

Dental care during pregnancy: a cross-sectional survey of adolescents and young adults

THESIS

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By

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Abstract

Purpose: We know little about what adolescents, pregnant or not, think about oral health care. We know little about barriers that pregnant adolescents face with oral health care. Our purpose was to evaluate knowledge, attitudes, and current practices regarding dental care and oral health in pregnant and non-pregnant adolescents and young adults as well as barriers to care during pregnancy.

Methods: Between November 2020 and March 2021, surveys were distributed to pregnant patients in a teen pregnancy clinic and males and females in a primary care clinic. The 18-question survey asked about personal dental health and dental care during pregnancy. Analysis was done using chi-square and Fisher's exact tests, with statistical significance at $p < 0.05$.

Results: There were 215 total respondents; 196 were female, and 31% were pregnant. Almost half were Black or African-American, 70% had Medicaid or public insurance, and 75% went to the dentist annually or twice annually for check-ups. Only 1% indicated that pregnant females should never go to the dentist. The majority of pregnant respondents had not been to the dentist while pregnant, and less than 5% had been in the six months prior to pregnancy.

Conclusions: Dental care during pregnancy is underutilized, consistent with other studies. Reported barriers to dental care were providers' refusal of treatment due to respondent's pregnancy status, low priority, safety concerns, lack of time, and finances. Results suggest the

need for improved knowledge for not just pregnant females to know that it is safe to get dental care, but for healthcare providers as well so pregnant women are not refused care.

Dedication

This thesis is dedicated to my family.

I dedicate it to my mom, who is the reason I pursued pediatric dentistry as a career, my dad, who has taught me the value of good work ethic throughout my life, my fiancé, for supporting me and sharing our mutual love for the dental profession, and my brother, for always being someone I look up to most.

This thesis is also dedicated to my academic mentors and educators.

I will be forever thankful for the knowledge and skills they have imparted on me during my formal education.

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Chapter 1: Introduction

Pregnancy can have several implications on the mother's oral health, which has been well documented in the literature over time.¹ It is estimated overall that gingivitis affects 30-100% of pregnant women.¹⁻⁶ A systematic review explored the association between pregnancy and oral health outcomes.⁷ There exists an association between periodontitis and pre-term birth,⁸⁻¹¹ pre-eclampsia,¹² low birthweight,⁹⁻¹¹ fetal growth restriction,¹¹ and miscarriage.¹³ Despite how well these associations have been documented, the importance of oral health during pregnancy has varied understanding among pregnant women. While a small-scale study showed that the majority of women knew that oral health during pregnancy was important,¹⁴ another showed that many women believed that a pregnant woman should only go to the dentist if it's for an emergency and bleeding gums and loosening of teeth are normal during pregnancy.¹⁵ An older study that included teenagers reported "not having any problems" as the most cited reason for not seeking dental care.¹⁶ Participants in other studies indicated that they believed or were informed that they should not go to the dentist while pregnant.^{16, 17} Studies overall found limited knowledge among pregnant women of the possible relationship between oral health and pregnancy outcomes.^{15, 17, 18}

Dental care during pregnancy is under-utilized. A 2009 study of pregnant adolescents showed that less than 30% of respondents saw a dentist during pregnancy.¹⁹ One study found that 10% of pregnant women were refused dental treatment during pregnancy, despite the majority of surveyed dentists reporting that pregnant patients can be seen during any stage of pregnancy.²⁰ Ultimately less than 50% of women seek care while pregnant^{16, 17, 20-23} There are various reasons for non-utilization of dental care during pregnancy, which include: lack of finances/insufficient funds/income level,^{16, 17, 20-22, 24} time constraints,¹⁵ lack of perceived problems,^{16, 17} choosing to

delay until after delivery,¹⁷ dental care not being a priority,¹⁵⁻¹⁷ insurance status,^{16, 17, 21, 22} and safety concerns.^{15, 16, 20} Women with insurance, higher education, higher income, and those who reported routine preventive dental visits prior to pregnancy and brushing their teeth more frequently are more likely to utilize care while pregnant.¹⁷

Studies have reported similar barriers to dental care amongst adolescents/teenagers and children including: high cost/insufficient funds,^{25, 26} insurance status,²⁵⁻²⁹ low-household incomes,²⁷⁻²⁹ parents having lower educational attainment²⁷⁻²⁹ understanding the value of oral health,³⁰ not having a regular dentist,²⁶ being male gender,^{27, 29} and being non-Caucasian or mixed race/ethnicity.^{27, 29} A 2018 study found that access to dental care amongst adolescents is improved by extending clinic hours.³¹ Another study showed that adolescents and young adults older than 13 were less likely to have a regular dentist than those less than 13 years old.²⁶ In this same study, the majority of patients had Medicaid with dental coverage but were unaware of their dental coverage,²⁶ suggesting that lack of understanding of coverage could be a barrier.

Purpose: We know little about what adolescents, pregnant or not, think about oral health care. We know little about barriers that pregnant adolescents face with oral health care. Our purpose was to evaluate knowledge, attitudes, and current practices regarding dental care and oral health in pregnant female and non-pregnant male and female adolescents and young adults as well as barriers to care in pregnant females.

Chapter 2: Methods

This cross-sectional study was approved by the Institutional Review Board at Nationwide Children's Hospital, Columbus, Ohio (IRB Study 00008213).

Survey Instrument

An 18-question self-administered survey was developed and piloted by pediatric dental residents, faculty, and staff. The survey consisted of multiple choice and open-ended questions. Two versions of the survey were created: an online version using REDCap and a paper version (Appendix B).

Sample Recruitment

The anonymous and voluntary survey was distributed between November 2020 and March 2021 via REDCap or paper copies based on clinic preferences and distributed to a convenience sample of patients from the Teen and Pregnant Program Clinic (TaP) and the Adolescent Medicine Clinic at Nationwide Children's Hospital. The survey was administered by respective clinical staff to patients who fit inclusion criteria. All participants received an information sheet (Appendix B). Participants provided verbal consent, and were compensated with a toothbrush, toothpaste, floss. Pregnant participants were also given information on caring for oral health of their baby.

Inclusion and Exclusion Criteria

Our inclusion criteria included neuro-typical, English-speaking patients, ages 12-22 years old in the TaP and Adolescent Medicine Clinics. This age range was based off the ages of patients treated in the TaP Clinic. Patients were excluded if they did not speak English, were not neurotypical, or were outside of the age range.

Basic demographic information was collected including age, sex assigned at birth, ethnicity, race, insurance status, clinic location, and pregnancy status. Participants were presented with questions about current oral health practices, past dental experiences, and nine questions about oral health and pregnancy. The final three questions, answered only by pregnant participants, inquired about the changing importance of oral health, dental care utilization, and barriers to care during pregnancy.

Statistical Analysis

All analyses were performed using R version 3.6.2 (R Foundation for Statistical Computing, Vienna, Austria). Descriptive statistics (frequency, percentage, mean and standard deviation) for responses to all survey questions. Responses to questions regarding dental care during pregnancy were tabulated by gender and by pregnancy status (females only). Chi-square tests and fisher's exact tests (when the cells have counts less than 5) were performed to examine whether responses to questions regarding dental care during pregnancy differ by gender or pregnancy status. Responses to the question about frequency of toothbrushing were tabulated and tested against the responses to the question about frequency of dental office visit. P-value < 0.05 was considered statistically significant.

Chapter 3: Results

Demographics

We collected 215 usable surveys from two clinics. Eight were unusable due to missing data. Respondents were 91% (n=196) female, 31% (n=67) pregnant, 49% (n=105) African American, and 35% (n=75) white. The age range was 12-22 years (mean 17 years + standard deviation 2.3). One hundred eighty-three respondents (85%) were non-Hispanic. Seventy percent (n=150) had public insurance, and 24% (n=52) had private insurance. The majority (70%, n=149) were patients in the Adolescent Medicine clinic, and 31% (n=66) were patients in Teen and Pregnant Clinic. See Table 1.

Dental history

Almost all respondents had been to a dentist. Three-quarters reported seeking dental care for checkups at some regular interval, and 22% said they only go when they have a problem. The majority (almost 70%) reported caries history, in that they had had a filling or cavity before, and 26% reported no previous caries history. About 90% (n=194) reported daily toothbrushing, with 12% (n=26) reporting more than twice daily toothbrushing. About 8% (n=17) reported less than daily brushing, with 1% (n=3) brushing less than once per week. Only 8% (n=17) reported bleeding gums when brushing, though an additional 37% (n=79) said this happened sometimes. Almost 10% (n=21) reported bad dental experiences in the past, and of those, 19% (n=4) reported this has affected them getting dental care since then. See Table 2.

Frequency of toothbrushing was evaluated with comparison to frequency of visiting the dentist for all respondents. This relationship between brushing teeth and going to the dentist amongst pregnant and non-pregnant adolescent and young adults was not found to be statistically significant (p=0.74). Few respondents (n=3) reported brushing less than 1 time per week. Of

those, they reported a higher frequency (66%) of visiting the dentist once per year on average. Most respondents (n=167) reported brushing 1-2 times per day, and almost 38% of those (n=63) reported going to the dentist twice per year on average. Twenty-six respondents reported brushing more than two times per day. Of those, 46% reported going to the dentist twice per year on average.

Care-seeking behavior based on pregnancy status was found to be statistically significant ($p=0.0004$). See Table 4. While no non-pregnant respondents reported they had never been to a dentist, 4.5% (n=3) of pregnant respondents had never been, indicating a higher percentage of pregnant respondents had never utilized dental care. Eighty-one percent (n=98) of non-pregnant respondents and only 64% (n=42) of pregnant respondents went to the dentist either annually or twice annually, indicating that a higher percentage of non-pregnant adolescents and young adults seek routine dental care. A higher percentage (32%, n=21) of pregnant respondents sought dental care only when they had a problem, compared to non-pregnant respondents (19%, n=23).

Oral health during pregnancy

All survey respondents were asked about knowledge of oral health relative to pregnancy. See Table 2. As to importance for females to go to the dentist when pregnant, 60.5% (n=130) reported it is important, 6% (n=12) reported it not being important, and 31% (n=66) were unsure. Regarding the ability for a pregnant female's oral health to affect the health of the baby, 40.5% (n=87) reported it can have an effect, 14% (n=31) reported no effect, and 40.5% (n=87) were unsure. When asked if and when pregnant females should seek dental care, 40.5% (n=87) reported they should go to the dentist like anyone else for all treatment, but 29% (n=63) reported for cleanings and check-ups only, and 6% (n=13) reported only if in pain. Only 2 respondents (1%) reported pregnant females should never go to the dentist.

Responses varied as to the ability of dental procedures to harm the fetus. Almost 26% (n=55) thought local anesthetic would harm the baby, 20% (n=43) thought it wouldn't, and nearly 50% (n=107) were unsure. Half (n=107) thought that dental x-rays could hurt the baby, nearly 13% (n=27) thought they wouldn't, and 34% (n=73) were unsure.

Only 9% (n=19) thought it was normal for females to lose teeth when they are pregnant, though 30% (n=65) were unsure. Fifty-six percent (n=121) thought it was not normal for females to lose teeth when they're pregnant. When asked if a mom could pass bacteria that cause cavities to her baby via saliva, 29% (n=63) reported yes and 21% (n=46) reported no. Forty-five percent (n=96) were unsure of this connection. If a pregnant female had tooth pain, 84% (n=180) thought she should go to the dentist and have the tooth looked at and 8% (n=18) thought the patient should either take antibiotics and wait or do "something else."

We compared responses to questions regarding oral health during pregnancy by pregnancy status. See Table 5. Regarding if a pregnant female's oral health can affect the health of the baby, 47.5% (n=56) of non-pregnant respondents and 35% (n=23) of pregnant respondents indicated yes, while 10% (n=12) of non-pregnant and 27% (n=18) did not believe a pregnant female's oral health could affect the health of the baby. This was statistically significant ($p=0.008$). When asked about when to seek dental treatment during pregnancy, 50% (n=58) of non-pregnant respondents and 32% (n=21) of pregnant respondents indicated pregnant females should go to the dentist like anyone else and for all treatment. Twenty-five percent (n=30) of non-pregnant respondents and 42% (n=28) of pregnant respondents indicated pregnant females should seek dental care for check-ups and cleanings only. Twenty percent (n=24) of non-pregnant respondents and 15% (n=10) of pregnant respondents indicated pregnant women should never go to a dentist or did not know ($p=0.03$). Fifty percent (n=58) of non-pregnant females and

32% (n=21) of pregnant females indicated pregnant females should go to the dentist like anyone else and for all treatment. Respondents were asked about potential harm to the fetus during pregnancy as it relates to dental care.

The majority (53%, n=63) of non-pregnant respondents did not know if numbing medicine could harm the baby of a pregnant female. Fifteen percent (n=10) of pregnant respondents did not think numbing medicine could harm their baby, and over one quarter (26%, n=31) of non-pregnant respondents agreed. Twenty percent (n=24) of non-pregnant respondents and 42% (n=28) of pregnant respondents thought numbing medicine could hurt the baby of a pregnant female (p=0.004).

Questions only pregnant females answered

When asked if oral health is more important, less important, or the same as it was prior to pregnancy, 34% (n=23) of pregnant females said "more important", 63% (n=42) said the same, and 3% (n=2) said less important. Almost 63% (n=42) had not gone to the dentist during pregnancy, but 10% (n=7) said they have an appointment scheduled or will make one. Since being pregnant, 22% (n=15) had gone to the dentist, and 4.5% (n=3) had a check-up in the 6 months before pregnancy. As to factors making it difficult for them to see a dentist during pregnancy, 21% (n=14) responded "I'm too busy", and 43% (n=29) indicated that none of the options applied. Other less common reasons for not seeing a dentist during pregnancy were not having enough money, the dentist they used to go to won't see them anymore, going to the dentist was not important, concerns for safety or fetal harm, and wait times were too long. See Table 3.

Questions when separated by gender

The only significant difference found when separating for gender was for the question “Do you think it is normal for a female to lose teeth because she is pregnant?” Sixty percent (n=114) of females and only 22% (n=2) males thought it was not normal to lose teeth during pregnancy. Seventy-eight percent (n=7) of males were not sure if this was normal (p=0.01).

Chapter 4: Discussion

Our findings agree with the few previous studies, indicating that pregnant women may lack knowledge on oral health and pregnancy and that dental care during pregnancy is underutilized.

Knowledge:

Compared to Strafford, where over half of the participants felt that dental care was more important during pregnancy compared to before pregnancy,²⁰ our results showed that only 34% felt this way, suggesting that adolescents and young adults value oral health during pregnancy less. Where approximately half of participants in one study knew oral health problems could affect the baby,¹⁹ our results showed that only 31% of pregnant females knew. Compared to Hans' study where less than 20% of women answered the question correctly on loosening of teeth during pregnancy,¹⁵ 60% (n=114) of female respondents in our study knew this wasn't normal during pregnancy. Hans' study asked a question about when a pregnant woman should go to the dentist, to which 10% answered correctly,¹⁵ while in our study, 40.5% knew that pregnant women should seek dental care as normal.

Bates¹⁴ tested an educational intervention in pregnant and non-pregnant females and males on oral health and pregnancy. Their findings indicated that, in a pre-test, 51% knew about the ability to transmit bacteria to the baby, while in the post-test, 80% knew. Our study showed that only 29% (n=63) knew.

Practices:

Our results showed that over 90% of all respondents brushed once or twice daily, which was similar to numbers in the literature, where around 90% of pregnant women reporting brushing 1-2 times per day.¹⁵

Utilization of dental services:

Keirse found that 15% of pregnant women visited a dentist during pregnancy and over 20% had plans to do so,²². Our results showed that more (22%) had gone, but fewer (10%) had plans to do so. Our results were similar to Fadavi, who cited 14% of African Americans and 26% of Hispanic Americans in their study saw a dentist during pregnancy.¹⁹

We found 46% of pregnant adolescents and young adults had routine dental care utilization (once per year on average, for check-ups). This was similar to Fadavi's study which showed under 50% of pregnant adolescents utilized care annually.¹⁹

Barriers:

Compared to others who cited safety concerns as the biggest barrier to dental care amongst 45%¹⁵ and approximately 33%¹⁹ of pregnant participants, our results showed that being too busy was the biggest barrier (21%). Safety concerns were cited elsewhere in our study, but only 4.5% of participants cited it as a barrier to care. An additional 7.5% cited fear that numbing medicine and x-rays could harm the baby, These percentages are less than those that Hans found.¹⁵ While Keirse cited cost as a barrier in 27% of respondents,²² it was cited amongst 6% of our respondents.

Reassuring data suggests that women are more likely to make behavioral changes during pregnancy in the benefit of their baby after being provided with oral hygiene interventions, and one study showed a significant increase in oral hygiene measures, reduction in plaque and

gingival indices, reduction in clinical attachment loss, and retention of knowledge on maternal and fetal health after oral hygiene counseling interventions were provided.³² Women who sought prenatal care in their first trimester were more likely to have gone to the dentist than those who sought prenatal care later in their pregnancy,^{17,21} and not being counseled during pregnancy was associated with a high risk of not receiving care.³³ This emphasizes the importance of comprehensive prenatal care that should include a strong dental component.

Limitations:

Limitations include self-reported data which has the potential for recall bias, a convenience sample from clinics where patients were already seeking medical care, and inadequate number of male respondents.

Our study adds to the literature that dental care amongst pregnant adolescents is underutilized and seems to be even less utilized and understood amongst adolescents than in older populations.

We hope others can use these findings to understand the importance of continued education on importance of oral healthcare during pregnancy.

Future Research:

Ideas for future research include studies that compare barriers amongst both groups (non-pregnant compared to pregnant participants), including providers in surveys and not just patients, implementing an experimental design after an intervention such as oral hygiene instruction, and a longitudinal study of the babies of pregnant patients and evaluating their oral health related quality of life and outcomes.

Chapter 5: Conclusions

Dental care during pregnancy amongst adolescents and young adults is underutilized. Our study has shown that pregnant adolescents and young adults seek routine dental care less, and problem-focused dental care more, than their non-pregnant counterparts. Pregnant adolescents find oral health less important since becoming pregnant compared to older pregnant populations.²⁰

Most people know that if a pregnant female has tooth pain, she should go to the dentist. Teenagers in general are largely unaware if local anesthesia can affect the baby and that a pregnant mom can pass bacteria that cause cavities to the baby. Many adolescents and young adults (48%) believe that x-rays can be harmful to the fetus. Most males are unsure of the questions regarding dental care during pregnancy and how pregnancy can affect the baby. The gap in knowledge regarding safety of dental care during pregnancy and reported barriers emphasize the importance of integrating dental care into routine prenatal care. While educating pregnant women is important, healthcare providers, including dentists, should be aware of the importance and safety of dental care during pregnancy.

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Appendix A: Tables

Table 1. Demographics of survey respondents		
	N	%
Total	215	100%
Age in years*		
Mean	17	
SD	2.3	
Median	17	
Min, Max	12, 22	
Gender*		
Male	10	4.7%
Female	196	91.2%
Decline to answer	2	0.9%
Ethnicity*		
Hispanic	23	10.7%
Non-Hispanic	183	85.1%
Race*		

American Indian or Alaska Native	2	0.9%
Asian	4	1.9%
Black or African American	105	48.8%
White	75	34.9%
Multi-race	19	8.8%
Other	3	1.4%
Insurance*		
Private insurance	52	24.2%
Public insurance	150	69.8%
No insurance or Self-Pay	4	1.9%
Appointment location		
TaP Clinic	66	30.7%
Adolescent Clinic	149	69.3%
Pregnancy status		
No	123	57.2%
Yes	67	31.2%
Blank (missing value)	25	11.6%
* Missingness <= 5%		

Table 2. General questions that every respondent answered		
	N	%
Total	215	100%
How often do you go to the dentist?*		
Only when I have a problem	47	21.9%
Once per year on average, for check-ups	81	37.7%
Twice per year on average, for check-ups	82	38.1%
I have never been to a dentist	4	1.9%
Have you ever had a cavity or a filling?*		
Yes	148	68.8%
No	56	26.0%
I do not know	8	3.7%
How often do you brush your teeth?*		
Less than 1 time per week	3	1.4%
Less than 1 time per day (2-6 times per week)	17	7.9%
1-2 times per day	168	78.1%
More than 2 times per day	26	12.1%
Do your gums bleed when you brush your teeth?*		
Yes	17	7.9%

No	118	54.9%
Sometimes	79	36.7%
Have you had a bad dental experience in the past?*		
Yes	21	9.8%
No	167	77.7%
I do not remember	23	10.7%
I have never been to a dentist	2	0.9%
Among those who answered yes to the previous question		
Has this bad experience affected whether or not you've gotten dental care since then?		
Yes	4	19.0%
No	10	47.6%
Blank (missing value)	7	33.3%
Do you think it is important for a female to go to the dentist while pregnant?*		
Yes	130	60.5%
No	12	5.6%
I do not know	66	30.7%
Do you believe that a pregnant female's oral health can affect the health of the baby?*		

Yes	87	40.5%
No	31	14.4%
I do not know	87	40.5%
When do you think a pregnant female should go to the dentist?*		
For check-ups and cleanings only	63	29.3%
Only if in pain	13	6.0%
Like anyone else for all treatment	87	40.5%
I do not think a pregnant female should ever go to the dentist	2	0.9%
I do not know	39	18.1%
Do you think numbing medicine that a dentist uses can hurt the baby of a pregnant female?*		
Yes	55	25.6%
No	43	20.0%
I do not know	107	49.8%
Do you think x-rays that a dentist takes can hurt the baby of a pregnant female?*		
Yes	104	48.4%
No	27	12.6%
I do not know	73	34.0%

Do you think that it is normal for a female to lose teeth because she is pregnant?*		
Yes	19	8.8%
No	121	56.3%
I do not know	65	30.2%
Do you think that the health of a pregnant female's mouth can affect the overall health of the baby she is carrying?*		
Yes	66	30.7%
No	47	21.9%
I do not know	92	42.8%
Do you think a mom can pass the bacteria that cause cavities to her baby via her spit (saliva)?*		
Yes	63	29.3%
No	46	21.4%
I do not know	96	44.7%
Which one is better for a pregnant female who has tooth pain?*		
Go to the dentist and have the tooth looked at	180	83.7%
Take antibiotics and pain medicine until after the baby is born, then go to the dentist	9	4.2%
Something else	9	4.2%

*Missingness <8%		
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Table 3. Questions that only pregnant females answered		
	N	%
Total	67	100%
Is the health of your mouth more important, less important, or the same now as it was before you were pregnant?		
More important now	23	34.3%
Less important now	2	3.0%
The same	42	62.7%
Have you gone to the dentist while being pregnant?		
Yes	15	22.4%
No	42	62.7%
I had a check-up in the past 6 months before I was pregnant	3	4.5%
Not yet, but I have an appointment already scheduled or will make one	7	10.4%
Have any of the following made it hard for you to go to a dentist during your pregnancy? Please circle all that apply.		

I don't think it's safe to go to the dentist while pregnant	3	4.5%
I have tried to make an appointment, but I can't find a dentist who will see me when I am pregnant	2	3.0%
The wait time is too long to get in to see the dentist	3	4.5%
I'm scared the numbing medicine can hurt my baby	3	4.5%
I'm scared the x-rays can hurt my baby	2	3.0%
I'm too busy	14	20.9%
I can't find a dentist who accepts my insurance	1	1.5%
I don't have money to go to a dentist	4	6.0%
The dentist I used to go to will not see me now	4	6.0%
Going to the dentist is not important to me right now	4	6.0%
My doctor has advised against me going to the dentist right now	0	0.0%
None of these apply to me	29	43.3%
Other	13	19.4%

Table 4. Comparison of seeking dental care by pregnancy status										
		Pregnant?								
How often do you go to the dentist?	Total	No		Yes		P-value	Interpretation: Based on unadjusted analysis (chi-square test), there appears to be an association between pregnancy status and response to Q1.			
Only when I have a problem	44	23	19.0%	21	31.8%	0.0004				
Once per year on average, for check-ups	69	39	32.2%	30	45.5%					
Twice per year on average, for check-ups	71	59	48.8%	12	18.2%					
I have never been to a dentist*	3	0	0.0%	3	4.5%					
Total	187	121	100.0%	66	100.0%					
*This category was excluded from analysis due to zero cell count.										
In table 5, Chi-square test was performed to examine whether response to Q1 differ by pregnancy status. However, it does not allow for adjustment of confounding factors such as age, race, ethnicity and insurance type (e.g., 73% of the pregnant females are Black while 40% of the non-pregnant females are White). Therefore, I developed a logistic regression model to adjust for those confounding factors shown in table 6.										

Table 5. Responses to questions regarding dental care during pregnancy by pregnancy status (females only)*					
	Pregnancy status				
	No		Yes		
	N	%	N	%	P-value
Do you think it is important for a female to go to the dentist while pregnant?					0.24
Yes	78	65.0%	39	59.1%	
No	5	4.2%	7	10.6%	
I do not know	37	30.8%	20	30.3%	
Do you believe that a pregnant female's oral health can affect the health of the baby?					0.008
Yes	56	47.5%	23	34.8%	
No	12	10.2%	18	27.3%	
I do not know	50	42.4%	25	37.9%	
When do you think a pregnant female should go to the dentist?					0.03

For check-ups and cleanings only	30	25.6%	28	42.4%	
Only if in pain	5	4.3%	7	10.6%	
Like anyone else for all treatment	58	49.6%	21	31.8%	
I do not think a pregnant female should ever go to the dentist	1	0.9%	1	1.5%	
I do not know	23	19.7%	9	13.6%	
Do you think numbing medicine that a dentist uses can hurt the baby of a pregnant female?					0.004
Yes	24	20.3%	28	42.4%	
No	31	26.3%	10	15.2%	
I do not know	63	53.4%	28	42.4%	
Do you think x-rays that a dentist takes can hurt the baby of a pregnant female?					0.36
Yes	59	50.0%	38	58.5%	
No	14	11.9%	9	13.8%	
I do not know	45	38.1%	18	27.7%	

Do you think that it is normal for a female to lose teeth because she is pregnant?					0.43
Yes	9	7.6%	9	13.6%	
No	73	61.9%	39	59.1%	
I do not know	36	30.5%	18	27.3%	
Do you think that the health of a pregnant female's mouth can affect the overall health of the baby she is carrying?					0.07
Yes	42	35.6%	16	24.2%	
No	24	20.3%	23	34.8%	
I do not know	52	44.1%	27	40.9%	
Do you think a mom can pass the bacteria that cause cavities to her baby via her spit (saliva)?					0.77
Yes	39	32.5%	19	28.8%	
No	27	22.5%	18	27.3%	
I do not know	54	45.0%	29	43.9%	
Which one is better for a pregnant female who has tooth pain?					0.13

Go to the dentist and have the tooth looked at	110	94.8%	56	86.2%	
Take antibiotics and pain medicine until after the baby is born, then go to the dentist	4	3.4%	5	7.7%	
Something else	2	1.7%	4	6.2%	
*Missing values were deleted when calculating frequency, percentage and p-value.					

Appendix B: Information Sheet and Survey



Study Title: Barriers to dental care in adolescents and young adults

Principal Investigator: Kim Hammersmith, DDS, MPH, MS

1. Introduction – Why are we doing this research study?

We are conducting a study to explore the barriers to dental care in pregnant and non-pregnant adolescents and young adults.

2. Participation is voluntary.

Participating in this survey is completely voluntary. Refusal to participate will not result in any penalty or loss of benefits. You may discontinue this survey at any time without penalty or loss of benefits.

3. What are possible Risks/Discomforts?

This survey will take approximately 15 minutes to complete. We believe that there is very minimal risk as a result of being in this study. Although we will take every precaution, there is a small chance of loss of confidentiality of your study information. There may be other risks of being in this research study that are not known at this time.

4. What are potential Benefits?

There are no expected benefits of taking the survey. However, we hope new information gained from this study could be useful for others.

5. How will my information be kept private?

Information collected about you will be stored in an encrypted software which is compliant with hospital policy.

6. Is there any payment/compensation for participation?

You will not be paid for participating in this research study.

7. Who can I contact for additional information?

You can contact the primary investigator Kim Hammersmith, DDS, MPH, MS if you have any questions about the research and research subject's rights. You can email Dr. Hammersmith at kim.hammersmith@nationwidechildrens.org or call at 614-722-5651.

If you have questions, concerns, or complaints about the research; if you have questions about your rights as a research volunteer; if you cannot reach the Principal Investigator; or if you want to call someone else - please call (614) 722-2708, Nationwide Children's Hospital Institutional Review Board (IRB). The IRB is the committee that reviews all research involving human subjects at Nationwide Children's Hospital.



Barriers to dental care in adolescents and young adults

Please circle one answer unless otherwise noted.

What is your age? _____

What sex were you assigned at birth?

- A. Male
- B. Female
- C. Other
- D. Decline to Answer

Are you of Hispanic, Latino, or Spanish origin?

- A. Yes
- B. No

How would you describe yourself?

- A. American Indian or Alaska Native
- B. Asian
- C. Black or African American
- D. Native Hawaiian or Other Pacific Islander
- E. White
- F. Multi-race
- G. Other (please list): _____

Which kind of health insurance do you have?

- A. Private Insurance (through my or my parent's job or purchased separately)
- B. Public Insurance (Medicaid/Dentaquest/Caresource/Molina/etc)
- C. No Insurance or Self-Pay (I get billed and have to make payments)

In what clinic is your appointment today?

- A. TaP Clinic
- B. Adolescent Clinic
- C. Primary Care

1. **How often do you go to the dentist?**
 - A. Only when I have a problem
 - B. Once per year on average, for check-ups
 - C. Twice per year on average, for check-ups
 - D. I have never been to a dentist

2. **Have you ever had a cavity or a filling?**
 - A. Yes
 - B. No
 - C. I do not know

3. **How often do you brush your teeth?**
 - A. Less than 1 time per week
 - B. Less than 1 time per day (2-6 times per week)
 - C. 1-2 times per day
 - D. More than 2 times per day

4. **Do your gums bleed when you brush?**
 - A. Yes
 - B. Sometimes
 - C. No
 - D. I do not brush my teeth

5. **Have you had a bad dental experience in the past?**
 - A. Yes →

<p>Can you please explain your bad dental experience?</p> <p>Has this bad experience affected whether or not you've gotten dental care since then?</p> <p>Yes --- if this bad experience has affected whether or not you've gotten dental care since then, please tell us why:</p> <p>No</p>

- B. No
- C. I do not remember
- D. I have never been to a dentist

-
- 6. Do you think it is important for a female to go to the dentist while pregnant?**
- A. Yes
 - B. No
 - C. I do not know
- 7. Do you believe that a pregnant female's oral health can affect the health of the baby?**
- A. Yes
 - B. No
 - C. I do not know
- 8. When do you think a pregnant female should go to the dentist?**
- A. For check-ups and cleanings only
 - B. Only if in pain
 - C. Like anyone else for all treatment
 - D. I do not think a pregnant female should ever go to the dentist
 - E. I do not know
- 9. Do you think numbing medicine that a dentist uses can hurt the baby of a pregnant female?**
- A. Yes
 - B. No
 - C. I do not know
- 10. Do you think x-rays that a dentist takes can hurt the baby of a pregnant female?**
- A. Yes
 - B. No
 - C. I do not know
- 11. Do you think that it is normal for a female to lose teeth because she is pregnant?**
- A. Yes
 - B. No
 - C. I do not know
- 12. Do you think that the health of a pregnant female's mouth can affect the overall health of the baby she is carrying?**
- A. Yes
 - B. No
 - C. I do not know

13. Do you think a mom can pass the bacteria that cause cavities to her baby via her spit (saliva)?

- A. Yes
- B. No
- C. I do not know

14. Which one is better for a pregnant female who has tooth pain?

- A. Go to the dentist and have the tooth looked at
- B. Take antibiotics and pain medicine until after the baby is born, then go to the dentist
- C. Something else →

What do you mean by "Something else"?

15. Are you pregnant?

- A. Yes →

What is your due date?

Month/Year: _____

- B. No

***If you are a male or not pregnant, please skip to the Comments section on the bottom of page 7.
Thank you for your willingness to participate.***

For pregnant females:

16. Is the health of your mouth more important, less important, or the same now as it was before you were pregnant?

- A. More important now
- B. Less important now
- C. The same

17. Have you gone to the dentist while being pregnant?

- A. Yes
- B. No
- C. I had a check-up in the past 6 months before I was pregnant
- D. Not yet, but I have an appointment already scheduled or will make one

18. Have any of the following made it hard for you to go to a dentist during your pregnancy? Please circle all that apply.

- A. I don't think it's safe to go to the dentist while pregnant
- B. I have tried to make an appointment, but I can't find a dentist who will see me when I am pregnant
- C. The wait time is too long to get in to see the dentist
- D. I'm scared the numbing medicine can hurt my baby
- E. I'm scared the x-rays can hurt my baby
- F. I'm too busy
- G. I can't find a dentist who accepts my insurance
- H. I don't have money to go to a dentist
- I. The dentist I used to go to will not see me now
- J. Going to the dentist is not important to me right now
- K. My doctor has advised against me going to the dentist right now
- L. None of these apply to me
- M. Other →

What do you mean by "Other"?



Optional:

We would like to continue our research on pregnancy and oral health and how it affects your baby in the future.

If you would like to help us, please write your name and contact information below, and we will keep it for later.

If you do not wish to participate, you can submit the survey now. Thank you!
I give permission for you to contact me later after my baby is born to continue this study or a related study.

Name: _____

Phone number: _____

Email address: _____

All Participants:

Please leave any comments in the space below.