

PERCEIVED ORAL HEALTH NEEDS AND DENTAL CARE UTILIZATION AMONG PREGNANT WOMEN ATTENDING FAMILY HEALTH FACILITIES IN ALEXANDRIA

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ABSTRACT

INTRODUCTION: Pregnant women are usually subjected to various hormonal and vascular changes that make them vulnerable to poor oral health. Scientific evidence has shown an association between periodontal health during pregnancy and adverse outcomes of labor such as low birth weight (LBW) and premature births. Hence, assessment of the self-perceived oral health status and needs along with the pattern of utilization of dental care during pregnancy is important.

OBJECTIVES: The aim was to assess the self-perceived oral health status and needs along with rate of dental care service utilization among pregnant women attending the family health facilities, in Alexandria Governorate.

MATERIALS AND METHODS: a cross-sectional analytical survey using a structured interview questionnaire was conducted on a simple random sample of 381 pregnant women attending family health care facilities in Alexandria governorate. Data was collected by a single, trained, examiner who interviewed the participants. A total of 3 facilities in each district were visited, till the required sample size was obtained (a total of 48 women from each district). The collected data were analyzed using IBM SPSS software package version 20.0.

RESULTS: More than half of the participants (66.93%) perceived their oral health status as excellent. Individual self-perception was affected by factors mainly; age, health status and number of children. The rate of dental service utilization was 56.96%, with the main influencing factors; age, pregnancy trimester, overall health status and prenatal care payment system, knowledge score and behavior score.

CONCLUSIONS: Pregnant women lack sufficient knowledge about the importance of oral health and how it may affect their babies. Rate of dental service utilization is influenced by the lack of perceived need.

KEYWORDS: Pregnancy, dental service utilization, perceived oral health.

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INTRODUCTION

Oral health during pregnancy has actually been identified as an important issue for both mother and baby. Pregnant women are subjected to natural hormonal, immunological, and vascular changes throughout their bodies which makes them vulnerable and susceptible to poor oral health (1, 2). The most frequently reported oral changes in the literature are pyogenic granuloma, gingivitis, and periodontitis. In addition, a decrease in salivary pH is occasionally observed among pregnant women, and may thus lead to an increased incidence of dental caries (3). Various studies showed an association between gum disease (gingivitis and periodontitis) and adverse pregnancy outcomes such as low birth weight (LBW) and premature births (4, 5). The pattern of dental service utilization is a worldwide public health challenge that has been found to be a key predictor of oral health outcomes (6). Determinants of dental service utilization, among adults, have been identified around the world. They are mostly related to, sex, race, ethnicity, cost of dental treatment, health insurance, dental anxiety, hygiene habits, oral health education, oral health beliefs, self-reported oral health problems, and need for oral health (6, 7). Furthermore, disparities in dental health service utilization among pregnant women leading to maternal dental disease and adverse perinatal health outcomes were also documented (8, 9). Reasons behind the low use of

dental services, as well as barriers toward seeking regular dental care during pregnancy have to be thoroughly investigated in order to generate the appropriate hypothesis that would eventually help in overcoming pregnancy adverse effects, in the future. The level of dental awareness of a pregnant woman affects the sanitary condition of her own teeth and the health of the child to be born. Several studies proved serious disparities in maternal and child oral health outcomes among people of vulnerable and disadvantaged populations where knowledge and awareness were minimal. Baseline data that would help the development of programs and policies for improving women's oral health, and thereby the health of their babies justifies the need for research on health awareness and promotion of healthy behaviors among pregnant women (10-12).

The null hypothesis of the present study is that self-perception towards oral health status and needs have no effect on their dental service utilization.

MATERIALS AND METHODS

A cross-sectional analytical study was conducted on a sample of 381 pregnant women attending family health care facilities for their routine pregnancy follow-up at obstetrics

and gynecology outpatient clinics. The total number of these facilities are 136, distributed among the eight health districts of Alexandria governorate, namely: Al-Montazah, East, Middle, West, El-Gomrok, El-Agamy, El-Amereya and Borg El-Arab. Using equal allocation random sampling method, a total of 3 facilities in each district were surveyed, (a total of 48 women from each district), till the required sample size was obtained.

Data were collected by a single trained examiner using a structured interview questionnaire to assess their self-perceived oral health status and needs, knowledge and behavior, as well as pattern of use of dental service during pregnancy. Interviews were conducted in the waiting areas while participants await their turns to be examined by the gynecologist. Patients consents were obtained verbally after explaining the aim of the study and confirming confidentiality of their reported information. Questionnaire comprised of 5 major sections and constructed based on literature reviews (7, 13, 14). Section 1: enquired about demographics and personal data including; age, education, occupation, pregnancy trimester and medical history. Section 2: investigated the self-perception of pregnant women towards oral health needs; how do they perceive their own oral health status, oral problems and how do they react towards such problems. Section 3: enquired about the participants' awareness towards their oral health status, importance of oral health and its effect on general health, safety of performing any dental treatment during pregnancy. Section 4: assessed the individual oral hygiene behavior and lifestyle during pregnancy including how they clean their teeth, as well as the frequency of tooth brushing, and the dietary and smoking habits. Section 5: assessed dental care utilization before and during pregnancy including if they have visited the dentist any time before and during their pregnancy and if so, what was the type of treatment they had received.

Statistical Analysis

The data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp) (15). Then, a bivariate analysis using Mont Carlo Exact Probability test (MCP), to detect possible associations was done at the 5% significance level (16).

RESULTS

Demographics and personal data of participants are presented in **table 1**. Around 76.64% were in the age range from (20–30 years), with the majority being between intermediate and high school education (28.8%, 29.66% respectively) and 75.07% were house wives. More than half (53%) were in their second trimester of pregnancy, 39% were in their third trimester, only 6% showed attendance in their first trimester and 2% had stated giving birth to a premature child in previous pregnancies. More than half (54.86%) reported that their prenatal care payment system was the free governmental health care facilities while 40.94% were private economical institutions, whereas only 3.67% covered by governmental health insurance and almost none covered by private insurance (0.52%).

Table (1): Socio-demographic and pregnancy related characteristics of study participants (N=381).

Age	n	%
-18-	44	11.55
-20-	292	76.64
-30-	45	11.81
-40	0	0
Education		
-Illiterate	16	4.20
-Reads and writes	55	14.44
-Intermediate education	107	28.08
-High school education	113	29.66
-University education	90	23.62
Occupation		
-House wife	286	75.07
-Employee	59	15.49
-Worker	35	9.19
-Freelance/private	1	0.26
Pregnancy trimester		
-First trimester	26	6.82
-Second trimester	204	53.54
-Third trimester	151	39.63
Total number of children		
-No children	145	38.06
-One child	101	26.51
-Two children	93	24.41
-Three children	42	11.02
Have you ever given birth to premature baby		
-No	372	97.64
-Yes	9	2.36
Payment system for prenatal care		
-Government health insurance	14	3.67
-Paid by the employer (private insurance)	2	0.52
-Private economical institution	156	40.94
-Free governmental facility	209	54.86
If the answer insurance, Does it include dental care		
-No	14	3.67
-Yes	2	0.52
-Total	16	4.20

Table 2 presents dental service utilization during current pregnancy. Almost half the participants (56.96%) had seen the dentist, where 65.90% sought the service as a compulsory procedure in their prenatal payment system routine, 32.26% felt trouble in their teeth and gums, while only 1.84% went for routine examination which represented the main dental service offered accounting for 43.43%. The other dental services frequently provided were scaling (17.05), tooth filling (8.6%) and extraction (0.46%). On the other hand, 43.04% did not visit the dentist since the beginning of their pregnancy, most of them said they had no dental problems (69.51%), others were afraid to go to the dentist or think it is not safe (22.56%), whereas 6.71% said that no one asked them to get a routine dental checkup.

Rate of dental service utilization during pregnancy in relation to different demographic variables are displayed in **Table 3**. Total utilizers were 217 participants representing 56.96% of the study sample. Participants of age group 20-30 had the highest utilization rate with statistical significance ($p=0.016$). Most of the utilizers were found to be in their third trimester and with no systemic diseases ($p=0.000$, and $p=0.007$, respectively). No significant difference was detected regarding different levels of education and occupation as well as number of children ($p=0.523$, $p=0.250$, $p=0.967$, respectively). Free governmental facility as a prenatal care payment system

was found to be the most common amongst the participants with statistically significant difference in comparison to other payment systems (p=0.009).

Table (2): Socio-demographic and pregnancy related characteristics of study participants (N=381).

Have you visited a dentist during the current pregnancy	n	%
- No	164	43.04
- Yes	217	56.96
If YES , When was your last visit		
- Less than one month	123	56.68
- One to three months	92	42.39
- Three to six months	1	0.46
- From more than six months	1	0.46
What was the reason for the visit		
- Routine examination	4	1.84
- I felt trouble in your teeth or gums	70	32.25
- Compulsory procedure in the routine of the prenatal payment system	143	65.89
What type of service and treatment did you receive		
- Routine examination	94	43.31
- Filling	19	8.75
- Extraction	1	0.46
- Scaling	37	17.05
- I do not remember	66	30.41
If NO, then why		
- I had no dental problems	114	69.51
- No one asked me to go to the dentist for routine tests	11	6.70
- afraid to go to the dentist, not safe	37	22.56
- Service not available	1	0.46
- The available service is not good	1	0.46

Relationship between individual self-perception of oral health status and dental service utilization presented in **table 4** shows that 63.13% of utilizers had excellent self-perception and were the most frequent, followed by participants with good self- perception (32.26%), whereas minority of attendees were those who had shown fair and poor self- perception of oral health status (2.76% and 1.84%, respectively), showing no statistical significance (p=0.227).

Overall scores of individual self-perception towards oral health status illustrated in (**figure 1**), over half of the participants had excellent self-perception (66.93%), while 28.87% had good self-perception, fair and poor self - perception represented equally (2.100%) only.

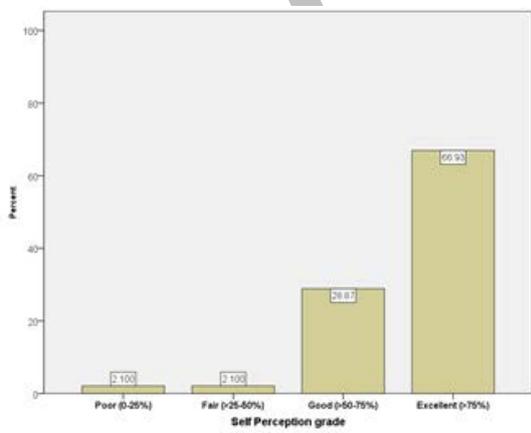


Figure (1): Self-perception level towards oral health.

Table (3a): Socio-demographic and pregnancy related characteristics of study participants (N=381).

	Dental service utilization during pregnancy		Total (n)
	No (%)	Yes (%)	
Age			
18-			
- n	26	18	44
% within dental service utilizers	(59.09%) 15.85%	(40.91%) 8.29%	11.55%
20-			
- n	125	167	292
% within dental service utilizers	(42.81%) 76.22%	(57.19%) 76.96%	76.64%
30-			
- n	13	32	45
% within dental service utilizers	(28.89%) 7.93%	(71.11%) 14.75%	11.81%
Total			
- n	164	217	381
	(43.04%)	(56.96%)	100.00%
Test of significance (p value)	$\chi^2_{(df=2)}=8.306$ $p=0.016^*$		
Education			
Illiterate			
- n (%)	10(6.25)	6(37.50%)	16
% within dental service utilizers	6.10%	2.76%	4.20%
Reads and writes			
- n	24(43.64)	31(56.36)	55
% within dental service utilizers	14.63%	14.29%	14.44%
Intermediate education			
- n	48(44.86)	59(55.14)	107
% within dental service utilizers	29.27%	27.19%	28.08%
High school education			
- n	46(40.71)	67(59.29)	113
% within dental service utilizers	28.05%	30.88%	29.66%
University education			
- n	36(40.00)	54(60.00)	90
% within dental service utilizers	21.95%	24.88%	23.62%
Total			
n	164(43.04)	217(56.96)	381
	(%)	(%)	100.00%
Test of significance (p value)	$\chi^2_{(df=4)}=3.214$ $p=0.523$ NS		
Occupation			
House wife			
- n	117(40.91)	169(59.09)	286
% within dental service utilizers	71.34%	77.88%	75.07%
Employee			
- n	27(45.76)	32(54.24)	59
% within dental service utilizers	16.46%	14.75%	15.49%
Worker			
- n	19(54.29)	16(45.71)	35
% within dental service utilizers	11.59%	7.37%	9.19%
Freelance/private			
- n	1(100.00)	0(0.00%)	1
% within dental service utilizers	0.61%	0.00%	0.26%
Total			
- n	164(43.04)	217(56.96)	381
	(%)	(%)	100.00%
Test of significance (p value)	$\chi^2_{(df=3)}=3.837$ $p_{(MC)}=0.250$ NS		

Table (3b): Socio-demographic and pregnancy related characteristics of study participants (N=381).

	Dental service utilization during pregnancy		Total (n)
	No (%)	Yes (%)	
Pregnancy trimester			
First trimester			
- n	20(76.92%)	6(23.08%)	26
- % within dental service utilizers	12.20%	2.76%	6.82%
Second trimester			
- n	97(47.55%)	107(52.45%)	204
- % within dental service utilizers	59.15%	49.31%	53.54%
Third trimester			
- n	47(31.13%)	104(68.87%)	151
- % within dental service utilizers	28.66%	47.93%	39.63%
Total			
- n	164(43.04%)	217(56.96%)	381
- %			100.00%
Test of significance (p value)	$\chi^2_{(df=2)}=22.610$ $p=0.000^*$		
Health status : Present diseases			
No			
- n	148(45.96%)	174(54.04%)	322
- % within dental service utilizers	90.24%	80.18%	84.51%
Yes			
- n	16(27.12%)	43(72.88%)	59
- % within dental service utilizers	9.76%	19.82%	15.49%
Total			
- n	164(43.04%)	217(56.96%)	381
- %			100.00%
Test of significance (p value)	$\chi^2_{(df=1)}=7.222$ $p=0.007^*$		
Number of children			
No children			
- n	63(43.45%)	82(56.55%)	145
- % within dental service utilizers	38.41%	37.79%	38.06%
One child			
- n	45(44.55%)	56(55.45%)	101
- % within dental service utilizers	27.44%	25.81%	26.51%
Two children			
- n	39(41.94%)	54(58.06%)	93
- % within dental service utilizers	23.78%	24.88%	24.41%
Three children			
- n	17(40.48%)	25(59.52%)	42
- % within dental service utilizers	10.37%	11.52%	11.02%
Total			
- n	164(43.04%)	217(56.96%)	381
- %			100.00%
Test of significance (p value)	$\chi^2_{(df=3)}=0.263$ $p=0.967$ NS		

Table (3c): Demographics in relation to dental service utilization during pregnancy.

	Dental service utilization during pregnancy		Total (n)
	No (%)	Yes (%)	
Payment system for prenatal care			
Government health insurance			
- n	11(78.57%)	3(21.43%)	14
- % within dental service utilizers	6.71%	1.38%	3.67%
Paid by the employer (private insurance)			
- n	2(100.00%)	0(0.00%)	2
- % within dental service utilizers	1.22%	0.00%	0.52%
Special economical installation			
- n	62(39.74%)	94(60.26%)	156
- % within dental service utilizers	37.80%	43.32%	40.94%
Free government facility			
- n	89(42.58%)	120(57.42%)	209
- % within dental service utilizers	54.27%	55.30%	54.86%
Total			
- n	164(43.04%)	217(56.96%)	381
- %			100.00%
Test of significance (p value)	$\chi^2_{(df=3)}=10.565$ $p_{(MC)}=0.009^*$		

Table (4): Socio-demographic and pregnancy related characteristics of study participants (N=381).

	Dental service utilization during pregnancy		Total
	No	Yes	
Self-perception level			
Poor (0-25%)			
n	4(50.00%)	4(50.00%)	8
% within dental service utilizers	2.44%	1.84%	2.10%
Fair (>25-50%)			
n	2(25.00%)	6(75.00%)	8
% within dental service utilizers	1.22%	2.76%	2.10%
Good (>50-75%)			
n	40(36.36%)	70(63.64%)	110
% within dental service utilizers	24.39%	32.26%	28.87%
Excellent (>75%)			
n	118(46.27%)	137(53.73%)	255
% within dental service utilizers	71.95%	63.13%	66.93%
Total			
n	164(43.04%)	217(56.96%)	381
% within Self-perception level			100.00%
Test of significance (p value)	$\chi^2_{(df=3)}=4.308$ $p_{(MC)}=0.227$ NS		

DISCUSSION

The level of dental awareness and self- perception of her health needs, as well as the pattern of dental service utilization of a pregnant woman, affect her own teeth and those of the child to be born. Baseline data that would help improving women’s oral health, and thereby the health of their babies, justifies the need for research on health

awareness and promotion of healthy behaviors among pregnant women.

The purpose of this study was to determine the level of self-perceived oral health status and needs, dental awareness as well as the pattern of use of dental services among pregnant women, attending family health care facilities, in Alexandria. The results of the current study showed that utilization of dental services during pregnancy was significantly influenced by demographic variables namely age, pregnancy trimester, general health status and payment system of prenatal care. Moreover, although not significant, another reason for not utilizing services was the lack of perceived need which indeed justifies the rejection of the study's null hypothesis.

Findings of current study revealed that the majority of the attendees were within 20-30 age group (Table 1). Based on the most recent Egypt Demographic and Health Survey (EDHS), conducted in 2014, it was reported that the median age at first marriage reached 21 years and that Egyptian women usually give births for the first child during the first and second year of marriage (17). Moreover, majority of participants were in their second and third trimester rather than their first a possible explanation is that tetanus toxoid, reduced diphtheria toxoid and acellular pertussis (Tdap) vaccine is provided to pregnant women for free as a part of the implemented governmental program. The vaccine should be given between 27 and 36 weeks of pregnancy as recommended by CDC (18). Also attendance was higher among those who were pregnant for the first time in comparison to multiparous women, since having more children may make it more challenging to arrange time or may have been subjected before to oral health instructions in their previous pregnancies (Table 3).

Almost one third of the participants visited the dentist when they had a complaint from their teeth and gums and less than 2% went for routine examination (Table 2). Results of the current study are similar to those found among a diverse population of pregnant women from the city of Surrey, in British Columbia, where almost half of the women had not visited a dental professional during their pregnancy, while 23% saw a dentist only for emergency purposes (19). On the other hand, reasons for not visiting were mainly because participants did not feel the need for dental care, which emphasizes the fact that perceived need is associated with dental service utilization as proven by Åström and Kida (20) as well as Singhal et al (21). Another reason that was common between pregnant females was the fear of going to the dentist, and few of them stated that no one had advised them to go for a routine dental checkup during their pregnancy (Table 2). This finding indicates that no proper advice or recommendation regarding oral health is being given to pregnant women whether by their physicians or dentists.

Age as a factor seemed to influence the pattern of utilization since age group 20-30 has shown to have significantly higher rate of dental service use in comparison to older age groups (Table 3). A probable explanation is that younger mothers seemed to care more or give their checkups more time. Similar findings were reported by Boggess et al in Chapel Hill, USA (22). Other demographic factors that had significantly affected the utilization were pregnancy trimester, overall health status and prenatal care payment system (Table 1). This may be attributed to the fact that many women in their first trimester suffer from severe

pregnancy symptoms which makes them unable, physically and psychologically, to visit the dentist. Availability of dental services at free governmental facilities as in the MCH units where prenatal care is provided for free is definitely a significant factor influencing the rate of service utilization since more than half of the utilizers were those who went to free governmental facilities which agrees with what was reported by Singhal et al (21).

LIMITATIONS

1. Perceived oral health behavior and needs are very subjective and might not be as accurate as if those women were clinically examined.
2. An interview questionnaire is always subjected to recall bias from the pregnant participant who might have skipped important information.
3. A cross sectional study design would never give a true correlation between the perceived needs of the pregnant women and service utilization because dependent and independent variables are both assessed in the same time.
4. Data collection was time consuming in some facilities where rate of patients per day was not high, which required more than 2-3 visits to reach the required sample within the district.

CONCLUSION

1. Utilization of dental services during pregnancy was significantly influenced by demographic variables: age, pregnancy trimester, general health status and payment system of prenatal care.
2. Main reason for not utilizing services was lack of perceived need.
3. No significant influence of self-perception on dental service utilization was found.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

REFERENCES

1. George A, Johnson M, Duff M, Ajwani S, Bhole S, Blinkhorn A, et al. Midwives and oral health care during pregnancy: perceptions of pregnant women in south-western Sydney, Australia. *J Clin Nurs*. 2012;21:1087-96.
2. Chung LH, Gregorich SE, Armitage GC, Gonzalez-Vargas J, Adams SH. Sociodemographic disparities and behavioral factors in clinical oral health status during pregnancy. *Community Dent Oral Epidemiol*. 2014;42:151-9.
3. Silva de Araujo Figueiredo C, Goncalves Carvalho Rosalem C, Costa Cantanhede AL, Abreu Fonseca Thomaz EB, Fontoura Nogueira da Cruz MC. Systemic alterations and their oral manifestations in pregnant women. *J Obstet Gynaecol Res*. 2017;43:16-22.
4. Puertas A, Magan-Fernandez A, Blanc V, Revelles L, O'Valle F, Pozo E, et al. Association of periodontitis with preterm birth and low birth weight: a comprehensive review. *J Matern Fetal Neonatal Med*. 2018;31:597-602.
5. George A, Johnson M, Blinkhorn A, Ajwani S, Bhole S, Yeo A, et al. The oral health status, practices and knowledge of pregnant women in south-western Sydney. *Aust Dent J*. 2013;58:26-33.
6. Rocha JS, Arima LY, Werneck RI, Moysés SJ, Baldani MH. Determinants of dental care attendance during pregnancy: A systematic review. *Caries Res*. 2018;52:139-52.

7. Amin M, ElSalhy M. Factors affecting utilization of dental services during pregnancy. *J Periodontol.* 2014;85:1712-21.
8. Keirse MJ, Plutzer K. Women's attitudes to and perceptions of oral health and dental care during pregnancy. *J Perinat Med.* 2010;38:3-8.
9. Detman LA, Cottrell BH, Denis-Luque MF. Exploring dental care misconceptions and barriers in pregnancy. *Birth.* 2010;37:318-24.
10. Wallace BB, Macentee MI. Access to dental care for low-income adults: perceptions of affordability, availability and acceptability. *J Community Health.* 2012;37:32-9.
11. Santa Cruz I, Herrera D, Martin C, Herrero A, Sanz M. Association between periodontal status and pre-term and/or low-birth weight in Spain: clinical and microbiological parameters. *J Periodontal Res.* 2013;48:443-51.
12. American College of Obstetricians and Gynecologists Women's Health Care Physicians; Committee on Health Care for Underserved Women. Committee Opinion No. 569: oral health care during pregnancy and through the lifespan. *Obstet Gynecol.* 2013;122:417-22.
13. Sun W, Guo J, Li X, Zhao Y, Chen H, Wu G. The routine utilization of dental care during pregnancy in eastern China and the key underlying factors: a Hangzhou City study. *PLoS One.* 2014;9:e98780.
14. Malkawi ZA, Tubaishat RS. Knowledge, practice and utilization of dental services among pregnant women in the north of Jordan. *J Contemp Dent Pract.* 2014;15:345-51.
15. Kirkpatrick LA, Feeney BC. A simple guide to IBM SPSS statistics for version 20.0. Belmont, Calif.: Wadsworth, Cengage Learning; 2013.
16. Mehta CR, Patel NR. Exact test, In: *Spss exact test 7.0 for windows.* Chicago, IL: SPSS Inc; 1996:11-37.
17. Health Mo, Population/Egypt, El-Zanaty, Associates/Egypt, ICF International. *Egypt Health Issues Survey 2015.* Cairo, Egypt: Ministry of Health and Population/Egypt and ICF International, 2015.
18. Reingold A, editor *Pertussis Vaccines Work Group 2015;* Atlanta, GA.
19. Jessani A, Laronde D, Mathu-Muju K, Brondani MA. Self-Perceived Oral Health and Use of Dental Services by Pregnant Women in Surrey, British Columbia. *J Can Dent Assoc.* 2016;82:g28.
20. Åström AN, Kida IA. Perceived dental treatment need among older Tanzanian adults – a cross-sectional study. *BMC Oral Health.* 2007;7:9.
21. Singhal A, Chattopadhyay A, Garcia AI, Adams AB, Cheng D. Disparities in unmet dental need and dental care received by pregnant women in Maryland. *Matern Child Health J.* 2014;18:1658-66.
22. Boggess KA, Urlaub DM, Massey KE, Moos MK, Matheson MB, Lorenz C. Oral hygiene practices and dental service utilization among pregnant women. *J Am Dent Assoc.* 2010;141:553-61.