periodontal problems currently, but the prevalence of periodontal problems could actually have been higher because many women who were expecting their first baby did not even have a clue about what periodontal problems mean. However, self-reported periodontal status was not confirmed by clinical or X-ray examination or checked from dental files, which is a limitation of this study. Another limitation of this study design was that the information on the pre-term births was not collected after the delivery. However, an earlier large study ($n = 36{,}483$) by Alshimmiri et al. (2003) in the same maternity hospital confirmed the prevalence of pre-term births to be low (2.7%). If 18% of these births could be explained by the periodontal status of the mother, as suggested by Offenbacher et al. (1996), only three pre-term births in this study sample could be explained by this reason.

Perceived periodontal problems or perceived dental pain did not make a difference as to whether or not the mother scheduled an appointment with a dentist. In a study in the USA (Mangskau & Arrindell 1996), one-half of those women who had some dental problems during pregnancy did not receive dental care, while in Germany, 84% reported having dental care if problems appeared (Gunay et al. 1991). Only very rarely did they seek an appointment for teeth cleaning or a check-up, as was also the case among the adult population in Kuwait (Behbehani & Shah 2002), among the students at the HSC (Al-Hussaini et al. 2003), and among mothers of first-grade schoolchildren (Petersen et al. 1990). Similar results were also obtained from a study among pregnant women in the USA (Mangskau & Arrindell 1996). In the UK, 39% did not visit a dentist during pregnancy, even though dental care is free of charge for pregnant women (Rogers 1991); reasons for not seeing a dentist were the feeling that it was not necessary, fear, or not liking dentists. In the USA, dental care is not largely government subsidized and women with lower incomes were significantly less likely to seek dental care than women with higher incomes (Gaffield et al. 2001). This finding is in accordance with our study's findings regarding dental office attendance among non-Kuwaiti women, who have to pay some minor fees for their dental care. Regardless of the cost, no recall system is in place for either Kuwaitis or expatriates; special efforts should therefore be made to encourage pregnant women to see a dentist at least once during their pregnancy and to educate them about oral health care.

Conclusions

A large proportion of the pregnant women in Kuwait in this study reported oral health problems; yet, half of the women had not visited a dentist during their pregnancy and most had not received instructions concerning oral

health care. Efforts should be made to educate pregnant women in oral health, especially preventive oral self-care.

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