

Oral Health Problems among Pregnant Saudi Arabian Women: A Self-report Survey

Anwar E. Ahmed¹, Rand M. AlBlaihed², Alhanouf N. Albalawi², Asmaa Alshehri³

¹Department of Epidemiology and Biostatistics, College of Public Health and Health Informatics, King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia. ²Department of Restorative Dentistry, Riyadh Elm University, Riyadh, Saudi Arabia. ³Department of Pediatric Dentistry, College of Dentistry, King Khalid University, Abha, Saudi Arabia

ABSTRACT

Objective: There are limited data on the prevalence of oral health problems in pregnant Saudi Arabian women; therefore, the aim of this study was to estimate the prevalence of their oral health problems and related factors. **Materials and Methods:** A self-administered survey was conducted between August 14 and August 31, 2016, on 438 pregnant women at the Ministry of National Guard Health Affairs Primary Health Care Centers, Riyadh. A standardized and reliable questionnaire was used to collect data. We collected data on sociodemographic data, lifestyles, and use of dental services during pregnancy. The main outcomes were oral health problems including self-reported dry mouth, gingival bleeding, dental pain, and dental caries. A logistic regression model was used to identify factors associated with each of the oral health problems. **Results:** Of the sample, 56.7% reported dry mouth, 55.8% gingival bleeding, 35.3% dental pain, and 35% dental caries. Women with low-income sleep deprivation, irregular eating patterns, and those who did receive dental services during pregnancy were most likely to have dental pain. Infrequent consumption of fruits and vegetables, vomiting, and having high stress increased the odds of dry mouth. The risk of gingival bleeding was high in women in the second trimester and those with gestational diabetes. **Conclusion:** We noted a high prevalence of oral health problems among pregnant Saudi women. Income, sleep deprivation, dental care utilization, and irregular eating patterns are factors that could impact perception of oral health conditions of pregnant women. Studies are needed to investigate the best approach to promote and maintain healthy lifestyles in pregnant women. This may help in developing related health policies or programs to promote oral health in this population.

Key words: Dental care, dental caries, dental pain, dry mouth, gingival bleeding, pregnant women

INTRODUCTION

Women's health is greatly influenced by pregnancy, as it is associated with complex psychological, behavioral, and natural hormonal changes.^[1] A 2012 study in Brazil revealed that many women are at high risk of developing oral diseases during pregnancy.^[2] The risk of oral health problems in pregnant women could differ by geographic regions, as is shown in a 4-year study in the eastern USA, where pregnant women from West Virginia were at higher risk of poor oral health, compared to Pittsburgh.^[3]

A high prevalence of dental caries was reported in pregnant women in India (62.7%^[4] and 87%^[5]) and Thailand 74%.^[6] The risk of dental caries was found to be 3 times higher in pregnant women than in non-pregnant women.^[6] This could be attributed to the change of diet and decreased salivary flow. The prevalence of periodontal disease was found to be high among pregnant women in Brazil 47%^[2] and India (74%^[7] and 95%^[4]), while a study in Hungary reported a high frequency of gingival bleeding, 37.8%.^[8] Another study indicated that 54.9% of pregnant women in South Brazil reported dental pain during the course of pregnancy.^[9]

Address for correspondence:

Anwar E. Ahmed, College of Public Health and Health Informatics, King Saud bin Abdulaziz University for Health Sciences, MC 2350, P.O. Box 22490 Riyadh, 11426, King Saudi Arabia. E-mail: ahmeda5@vcu.edu

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Oral health problems among pregnant women were found to be associated with sociodemographic factors. A study from Brazil reported that periodontal disease was associated with higher gestational age, maternal age, income level, and obesity.^[2] A study from India reported that maternal age was a risk factor for periodontal disease.^[5] Furthermore, age, plaque index, and number of pregnancies were positively related to periodontal disease in Hungary.^[8] A study in Maryland, USA, revealed that pregnant women with low income were least likely to have had dental services than pregnant women with high income.^[10]

Although a substantial percentage of pregnant women in India reported dental pain, periodontal problems, and caries, the rate for non-attendance of dental services among pregnant women was high.^[11] An Australian study reported that dental attention was needed by 86% of the pregnant women,^[12] and while a California study reported that 65% of pregnant women had no dentist visits during their pregnancy, 62% were not receiving any dental care.^[13] A study in Nigeria reported that only 33% of pregnant women had ever attended a dentist. According to the authors, only 7.0% had dental care during their current pregnancy.^[14] Non-attendance for dental care during pregnancy is attributed to various factors such as dental phobias, women feeling it was unnecessary, the misconception of violating fetus safety, and the lack of awareness regarding oral health.^[14-17] In Saudi Arabia, there is an underutilization of dental services by pregnant women.^[18] Access to dental care and treatment is free in public hospitals in Saudi Arabia, but long waiting periods are required to be seen by a dentist, which can be a barrier for pregnant women seeking dental services.

Oral care in this population is an important issue, as research evidence has linked oral health problems with pregnancy outcomes such as premature births and underweight births.^[19-23] Research studies are warranted to investigate the link between lifestyles, dental services utilization, and oral health problems among pregnant women. Such studies are limited in Saudi Arabia. The aim of this study was to assess the associations between (1) sociodemographic factors, (2) lifestyles, and (3) dental services utilization and oral health problems in a sample of pregnant Saudi women.

MATERIALS AND METHODS

A multicenter, cross-sectional study was conducted in three Ministry of National Guard Health Affairs (MNGHA) Primary Health Care Centers: (1) Health Care Specialty Center (Khashm Al-Aan), (2) Comprehensive Specialized Clinic (Um Al-Hammam), and (3) King Abdulaziz Medical City (KAMC), MNGHA, Saudi Arabia. The study participants were pregnant Saudi women who visited the Obstetrics and Gynecology Clinics for a regular medical checkup. The data were collected from August 14 to August 31, 2016. The study

has been approved by the IRB, MNGHA: Research Protocol Number RSS16/003. All the study participants signed an informed consent form.

The questionnaire consisted of questions assessing age, employment status, educational level, number of children, income levels, gestational diabetes, trimester, family support, morning sickness, and vomiting, and whether participant had received dental services during the current pregnancy. Family support was assessed on yes/no, while income was classified into three groups in accordance with the Saudi Ministry of Labor: Low income <5000 SR, equivalently \$1333, 5000–10000 SR, equivalently \$1333–\$2666, and >10000 SR, equivalently \$2666.

We evaluated stress using a translated Arabic version of the perceived stress scale (PSS) - 10 items.^[24] A score of ≥ 20 indicates high stress.^[25] PSS was found to be reliable in our population with Cronbach's alpha of 0.74.

The following lifestyles and behaviors of respondents were assessed on yes/no: Sleep deprivation, infrequent consumption of fruits and vegetables, regular eating patterns, drinking enough water, frequent consumption of sweets, and use of a toothbrush. The study outcomes were assessed on yes/no based on self-reported data on oral health status. We asked women to report whether they experienced oral health problems, namely gingival bleeding, dry mouth, dental caries, or dental pain. These oral health problems were reported in previous studies in various pregnant women populations.^[3-5]

Statistical analysis

The analysis was performed using the Statistical Package for the Social Sciences V 23 software (IBM Corporation, Armonk, NY, USA). We performed descriptive statistics on study variables [Table 1]. We reported the prevalence rates of oral health problems and their 95% confidence intervals (CI). Chi-square tests were used to assess the associations between sociodemographic/clinical data, lifestyles, received dental services during pregnancy, and each of the oral health problems [Table 2]. Multiple logistic regression models were employed to identify those factors that were associated with each of the oral health problems. $P \leq 0.05$ was considered statistically significant.

RESULTS

The authors distributed 510 surveys, and 438 pregnant women responded (a response rate of 85.9%). The majority of women were unemployed. The mean age was 30.58 years (\pm SD = 5.4) with an age range between 18 and 45 years. Table 1 represents the sample characteristics.

The majority of women (86%) had at least one oral health problem. The prevalence rates of oral health problems

Table 1: Sample characteristics (n=438)

Characteristics	n (%)
Age	
<37 years	365 (83.7)
≥37 years	71 (16.3)
Education level	
High school or less	194 (44.7)
University or higher	240 (55.3)
Employment status	
Employed	110 (25.3)
Unemployed	325 (74.7)
Income	
<5000 SR	121 (28.5)
5000–10,000 SR	218 (51.3)
>10,000 SR	86 (20.2)
Number of children	
None	89 (20.5)
1–2 child	183 (42.1)
3 child or more	163 (37.5)
Pregnancy trimester	
1 st trimester	43 (10.0)
2 nd trimester	136 (31.7)
3 rd trimester	250 (58.3)
Gestational diabetes	83 (19.3)
Sleep deprivation	170 (39.6)
Regular eating pattern	236 (55.1)
Frequent consumption of fruits and vegetables	237 (54.4)
Frequent consumption of soft drinks	167 (38.6)
Drinking enough water	329 (76.0)
Frequent consumption of sweets	186 (43.0)
Uses toothbrush	378 (86.7)
Family support	366 (84.5)
Dentist visit during your pregnancy	121 (28.0)
Morning sickness	259 (60.4)
Vomiting	236 (55.0)
Stress	145 (33.1)
Dental caries	151 (35.0)
Dental pain	153 (35.3)
Gingival bleeding	242 (55.8)
Dry mouth	242 (56.7)

<5000 SR, equivalently \$1333, 5000–10,000 SR, equivalently \$1333–\$2666, and >10,000 SR, equivalently \$2666

were reported as follows: 242/427 (56.7%) had dry mouth (95% CI = 51.8–61.4%), 242/434 (55.8%) had gingival bleeding (95% CI = 50.9–60.5%), 153/433 (35.3%) had dental pain (95% CI = 30.8–40.0%), and 151/432 (35.0%)

had dental caries (95% CI = 30.5–39.7%). Among the study participants, only 121/432 (28%) had received dental care or visited a dentist during pregnancy (95% CI = 23.8–32.5%).

Table 2 illustrates the bivariate association between pregnant women's characteristics and four different oral health problems (dental caries, dental pain, gingival bleeding, and dry mouth). The prevalence of dental caries was higher in pregnant women with three or more children (22.5% "none," 35.9% "1–2 children," and 40.9% ≥ "3 children," $P = 0.013$), those with irregular eating patterns (42.3% vs. 28.2%, $P = 0.002$), infrequent consumption of fruits and vegetables (39.8% vs. 30.3%, $P = 0.040$), frequent consumption of soft drinks (43.6% vs. 29.4%, $P = 0.003$), not drinking enough water (43.7% vs. 32.3%, $P = 0.035$), received dental services during pregnancy (48.8% vs. 29.3%, $P = 0.001$), morning sickness (38.8% vs. 28%, $P = 0.022$), vomiting (39.4% vs. 29%, $P = 0.025$), and high perceived stress (43% vs. 31%, $P = 0.015$).

The prevalence of dental pain was higher in pregnant women of young age (age ≤ 37 years) (37.4% vs. 24.3%, $P = 0.036$), low income (45% vs. 33.3%, $P = 0.006$), having one or more children (28.4% "none," 42.1% "1–2 children," and 31.4% ≥ "3 children," $P = 0.038$), sleep deprivation (46.5% vs. 28.6%, $P = 0.001$), irregular eating patterns (44.2% vs. 28.6%, $P = 0.001$), infrequent consumption of fruits and vegetables (41.4% vs. 30%, $P = 0.014$), frequent consumption of sweets (42.9% vs. 30.3%, $P = 0.007$), use toothbrush (37.4% vs. 22.4%, $P = 0.026$), received dental services during pregnancy (52.9% vs. 28.3%, $P = 0.001$), morning sickness (39.5% vs. 29.8%, $P = 0.040$), vomiting (40.8% vs. 28.3%, $P = 0.007$), and high perceived stress (43.1% vs. 31.1%, $P = 0.014$).

The prevalence of gingival bleeding was higher in young pregnant women (age ≤ 37 years) (57.9% vs. 45.1%, $P = 0.036$), gestational diabetes (66.3% vs. 53.6%, $P = 0.038$), frequent consumption of soft drinks (62% vs. 51%, $P = 0.024$), frequent consumption of sweets (62.8% vs. 50.4%, $P = 0.010$), use of a toothbrush (58% vs. 41.4%, $P = 0.018$), received dental services during pregnancy (63% vs. 52.4%, $P = 0.048$), morning sickness (59.6% vs. 49.4%, $P = 0.038$), and vomiting (61.2% vs. 49.7%, $P = 0.018$).

The prevalence of dry mouth was higher in pregnant women with sleep deprivation (65.1% vs. 51.2%, $P = 0.005$), irregular eating patterns (63.3% vs. 51.5%, $P = 0.015$), infrequent consumption of fruits and vegetables (48.9% vs. 65.8%, $P = 0.001$), no family support (68.7% vs. 54.6%, $P = 0.033$), morning sickness (63.8% vs. 45.5%, $P = 0.001$), vomiting (68.4% vs. 43.2%, $P = 0.001$), and high perceived stress (69.9% vs. 49.8%, $P = 0.001$).

Table 3 demonstrates the multiple factors that were associated with each oral health problem. After controlling

Table 2: Oral health problems and its association with sociodemographic and clinical variables

Characteristics	Dental caries		Dental pain		Gingival bleeding		Dry mouth	
	<i>n</i> (%)	<i>P</i>	<i>n</i> (%)	<i>P</i>	<i>n</i> (%)	<i>P</i>	<i>n</i> (%)	<i>P</i>
Age								
<37 years	131 (36.3)	0.244	135 (37.4)	0.036*	209 (57.9)	0.036*	199 (55.9)	0.324
≥37 years	20 (29.0)		17 (24.3)		32 (45.1)		43 (62.3)	
Education level								
High school or less	69 (36.5)	0.636	68 (35.8)	0.890	109 (57.1)	0.703	110 (58.2)	0.585
University or higher	82 (34.3)		84 (35.1)		132 (55.2)		130 (55.6)	
Employment status								
Employed	30 (27.5)	0.067	32 (29.6)	0.151	62 (56.9)	0.729	64 (60.4)	0.396
Unemployed	119 (37.2)		120 (37.3)		177 (55.0)		177 (55.7)	
Income								
<5000 SR	46 (38.3)	0.152	54 (45.0)	0.006*	67 (56.3)	0.759	75 (63.0)	0.131
5000–10,000 SR	77 (36.0)		72 (33.3)		116 (53.7)		112 (52.3)	
>10,000 SR	22 (25.9)		20 (23.8)		50 (58.1)		49 (60.5)	
Number of children								
None	20 (22.5)	0.013*	25 (28.4)	0.038*	46 (52.9)	0.804	48 (53.9)	0.829
1–2 children	65 (35.9)		77 (42.1)		104 (57.1)		103 (57.9)	
≥3 children	65 (40.9)		50 (31.4)		90 (55.6)		89 (56.7)	
Pregnancy trimester								
1 st trimester	17 (39.5)	0.415	16 (39.0)	0.233	24 (55.8)	0.293	21 (48.8)	0.500
2 nd trimester	41 (30.8)		40 (29.4)		68 (50.4)		76 (57.6)	
3 rd trimester	91 (36.8)		93 (37.7)		145 (58.7)		142 (58.4)	
Gestational diabetes								
Yes	32 (40.0)	0.245	33 (40.2)	0.288	55 (66.3)	0.038*	50 (64.1)	0.149
No	114 (33.1)		117 (34.0)		184 (53.6)		188 (55.1)	
Sleep deprivation								
Yes	57 (33.9)	0.693	79 (46.5)	0.001*	95 (56.2)	0.908	108 (65.1)	0.005*
No	92 (35.8)		73 (28.6)		143 (55.6)		130 (51.2)	
Regular eating pattern								
Yes	66 (28.2)	0.002*	67 (28.6)	0.001*	124 (53.0)	0.148	119 (51.5)	0.015*
No	80 (42.3)		84 (44.2)		114 (60.0)		119 (63.3)	
Frequent consumption of fruits and vegetables								
Yes	71 (30.3)	0.040*	70 (30.0)	0.014*	128 (54.5)	0.547	112 (48.9)	0.001*
No	78 (39.8)		82 (41.4)		113 (57.4)		129 (65.8)	
Frequent consumption of soft drinks								
Yes	72 (43.6)	0.003*	66 (40.2)	0.090	103 (62.0)	0.024*	98 (60.5)	0.267
No	77 (29.4)		85 (32.2)		134 (51.0)		143 (55.0)	
Drinking enough water								
Yes	105 (32.3)	0.035*	114 (35.1)	0.737	181 (55.5)	0.754	181 (56.4)	0.854
No	45 (43.7)		38 (36.9)		59 (57.3)		58 (57.4)	

(Contd...)

Table 2: (Continued)

Characteristics	Dental caries		Dental pain		Gingival bleeding		Dry mouth	
	n (%)	P	n (%)	P	n (%)	P	n (%)	P
Frequent consumption of sweets								
Yes	76 (40.9)	0.025*	79 (42.9)	0.007*	115 (62.8)	0.010*	102 (55.4)	0.698
No	74 (30.5)		74 (30.3)		124 (50.4)		137 (57.3)	
Uses toothbrush								
Yes	125 (33.5)	0.093	140 (37.4)	0.026*	217 (58.0)	0.018*	212 (57.6)	0.400
No	26 (44.8)		13 (22.4)		24 (41.4)		30 (51.7)	
Family support								
Yes	126 (34.8)	0.693	127 (35.1)	0.559	200 (55.1)	0.407	195 (54.6)	0.033*
No	25 (37.3)		26 (38.8)		40 (60.6)		46 (68.7)	
Received dental care during pregnancy								
Yes	59 (48.8)	0.001*	64 (52.9)	0.001*	75 (63.0)	0.048*	62 (53.0)	0.336
No	90 (29.3)		87 (28.3)		162 (52.4)		178 (58.2)	
Morning sickness								
Yes	100 (38.8)	0.022*	102 (39.5)	0.040*	152 (59.6)	0.038*	162 (63.8)	0.001*
No	47 (28.0)		50 (29.8)		84 (49.4)		76 (45.5)	
Vomiting								
Yes	91 (39.4)	0.025*	95 (40.8)	0.007*	142 (61.2)	0.018*	156 (68.4)	0.001*
No	56 (29.0)		54 (28.3)		96 (49.7)		82 (43.2)	
Stress								
High	61 (43.0)	0.015*	62 (43.1)	0.014*	86 (60.1)	0.202	100 (69.9)	0.001*
Low	89 (31.0)		89 (31.1)		154 (53.7)		140 (49.8)	

*Significant at alpha=0.05, <5000 SR, equivalently \$1333, 5000–10,000 SR, equivalently \$1333–\$2666, and >10,000 SR, equivalently \$2666

for confounders, pregnant women with three or more children (adjusted odds ratio (aOR) = 3.7; 95% CI: 1.7–7.90, $P = 0.001$) and those who had received dental care during pregnancy (aOR = 2.3; 95% CI: 1.31–3.90, $P = 0.003$) had higher odds of dental caries. Similarly, pregnant women with low income (aOR = 4.2; 95% CI: 1.83–9.55, $P = 0.001$), income between 5000 and 10,000 Saudi Riyals (aOR = 2.2; 95% CI: 1.07–4.47, $P = 0.031$), sleep deprivation (aOR = 1.7; 95% CI: 1.01–3.01, $P = 0.045$), use of a toothbrush (aOR = 2.5; 95% CI: 1.09–5.86, $P = 0.031$), and those who received dental care during pregnancy (aOR = 3.3; 95% CI: 1.89–5.83, $P = 0.001$) had higher odds of dental pain, while regular eating pattern (aOR = 0.6; 95% CI: 0.32–0.99, $P = 0.050$) had lower odds of dental pain. Pregnant women with gestational diabetes (aOR = 2.1; 95% CI: 1.12–4.03, $P = 0.020$) and those who used a toothbrush (aOR = 2.4; 95% CI: 1.12–4.92, $P = 0.024$) had higher odds of gingival bleeding, while women with the second trimester (aOR = 0.5; 95% CI: 0.33–0.92, $P = 0.022$) had lower odds of gingival bleeding. Pregnant women with frequent consumption of fruits and vegetables had lower odds of dry

mouth (aOR = 0.6; 95% CI: 0.34–0.99, $P = 0.044$), while vomiting (aOR = 2.2; 95% CI: 1.32–3.82, $P = 0.003$) and stress (aOR = 1.7; 95% CI: 1.01–2.92, $P = 0.045$) had higher odds of dry mouth.

DISCUSSION

In this study, we used self-reported data to assess the prevalence of oral health problems such as dental caries, dental pain, gingival bleeding, and dry mouth in a sample of pregnant Saudi women. Self-reported data were found to be a reliable and valid method for assessing the prevalence of oral problems in pregnant women.^[26] This may promote self-care practices and prevent oral health problems.^[27]

The most common oral health problems in our sample were dry mouth and gingival bleeding. We noted that 84% of the pregnant women studied were reported to have at least one oral health problem. This finding is within the range that was established by previous international studies: 47%,^[2]

Table 3: Independent risk factors of oral health problems

Factors	Dental caries			Dental pain			Gingival bleeding			Dry mouth		
	P	aOR	95% C.I. for OR	P	aOR	95% C.I. for OR	P	aOR	95% C.I. for OR	P	aOR	95% C.I. for OR
Age <37 years	0.145	1.8	0.82 3.89	0.318	1.5	0.67 3.45	0.235	1.5	0.76 3.06	0.085	0.5	0.25 1.09
High school or less	0.792	1.1	0.61 1.91	0.553	1.2	0.66 2.15	0.244	1.4	0.80 2.34	0.797	1.1	0.62 1.85
Employed	0.202	0.7	0.34 1.26	0.987	1.0	0.50 1.97	0.549	1.2	0.66 2.19	0.971	1.0	0.53 1.84
Income <5000 SR	0.406	1.4	0.64 3.06	0.001*	4.2	1.83 9.55	0.862	1.1	0.52 2.17	0.870	0.9	0.44 1.98
5000–10,000 SR	0.214	1.5	0.78 3.01	0.031*	2.2	1.07 4.47	0.889	1.0	0.53 1.73	0.475	0.8	0.43 1.49
1–2 children	0.125	1.7	0.86 3.48	0.056	2.0	0.98 3.88	0.677	1.1	0.62 2.09	0.598	1.2	0.63 2.21
≥3 children	0.001*	3.7	1.70 7.90	0.136	1.8	0.83 3.88	0.872	1.1	0.54 2.07	0.695	0.9	0.43 1.74
1 st trimester	0.597	1.3	0.55 2.87	0.395	1.4	0.62 3.36	0.642	0.8	0.38 1.81	0.327	0.7	0.30 1.50
2 nd trimester	0.266	0.7	0.41 1.27	0.122	0.6	0.35 1.13	0.022*	0.5	0.33 0.92	0.833	0.9	0.55 1.61
Gestational diabetes	0.706	1.1	0.59 2.16	0.220	1.5	0.78 2.99	0.020*	2.1	1.12 4.03	0.094	1.7	0.91 3.36
Sleep deprivation	0.480	0.8	0.48 1.41	0.045*	1.7	1.01 3.01	0.205	0.7	0.43 1.20	0.631	1.1	0.67 1.92
Regular eating pattern	0.172	0.7	0.39 1.19	0.050*	0.6	0.32 0.99	0.111	0.7	0.38 1.10	0.439	0.8	0.47 1.39
Frequent consumption of fruits and vegetables	0.314	0.8	0.43 1.31	0.117	0.6	0.36 1.12	0.297	1.3	0.78 2.22	0.044*	0.6	0.34 0.99
Frequent consumption of soft drinks	0.220	1.4	0.82 2.38	0.381	0.8	0.45 1.36	0.973	1.0	0.61 1.66	0.499	1.2	0.71 2.02
Drinking enough water	0.128	0.6	0.35 1.14	0.959	1.0	0.54 1.90	0.388	0.8	0.44 1.38	0.523	1.2	0.66 2.25
Frequent consumption of sweet	0.139	1.5	0.88 2.47	0.080	1.6	0.94 2.74	0.057	1.6	0.99 2.61	0.626	1.1	0.69 1.87
Uses toothbrush	0.378	0.7	0.33 1.52	0.031*	2.5	1.09 5.86	0.024*	2.4	1.12 4.92	0.419	1.4	0.64 2.88
Family support	0.278	1.5	0.72 3.15	0.989	1.0	0.49 2.06	0.074	0.5	0.26 1.06	0.124	0.6	0.27 1.17
Received dental care during pregnancy	0.003*	2.3	1.31 3.90	0.001*	3.3	1.89 5.83	0.074	1.6	0.95 2.72	0.134	0.7	0.39 1.13
Morning sickness	0.198	1.5	0.82 2.59	0.549	1.2	0.67 2.12	0.410	1.2	0.74 2.10	0.336	1.3	0.76 2.24
Vomiting	0.754	1.1	0.63 1.91	0.180	1.5	0.84 2.61	0.159	1.4	0.87 2.42	0.003*	2.2	1.32 3.82
Stress	0.224	1.4	0.82 2.33	0.382	1.3	0.74 2.19	0.385	1.3	0.76 2.07	0.045*	1.7	1.01 2.92

*Significant at alpha=0.05. aOR: Adjusted odds ratio. <5000 SR, equivalently \$1333, 5000–10,000 SR, equivalently \$1333–\$2666, and >10,000 SR, equivalently \$2666. CI: Confidential interval

84.2%,^[8] 86.2%,^[6] 87%,^[5] and 95%.^[4] The high prevalence of oral health problems in our sample could be due to women's lifestyles and behaviors, as a large portion of the sample had irregular eating patterns, frequent consumption of sugar content, frequent consumption of soft drinks, and infrequent consumption of fruits and vegetables. These findings are in agreement with several studies which reported that lifestyles and food choices are the common cause of oral health problems.^[28-30]

Fewer pregnant women tended to receive the necessary dental care to maintain oral health. In our study, 28% of the sample had received dental care or visited a dentist during pregnancy. Our finding was higher than what was reported in a sample of Nigerian pregnant women,^[14] where 7.0% of pregnant Nigerian women had received dental care during their pregnancy. The difference between the two studies could be due to the sampling techniques, as in their study, 62% of the women had never visited a dentist.

In our study, receiving dental care during pregnancy was associated with dental caries and dental pain. This could be due to the presence of dental caries/pain in women who received dental care and thus were attended for dental treatment.^[12] The multivariate analysis revealed that low income was associated with dental pain. This finding is in agreement with other studies in pregnant populations, where they reported low-income subjects as having a high risk of oral health problems.^[2,18,31]

This study described the prevalence rates of dental caries, dental pain, gingival bleeding, and dry mouth in a sample of pregnant Saudi women who attended Obstetrics and Gynecology at KAMC, Saudi Arabia. While these rates were found to be high, the limitations of this conclusion should be read with caution, as the results may not be generalized to pregnant Saudi women who attending other clinical centers. Further, while we have assessed dental care during the pregnancy, we did not assess the reasons for lack of dental care.

CONCLUSION

We noted a high prevalence of self-reported oral health problems among pregnant Saudi women. Gingival bleeding and dry mouth were the most common occurrence among pregnant Saudi women. Income, sleep deprivation, dental care utilization, and irregular eating patterns are factors that could impact perception of oral health conditions of pregnant women. Studies are needed to investigate the best approach to promote and maintain healthy lifestyles in pregnant women. This may help in developing related health policies or programs to promote oral health in this population.

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