Clinically Determined and Self-Reported Dental Caries Status During and After Pregnancy Among Low-Income Hispanic Women

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Abstract

Objectives—This analysis assessed, during and one-year after pregnancy: 1) the prevalence of and relationship between self-reported and clinically determined dental caries and oral health status, and whether self-reports are a potential proxy for professional determination; 2) factors associated with high levels of professionally determined or self-reported oral disease.

Methods—Data are from a randomized clinical trial of 301 pregnant, low-income Hispanic women at the California-Mexico border to compare two interventions to prevent early childhood caries. Interviews and dental examinations were conducted at enrollment (second trimester) and one-year post-partum (PP).

Results—During pregnancy and PP, 93% had untreated caries and most had gingival inflammation. Sensitivity and specificity of self-reported measures compared to dentists' determinations were modest (ranging from 45–80% for sensitivity and 41–77% for specificity at both time points); positive predictive values for women reporting current tooth decay or fair/poor oral health were high (>94%), but negative predictive values were low (<23%). In a bivariate GEE model, factors associated with fair/poor self-reported oral health during and after pregnancy included self-reported dental symptoms (current tooth decay, bleeding gums without brushing), dental behaviors (not flossing) and number of decayed tooth surfaces. In a logistic regression

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model, the only significant factor PP associated with less extensive untreated disease was if women ever had their teeth cleaned professionally (OR=0.44).

Conclusions—There is a great need for dental treatment in this underserved population both during pregnancy and PP. Women may not be able to accurately recognize or act on their treatment needs. At baseline and PP, few demographic or behavioral factors were associated with either self-reported or clinically-determined oral disease (e.g., being less educated or acculturated and not flossing) in the bivariate analyses. Ever having a professional teeth cleaning significantly predicted less disease PP.

Keywords

pregnancy; dental caries; oral health; post-partum; health status disparities; Hispanic

Introduction

Nationally, based on 2005–6 National Health and Nutrition Examination Survey (NHANES) data, 22% of women aged 18–24 and 23% of women aged 25–44 had untreated dental caries (1) with 50% of all adult women reported fair/poor oral health status in 2005–8 (2). Professionally-determined and self-reported measures of oral health status assess different though overlapping domains, and have been positively associated in older adults (3) Among pregnant women, gingivitis has been reported by 60–70% (4), and dental problems and unmet dental needs are prevalent (5,6). One study of mostly lower-income, Hispanic pregnant women found 29% needed immediate dental care (7) However, limited information exists on clinical and self-reported dental caries status of pregnant women or new mothers from underserved, low-income, racial/ethnic minority populations at risk for untreated oral disease.

Current clinical guidelines recommend dental care during pregnancy (8–10), yet dental utilization rates remain low. Most statewide surveys indicate only 23–43% of women obtain dental care during pregnancy (5, 6, 11, 13). Hispanic women are less likely than their white counterparts to receive care during pregnancy or ever have a professional teeth cleaning(6). Typically, lack of dental care stems from various patient and provider factors common to low-income populations such as lack of insurance, financial resources, oral health knowledge/literacy and concerns about dental treatment safety for mothers and fetuses (14,15).

Dental care during pregnancy will benefit both mother and subsequently, the infant, which makes it an ideal time to educate women about their own oral health status, proper hygiene, caries etiology and prevention. Mothers' untreated caries is a correlate of higher risk of early childhood caries in her children (16,17). In some states, including California, low-income women can access dental care during pregnancy through eligibility for prenatal and dental Medicaid programs unavailable at other times. However, in California in 2007, only 14% of Medicaid-enrolled pregnant women obtained care (18). Thus, identifying pregnant women with untreated disease is important to capitalize on these short-term opportunities.

This analysis was undertaken among low-income, primarily Hispanic women participating in a clinical trial to determine:

1. Baseline (during pregnancy) and one-year post-partum (PP) self-reported oral health status and symptoms and clinically determined dental caries status;

2. Sensitivity and specificity of subjective reports of oral health status compared to professionally-assessed clinical measures to determine if self-reports could be used as a proxy for professional determination; and

3. Demographic and behavioral factors associated with unfavorable self-reported oral health status and high prevalence of professionally-determined untreated caries.

Methods

Study Population

The purpose of the larger clinical trial, the "Mothers and Youth Access" (MAYA), was to compare minimal and moderate intensity preventive caries interventions to mother-child dyads to prevent and reduce the incidence of early childhood caries in the offspring of the enrolled women. The randomized, examiner-blinded trial was conducted at the federally qualified San Ysidro Health Center (SYHC) in San Ysidro, CA, located at the California-Mexico border. Prior to initiation, the University of California, San Francisco and San Diego State University Institutional Review Boards (IRBs) approved the trial. A NIH-appointed Data and Safety Monitoring Board oversaw the trial. Study methodology details were published elsewhere (19,20) and are briefly summarized here.

Eligibility Criteria

Inclusion criteria were: ability to provide informed consent in English or Spanish, evidence of geographic stability, age 18–33 years, residing in local communities, and registered as a SYHC prenatal program patient. Exclusion criteria were: having a high- risk pregnancy as defined by the SYHC OB/GYN Department, required pre-medication before dental examination, over three missed or rescheduled MAYA appointments before randomization, and sisters or co-residents of enrolled MAYA participants.

Study Design

The MAYA case manager interviewed women at enrollment (second trimester of pregnancy) to obtain demographics and information about dental experiences and perceived oral health status. They received dental examinations at enrollment and at 4, 9, 12, 18, 24, 30 and 36 months post-partum (PP). At four-months PP, women were randomized to either the minimal counseling only group or the moderate intensity intervention group. Both groups received, in English or Spanish, parental oral health counseling based on recommendations from the American Academy of Pediatric Dentistry for anticipatory guidance in pediatric dental care (21–23). In the moderate intensity group: mothers were given a two-weeks-on, two-weeks-off regimen of chlorhexidine gluconate 0.12% mouthrinse (Peridex® 3M ESPE/OMNII Oral Pharmaceuticals) from four to seven-months PP (24); and their children received topical fluoride varnish (CavityShield® 3M ESPE/

OMNII Oral Pharmaceuticals) every six-months from ages 12–30 months. In both groups, anyone with acute dental infection was referred immediately to SYHC for treatment; all were given dental exam results and referred for care based on the treatment urgency.

Questionnaire

At baseline, women were asked about the following dental symptoms: active or current tooth decay, bleeding gums (with and without brushing), sensitive teeth, a toothache or dental pain, and broken fillings. Flossing behavior, time since last dental visit, and whether or not ever had teeth cleaned professionally by a dentist or dental hygienist were also collected. Demographics of age, family income (below $15,000 annually), education (high school graduate or not), occupation (homemaker or not), someone smoking in the household, fair/poor overall health, and acculturation measures were also assessed at baseline. The acculturation index for these analyses summed three questions scored 0 or 1 into a single 0–3 measure: caregivers born in Mexico, educated in Mexico, and speaking only Spanish at home. If both Spanish and English were spoken at home, 0.5 was assigned. At the 12-month PP visit they were again asked about current tooth decay, and at both timepoints to rate their oral health on a five-point ordinal scale. At baseline, the self-rated oral health response options were poor, fair, average, good, and excellent, while at 12-months postpartum they were poor, fair, good, very good, and excellent, which were both recoded as fair/poor versus other.

Dental Examination

The study's principal investigator trained and calibrated dentist examiners and staff. Examiners were blinded to treatment group assignment and used universal infection control procedures to assess dental caries status, plaque index (25) and gingival index (26) based on six index teeth (scores range from 0–3 from best to worst). NIDCR caries diagnostic criteria were used(27) and supplemented with diagnostic criteria for non-cavitated lesions(28). A dental operatory with light was used in the SYHC dental clinic. Three dentists conducted baseline examinations and four dentists conducted 12-month post-partum exams.

Statistical Analyses

The statistical software used was SAS 9.1.2. Analyses included women participating at both timepoints (n=301) to calculate prevalence statistics, sensitivity, specificity, and longitudinal comparisons. Casewise deletion was used for missing data. The examiner who performed the most 12-month visits (n=199) scored gingival index (GI) a mean of 0.94 greater than the other three 12-month examiners. Hence, that examiner's 12-month gingival scores (0, 1, 2, 3) for each site were downwardly adjusted by 1 point. Confidence intervals (CIs) and p-values in prevalence measures for the difference over time were computed using paired t-tests or Wilcoxon signed rank tests as appropriate. Sensitivity, specificity, and positive/negative predictive values (PPV, NPV) were calculated for self-reported dental symptoms and bleeding while brushing compared to professionally determined measures of untreated caries (number of decayed tooth surfaces) and gingival index score 2–3, indicating gingival bleeding. Since many women (n=190) responded not knowing their tooth decay status, they were grouped with those responding "no".

Chi-square tests for categorical independent variables compared proportions of women with different characteristics to the two binary outcome measures: self-reported oral health status (fair/poor vs. better) and clinically determined number of untreated carious tooth surfaces (above/below median of 8). The number of untreated carious tooth surfaces was highly skewed with a very large percentage of women with any untreated caries, so the median was chosen as the outcome measure. A generalized estimating equations (GEE) logit model analyzed multiple covariates associated with the simultaneous bivariate responses of self-rated oral health at the two longitudinal timepoints to account for within-person correlation over time. Logistic regression was used at the 12 month PP timepoint to model selected covariates relating to untreated carious surfaces.

Results

Study Sample Characteristics

Initially, 551 women received baseline exams (some initially enrolled were not eligible because of medical conditions), and 301 of the 361 women randomized in the trial received the 12-month PP dental examinations and questionnaires. Women retained in the trial were more likely to have higher household income and be Mexican/Mexican American than women from other ethnic backgrounds (e.g. Central American) (19).

Of the 301 women included in this analysis, 96% were Hispanic or Latina; 61% were born in Mexico and 37% in the US. Mean age (SD) was 25.5 (4.5) years. About two-thirds (63%) had a high school diploma/GED or less, 10% had technical or vocational school training and 27% had attended or completed college. Half (50%) reported average annual family income before taxes of less than $15,000, and 37% an income of $15,000–34,999. At enrollment (baseline), women were a mean (SD) of 21.5 (3.5) weeks pregnant, ranging from 15 to 30 weeks. Most women (69%) were not employed outside the home.

At baseline, 32% reported having a past year dental visit which may or may not have been during pregnancy, 40% between 1–3 years prior, 15% 3–5 years prior, 8% over 5 years prior, and about 2% reported never having a dental visit. One year after delivery, 51% reported seeing a dentist within the prior year.

Clinical Findings

Women had very high rates of caries experience (Table 1). Untreated caries prevalence was 93% both during pregnancy and a year after delivery. Disease extent was also great. For women at enrollment and 12-months PP, the mean number of decayed and filled tooth surfaces (DFS) was 18.7 (SD 10.3) and 18.9 (SD 10.5), respectively, with 58% and 50% of DFS being decayed surfaces (DS).

There is clinical evidence that some women received dental treatment during this time period. Among the 301 seen at both timepoints, mean DS declined by 1.5 (SD 9.5) and filled surfaces increased by 1.7 (SD 5.0). Mean DFS increment was 0.2 (SD 8.6). However, one year PP, these young women had a mean and median of 8 untreated carious tooth surfaces and a maximum of 33 surfaces; thus extensive dental treatment needs were still present.

Mean gingival index was unchanged, 1.2 (SD 0.5) at both timepoints, indicating between mild (score 1) and moderate (score 2) gingival inflammation. However, the proportion of women who had at least one gingival site with a score of 2–3 during pregnancy and 12-months PP, indicating at least moderate or severe inflammation with bleeding on pressure, declined from 69% to 57%.

Self-Reported Oral Health Status and Dental Symptoms

The proportion reporting fair/poor oral health increased from 44% during pregnancy to 63% at 12-months PP (Table 1). A year after delivery, only 4.5% of women reported excellent or very good oral health. During pregnancy, half the expectant women reported having current tooth decay which increased to three-fourths of new mothers. About a fourth of pregnant women (28%) reported having a current toothache or dental pain and about a fourth (26%) reported teeth being sensitive to sweets, often signifying untreated caries. More than one-third reported having broken fillings. During pregnancy, almost three-fourths reported their gums bled when brushing their teeth, indicating gingival inflammation and poor oral hygiene, and 17% reported bleeding gums even without tooth brushing (not shown).

Sensitivity, Specificity, and Positive and Negative Predictive Values of Self-Reported Symptoms Compared to Professional Assessment

Sensitivity and specificity ranges of self-reported measures during pregnancy were similar, from 45–78% and 41–71%, respectively (Table 2). Women were better at accurately reporting when they had gingival bleeding based on observing that their gums bled when they brushed their teeth than reporting current tooth decay. Their ratings of fair/poor oral health status do not provide high sensitivity or specificity levels with regards to professionally determined oral health status during pregnancy. Sensitivity and specificity of self-reported current tooth decay and oral health status improved somewhat PP to 65–80% and 68–77%, respectively.

In contrast, at both timepoints, positive predictive values (PPVs) of self-reports of current tooth decay and fair/poor oral health status are all greater than 90% indicating professionally identified cavitated lesions. Pregnant women with self-reports of gums bleeding when brushing and fair/poor oral health status have PPVs of 75% and 80%, respectively, compared to all women with a clinical GI score of 2–3. Relatively low negative predictive values (NPVs) suggest that self-reports of no current tooth decay, no bleeding gums and favorable oral health status are not reliable predictors of clinically determined favorable oral health status.

The clinical measures are shown for women reporting fair/poor vs. better oral health at the two timepoints (Table 3, bottom). Mean DS was significantly higher (p=0.009) for pregnant women reporting fair/poor oral health (11.4 surfaces) than better self-reported oral health (9.0 surfaces) though both groups had extensive untreated caries. DFS did not differ significantly. For those with a maximum gingival index score of 2–3, the subset reporting fair/poor oral health was significantly higher (p<0.001) from those reporting better oral health (80% vs. 61%). Similar relationships were found PP.

Factors Associated with Fair/Poor Self-Reported Oral Health Status during Pregnancy

Based on bivariable analyses (Table 3), pregnant women reporting poorer oral health status were significantly (p 0.05) more likely than those reporting more favorable oral health status to exhibit certain demographic factors, dental behavioral factors, and symptom reports. Those reporting fair/poor oral health were more likely to be less acculturated and have less than a high school education. They were more likely to report many dental symptoms (current toothache or tooth decay, sensitivity to sweets, and bleeding gums without tooth brushing). Behavioral factors included never having had teeth cleaned professionally, not flossing, and having a dental visit over five years prior.

Factors Associated with Fair/Poor Self-Reported Oral Health Status at 12-months Post-partum

Based on bivariable analyses (Table 3), fewer factors were significantly associated with worse self-reported oral health status at 12 months PP than those found during pregnancy: less than a high school education, fair/poor overall health, current tooth decay, broken fillings, never having had teeth cleaned professionally, and not flossing.

Table 4 shows the bivariate GEE model of factors associated with fair/poor (vs. other) selfreported oral health with a timepoint variable for the two timepoints. Women reporting current tooth decay (OR=1.92), spontaneous bleeding gums without tooth brushing (OR=2.65) and, at baseline, having had a last dental visit over five years prior (OR= 2.11) were close to or more than twice as likely to report poorer oral health status. Not flossing at all (OR=1.68) and DS were significant covariates; the OR for an increase of 1 decayed surface was small (OR=1.05) although calculating for a change in 10 surfaces (not shown), it was moderate (OR=1.60). The odds of self-reported fair/poor oral health was greater at PP than baseline (OR=2.73).

Factors Associated with High Levels of Untreated Dental Caries at 12-months Post-Partum

Based on bivariable analyses (Table 5), at 12-months PP fewer demographic and behavioral factors were significantly (p 0.05) associated with women having untreated caries at or above the median of 8 DS. Women with more caries were more likely to report overall health and oral health as fair/poor, having current tooth decay, never having their teeth cleaned professionally, and "not at all sure" that they could see a dentist if they had a toothache.

In the logistic regression model (Table 5), including key demographics and dental behaviors, the only significant predictor of increased untreated dental caries was whether women had ever had their teeth cleaned professionally. Those with a professional teeth cleaning were less than half as likely (OR=0.44) to have DS above the median 12-months after pregnancy than those never having a professional cleaning.

Discussion

Study participants had very high caries experience levels, and almost universally had untreated caries, both during pregnancy and a year after delivery, despite being referred for

dental care at the same location as the study site. Untreated decay was found in 93% of this sample, which was substantially higher than 2005–6 NHANES prevalence estimates of about 22% among women aged 18–44 (1). Mexican-American adults and those with lower family incomes also had a higher prevalence of untreated dental caries. Thus, higher caries rates are expected in this minority population, but the disparities found in this study are extensive.

Good oral health is a broader construct than being caries-free or gingivitis-free and is affected by many symptoms and conditions. Different factors were associated with fair/poor oral health status at the two time points and with more extensive untreated caries. This population had relatively homogenous low socio-economic status, which may explain why demographic factors were not significant risk factors. An analysis of 1999 and 2002 state-based Behavioral Risk Factor Surveillance System (BRFSS) data indicated that pregnant women not receiving dental care were more likely to be younger, active smokers, less educated, from lower income families, and without health insurance – in short, lower socioeconomic status (29).

Among women with self-reported current tooth decay or fair/poor oral health, positive predictive values were very high, indicating they were likely to have dental treatment needs, but in part this was due to the high underlying prevalence (PPV and NPV estimates are prevalence dependent). Sensitivity and specificity of these self-reported measures did improve slightly PP, perhaps as a result of information gained during study dental visits and appropriate referral for dental treatment. Among women without self-reported symptoms or fair/poor status, few women were likely to be disease-free. Thus, clinicians cannot solely rely on women from similar communities to correctly report lack of dental treatment need. Women could better recognize gingival bleeding when tooth brushing when they had gingival inflammation and most women had at least one site with moderate/severe gingival inflammation. Thus, emphasizing a need for dental care based on this recognizable symptom may be more meaningful to women than based on dental caries. Most of the other studies exploring agreement between self-rated and clinically determined oral health status have focused on elderly populations and veterans (30–34) and generally found that there are differences between self-report and clinical findings. The studies do not all compare the same self-report indices and clinical conditions, but overall, individuals do not seem to be as able to accurately self-report on the extent of periodontal disease or whether or not they have caries. People are better able to self-report missing teeth, whether or not they have any type of prosthetics, and restorations more accurately. A recent study by Liu and colleagues (35) systematically compared self-reported oral health (individual items and an overall summary score) to several clinically-determined measures among all adults using 1999–2002 NHANES data. They (35) found self-reported oral health status to be more predictive of caries than periodontal disease. However, the NHANES analysis examined different selfreported items in a larger, more diverse sample of adults that included men and women. Our study included specific self-report measures about symptoms of periodontal disease (like recognizing bleeding gums). The only common self-report measure explored in our study and in NHANES was the condition of mouth and teeth as fair/poor or better.

Women, while pregnant, may be more receptive to adopting healthier oral health behaviors. Including a dental component in prenatal programs such as Centering Pregnancy (36) is needed to provide dental education, teach and encourage preventive oral health practices, and refer women for dental care. Hormonal changes during pregnancy increase women's susceptibility to gingivitis (37). Thus, women can particularly benefit from professional dental cleanings and instruction in flossing. In this study, ever having had a professional teeth cleaning was the strongest factor associated with less future untreated caries. Untreated maternal dental caries puts children at risk for acquiring cariogenic bacteria and developing early childhood caries.

Little information exists about oral health of women living at the US-Mexico border. Women in our sample were nearly all Mexican-American, and while Hispanic ethnicity is not homogenous, the participants had similar socioeconomic backgrounds. Additionally, while some differences in oral health status by acculturation level were found in the bivariate analyses, these differences were not found in the regression models. Although findings have limited generalizability due to the trial's eligibility criteria, they should fairly represent low-income women eligible for prenatal care with normal pregnancies. Because this particular analysis was not the primary trial goal, clinical data were not available for other measures of periodontal status and other oral health conditions. Similarly, interviews did not include all possible oral disease signs and symptoms. Not all questions were repeated at both timepoints for longitudinal assessment. If women who received the antibacterial rinse had reduced caries increment, the overall 12-month caries status is underestimated. Maternal mutans streptococci (MS) levels declined with rinse use, but increased again once mothers stopped rinsing (20). However, the short duration of the rinse regimen probably did not affect existing frank caries or maternal caries increment in the five months after rinsing was discontinued.

Oral health disparities exist among these low-income, Hispanic pregnant women. They may not always recognize or seek treatment for dental problems. As part of the trial, mothers were told they had unmet needs. Mothers were already bringing their children to SYHC for the trial, and were directly referred for dental care at this accessible site. As a trial retention incentive, a temporary 75% price discount for SYHC Dental Clinic services was offered to mothers of MAYA-enrolled children. This discount reduced the cost of dental care substantially, beyond the usual 0–50% sliding fee scale. Despite the high levels of need and efforts to reduce the cost barrier, these mothers did not get needed care.

Other barriers likely interfered with the mothers' ability to obtain needed dental services. Lack of time and child care may have been barriers. They may have started but not completed the treatment plan. It is plausible that a busy mother prioritized meeting her child's health needs over her own. Dental fear may have also played a role. High Mexican acculturation populations (with a high percentage of undocumented workers) may fear government agencies. Lack of insurance may have been a perceived barrier. Many low-income women in California could access some dental care through special Medicaid eligibility, but may be unaware of this coverage opportunity.

Limitations of the study include the high disease prevalence among female-only participants and the study not being designed to measure the relationship between self-reports and clinically determined disease. With a more heterogeneous study sample, including a wider racial/ethnic and socioeconomic distribution (e.g. educational level and health literacy level), with less disease it is unclear if self-reports would be more concordant or less concordant. Nevertheless, this report informs whether self-reports from high risk populations might be a useful tool.

Additional research is needed to better understand how underserved, pregnant Hispanic women and mothers of young children interpret signs and symptoms of oral disease, understand caries etiology, prevention and progression, and when and how to seek treatment. All health professionals should make expectant and new mothers aware of their dental care needs, state benefit eligibility, and provide necessary referrals. Stronger partnerships are needed between dentists and other healthcare providers to reduce the high oral disease levels in this population (14). Barriers to seeking dental care need to be addressed on individual-, health care system- and policy-levels to improve the oral health of mothers and children.

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Table 1

Prevalence of Professionally Determined and Self-Reported Dental Caries Status and Related Symptoms During and 12 months Post Partum

	Baseline (seen at both times) (n=301)	12-months post-partum (n=301)	Change	95% CI for change	p-value
Professionally Determined Caries Status					
% Any Untreated Caries, DS > 0	93.4	92.7	−0.7	[−4.9, 3.6]	0.7389
Mean DS (SD)	18.7 (10.3)	18.8 (10.5)	0.2 (8.6)	[−0.8, 1.2]	0.7138
Mean Decayed Surfaces (SD)	10.0 (8.0)	8.5 (6.9)	−1.5 (9.5)	[−2.5, −0.4]	0.0075
% DS/DFS (SD)	58.2 (35.7)	50.3 (35.2)	−7.5 (32.2)		
% Gingival Max Score (% w/2 or 3) *	69.1	57.5	−11.6	[−21.2, −2.0]	0.0005
Mean Gingival Index (SD) (n)	1.2 (0.52) (229)	1.2 (0.5) (301)	0.0 (0.5) (229)	[−0.1, >0.0]	0.4963
Self-Reported Oral Disease Symptoms					
% Current Tooth Decay	50.3	76.0	25.7	[16.4, 34.9]	<0.0001
Self-Reported Oral Health Status					
% Fair or Poor	44.4	62.6	18.2	[6.6, 29.8]	<0.0001

*
Range 0–3, 6 sites/person scored

Table 2

Sensitivity, Specificity, Positive and Negative Predictive Values of Self-Reported Oral Health Measures Compared to Professionally Determined Measures During Pregnancy and 12-months Post Partum (n=30)

During Pregnancy	Sensitivity	Specificity	PPV	NPV
Self-reported (S-R) current tooth decay (yes vs. no or unknown) **vs. % with cavitated lesions** (any vs. none) [a]	51.1	60.0	94.7	8.0
S-R bleeding gums when brushing vs % with clinical bleeding (GI Score of 2 or 3) [a]	77.8	40.9	74.5	45.2
S-R oral health status (poor, fair vs. other) vs. **% with cavitated lesions** (any vs. none) [b]	45.0	63.2	94.7	7.3
S-R oral health status (poor, fair vs. other) vs. **% with clinical bleeding** (GI Score of 2 or 3) [b]	51.2	70.7	79.6	39.4
12-months post-partum				
S-R current tooth decay (yes vs. no or unknown) **vs. % with cavitated lesions** (any vs. none)	79.9	77.3	97.8	23.3
S-R oral health status (poor, fair vs. other) vs. **% with cavitated lesions** (any vs. none)	64.9	68.2	96.3	13.3

PPV = Positive Predictive Value; NPV = Negative Predictive Value

[a] Sample size was 297 for this analysis.

[b] Sample size was 300 for this analysis.

Table 3

Factors Associated with Fair/Poor Self-Reported Oral Health (vs. Other) Status During and After Pregnancy

	During Pregnancy (n=297)			12 Month Post-Partum (n=301)		
Demographics	**Fair/Poor**	**E/G/Av**	**p-value**	**Fair/Poor**	**E/VG/G**	**p-value**
Woman's age (below mean age)[a]	56.8	47.9	0.1255	56.2	45.1	0.0585
% Acculturation Index (> 1.5) [a]	65.9	54.5	0.0474	61.7	54.9	0.2428
% <High School grad [a]	48.0	34.8	0.0222	46.1	31.9	0.0151
% Occupation is homemaker [a]	76.0	71.6	0.4079	76.6	67.9	0.1080
% Family income < $15k/annum [a]	57.6	46.9	0.0722	54.8	46.8	0.1898
% Other children at home > 0 [a]	69.8	75.5	0.2769	72.1	73.5	0.8045
Overall Health (% Fair/Poor)	18.9	16.9	0.6647	22.2	9.8	0.0091
Someone in house smokes [a]	26.5	17.7	0.0665	20.3	24.8	0.3664
Self-Reported Dental Symptoms						
% toothache now [a]	33.1	22.4	0.0410	27.2	28.8	0.7586
% current tooth decay	60.6	40.9	0.0007	83.5	62.8	<0.0001
% teeth sensitive to sweets [a]	34.6	18.2	0.0013	27.8	22.3	0.2937
% broken fillings [a]	44.2	34.8	0.1003	44.3	30.4	0.0168
% bleeding gums, w/o brushing [a]	24.2	8.5	0.0002	18.6	10.7	0.0685
% bleeding gums, w/brushing [a]	77.3	68.3	0.0862	74.9	67.3	0.1549
Dental Behaviors						
% Ever had teeth cleaned professionally [a]	64.1	80.9	0.0013	66.3	83.6	0.0012
% Not flossing at all [a]	53.0	35.2	0.0020	48.4	32.7	0.0078
Last dental visit% > 5 years ago [a]	18.8	4.4	<0.0001	12.6	7.3	0.1606
Last treated for dental caries [a] % In last year:	17.4	22.2	0.3179	16.7	26.0	0.0615
Clinical Measures						
Mean DS	11.4	9.0	0.0094	10.0	6.0	<0.0001

Demographics	During Pregnancy (n=297)			12 Month Post-Partum (n=301)		
	Fair/Poor	E/G/Av	p-value	Fair/Poor	E/VG/G	p-value
Mean DFS	19.1	18.3	0.4767	19.4	17.9	0.2075
% Max Gingival Score of 2 or 3	79.6	60.6	0.0005	63.8	46.9	0.0040

[a]These questions were asked at baseline only.

Table 4

Bivariate GEE Model of Factors Associated with Fair/Poor Self-Reported Oral Health (vs. Other) Status During Pregnancy and 12 months Post-Partum (n=301)

Factors	Odds Ratio	95% CI for Odds Ratio	p-value
Demographics			
Woman's age	1.00	[1.00, 1.00]	0.2734
% Acculturation Index (> 1.5) [a]	0.92	[0.56, 1.50]	0.7419
% <High School grad [a]	1.30	[0.81, 2.10]	0.2822
Overall Health (% Fair/Poor)	1.08	[0.63, 1.86]	0.7819
Someone in house smokes [a]	0.93	[0.54, 1.58]	0.7870
Self-Reported Dental Symptoms			
% toothache now [a]	0.85	[0.52, 1.40]	0.5232
% current tooth decay	1.92	[1.23, 3.01]	0.0043
% teeth sensitive to sweets [a]	1.27	[0.75, 2.16]	0.3768
% bleeding gums, w/o brushing [a]	2.65	[1.39, 5.03]	0.0030
Dental Behaviors			
% Broken Fillings	1.31	[0.85, 2.01]	0.2187
% Ever had teeth cleaned professionally	0.61	[0.37, 1.00]	0.0515
% Not flossing at all [a]	1.68	[1.06, 2.65]	0.0269
%Last dental visit > 5 years ago [a]	2.11	[0.97, 4.59]	0.0612
Clinical Measures			
DS	1.05	[1.02, 1.09]	0.0042
Visit			
Timepoint (12 Months Post-Partum vs. Baseline)	2.73	[1.76, 4.22]	<0.0001

[a] These questions were asked at baseline only.

Table 5

Bivariable Associations and Logistic Regression Model of Factors Associated with Untreated Dental Caries Over Median (DS ≥ 8), 12-months Post-Partum (n=301)

Factors	Bivariable Associations			Logistic Regression		
Demographics	DS<8	DS ≥ 8	p-value	Odds Ratio	95% CI for Odds Ratio	p-value
Woman's age	39.0	42.0	0.6050	1.00	[1.00, 1.00]	0.2100
Acculturation Index (> 1.5) [a]	54.3	64.0	0.0871	1.08	[0.82, 1.44]	0.5803
<High School grad [a]	35.3	46.2	0.0573	1.10	[0.61, 2.00]	0.7403
Overall Health (Fair/Poor)	13.3	28.7	0.0010	1.77	[0.86, 3.64]	0.1188
Someone in house smokes [a]	22.5	21.5	0.8279	0.89	[0.47, 1.72]	0.7365
Dental symptoms and behaviors						
Broken fillings [a]	36.9	41.2	0.4472	0.96	[0.56, 1.64]	0.8810
Ever had teeth cleaned professionally[a]	82.1	62.9	0.0002	0.44	[0.23, 0.85]	0.0137
Not flossing at all [a]	37.1	48.0	0.0555	1.17	[0.67, 2.06]	0.5774
Last dental visit > 5 years ago [a]	10.3	11.0	0.8493	1.06	[0.42, 2.63]	0.9079
"Not at all sure" they could see a dentist if had toothache[a]	15.0	25.5	0.0241	1.29	[0.64, 2.63]	0.4770
Self-Reported % current tooth decay [b]	62.9	88.7	<.0001			
Self-Reported Oral Health (% Fair/Poor oral health) [b]	47.7	77.3	<.0001			

[a] These questions were asked at baseline only.

[b] These items were not included in the logistic regression model given their high correlation with the outcome.