MICHIGAN WIC PILOT YEAR 1 RESULTS

A Partnership Activity of the Michigan Women, Infants, and Children (WIC) Program, Altarum Institute's Michigan Caries Prevention Program (MCPP), McMillen Health, and Funded by the Delta Dental Foundation

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WIC Brush! Training: Year One Pilot Project

Training was offered to **30 WIC staff** in Detroit to teach mothers of young children about oral health, nutrition and how to find a dentist

23,000

infants and children in Detroit have access to these **five pilot clinics**

95%

of staff learned the recommended age for a child's first dental visit is **6 months to 1 year**

After the training, staff comfort level with discussing oral health issues **increased** from

36% to 86%

More than

1,000

children received a dentist referral because of the training

Nearly

100%

of children referred by WIC who went to the dentist received preventive care in that visit

For more information, please visit:
miteeth.org/WIC.html

MICHIGAN WIC Women Infants & Children

MDHHS Michigan Department of Health & Human Services

McMillenHealth EDUCATION · CURRICULUM · MEDIA

Michigan CARIES PREVENTION PROGRAM

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Acknowledgments & Notes

Special thanks to Michigan Women, Infants, and Children (WIC) and the staff at all WIC clinics that received training. This pilot activity was made possible by the generous funding and partnership of the Delta Dental Foundation. BRUSH educational resources, training, and curriculum developed by McMillen Health. Press Release regarding this pilot activity was published on February 4, 2016.

Introduction

Altarum Institute, Michigan WIC, McMillen Health, and the Delta Dental Foundation collaborated to implement a WIC-oral health pilot project in 2016 in urban Detroit. Staff in five WIC clinics—serving approximately 23,000 children, or 10% of the state's WIC participation—received training to integrate oral health education and dental referrals into the nutrition education provided to mothers with young children on January 12th and 13th, 2016. Clinics included Arab American & Chaldean Council (clinics at Joy Greenfield, 7 Mile, Lappin, and Harper) and Moms and Babes Too at Woodward.

In visits with WIC staff following training, families received oral health education appropriate to their child's age, resources (toothbrush, floss, etc.), as well as a referral to a dentist based on zip code. Through the pilot, the impact of delivering a common message to WIC families about the importance of oral health and early preventive dental visits, and integrating these key messages as complementary education within the nutrition education provided to WIC families was assessed.

There were four overall goals to these pilot activities:

- Empower WIC staff in the pilot clinics with the education and tools to support good oral health among their clients.
- Provide BRUSH training and resources to increase the comfort level among WIC staff in discussing oral health with their clients.
- Enable WIC staff to provide education and dental referrals to their clients to implement these health behaviors with their families.
- Evaluate the success/benefits of the pilot activities to inform potential statewide implementation.

The following is an in-depth analysis of survey, focus group, and Medicaid enrollemtn, claims, and encounter data used to determine the impact of this pilot program.

Pre-Post Training Survey Results

BACKGROUND

A pre- and post-survey was delivered to WIC staff before and after receiving the BRUSH training. The survey assessed the baseline knowledge and behaviors related to children's oral health among WIC staff, as well as determine their feedback on receiving the BRUSH training and resources provided as a pilot activity funded by the Delta Dental Foundation.

Staff received paper surveys for a pre- and post-training assessment in their training materials packets. 30 staff attended the training, and 22 completed and returned both pre- and post-surveys. The overall response rate of 73% among attendees.

KEY FINDINGS

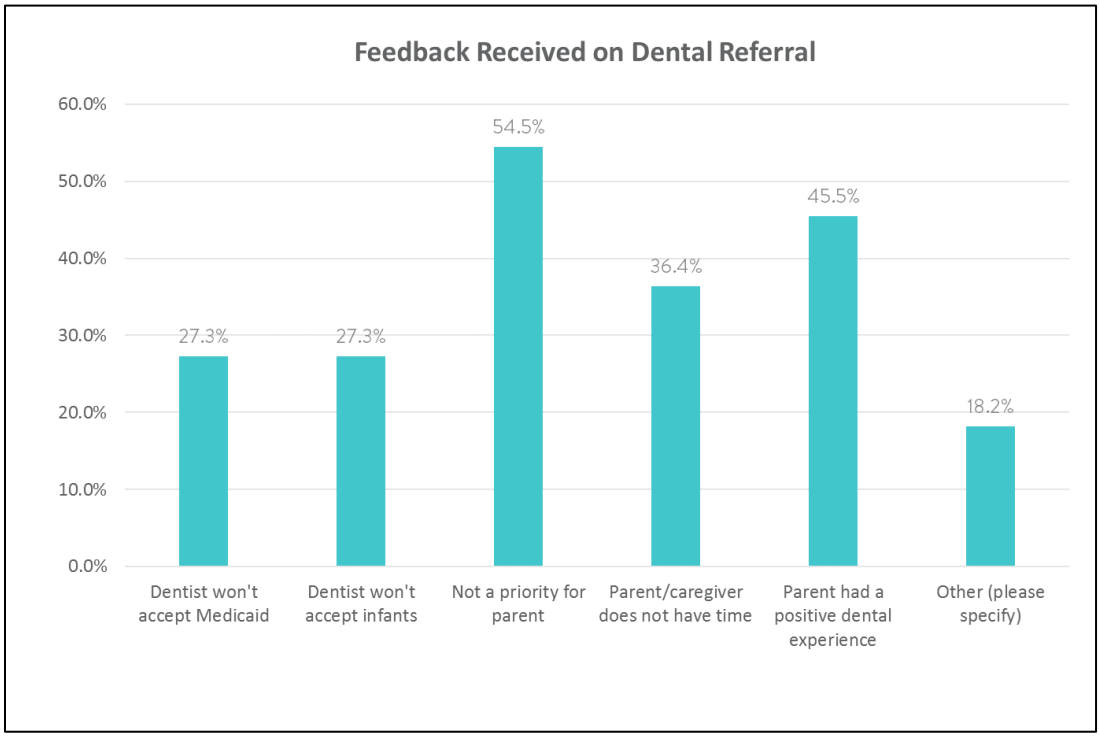
Overall, WIC staff were very positive about the BRUSH training. We asked if they had any previous training on dental health topics, in which 95.5% indicated 'no', and 4.5% indicated 'yes, and the training was adequate', making this training an integral part to discussing oral health with clients.

Staff receiving training were predominantly CPA or Nutrition Specialist staff, and the WIC experience varied, with most commonly 2-5 years, 11-20 years, and 21+ years working in WIC.

Referrals to a Dentist

Staff were asked if they currently placed dental referrals, 95.5% said yes, while 4.5% said no. Of the 95.5% that responsed yes to currently placing dental referrals, 66.7% indicated that they follow up on dental referral at subsequent visits, while 33.3% said they do not.

Staff shared that feedback from clients post-referral includes barriers such as parental priorities or lack of time, as well as encouraging feedback that the parent has had a positive dental experience. Below are the responses:



Training Impact: Knowledge & Comfort

WIC staff knowledge regarding the recommended age for a child's first dental visit (6 months to 1 year or when teeth erupt) improved from 43% (pre-survey) to 95% (post-survey). Additionally, comfort level with discussing oral health issues increased significantly, with a large increase among WIC staff who indicated they were very comfortable—from 36% (pre-survey) to 86% (post-survey).

Staff Feedback on BRUSH Training

Feedback on the training was very positive, with over one-third of WIC staff indicating their favorite part was “all of it”, or the entire training. When asked to describe their impression of the training in one statement, staff reported that they found it interesting or informative, excellent, well done, professional, educational or helpful, relevant or applicable to clients, thorough and organized, as well entertaining or enjoyable. 100% of WIC staff indicated in the post-survey they would recommend this BRUSH training to a colleague.

Post Training Thoughts on Implementation

Following the training, we wanted to explore how staff felt about taking what they had learned from the training and applying it during WIC visits. We asked participants, “Do you feel barriers and/or challenges to implementing the BRUSH resource materials, and other pilot activities, exist at your clinic?” The majority of WIC staff indicated ‘no’ (65%), while 35% felt that barriers and/or challenges existed. For those that indicated that barriers or challenges may exist, we asked them to explain what those may be. Some of the responses included: parent or caregiver motivation and compliance, lack of time with clients to cover everything, space constraints in clinic setting for display materials, and concerns regarding dentists’ acceptance of the age one dental visit.

Staff were asked in the post-survey how they envisioned incorporating BRUSH resource materials with their CCS counseling approach. Many staff shared their ideas of how they would introduce the topic with their clients:

> *Tell me about brushing your teeth...*
>
> *Tell me about going to the dentist...*
>
> *Will bring topic up with children's meal patterns/teeth issues/dentist referrals*
>
> *How do you take care of your teeth?*
>
> *How comfortable do you feel offering Fruit Snacks as a healthy snack to your child?*
>
> *Ask the child - how do you brush your teeth?*
>
> *What concerns, if any, do you have about your child's teeth?*
>
> *How is toothbrushing going?*
>
> *What challenges do you face keeping your child's teeth healthy?*
>
> *Has your child seen a dentist in the last 6 months?*

What age did you introduce your child to the dentist?

Summary of Findings & Conclusions

Feedback on the training was very positive, with over a third of participants indicating their favorite part was “all of it”, or the entire training. Although most (96%) of attendees had never received previous oral health training, 100% of participants indicated in the post-survey they would recommend this BRUSH training to a colleague.

Staff indicated that dental referrals and follow up are common in WIC, however their awareness of and comfort with discussing oral health increased considerably. Staff knowledge increased regarding the recommended age for a child’s first dental visit from 43% to 95%. Comfort level with discussing dental issues increased overall, with a large increase among WIC staff who indicated they were very comfortable (from 36% to 86%).

Staff felt ready to implement this training in their clinics. 65% of participants did not feel they had any barriers to implementing the BRUSH oral health education and resources into their clinic workflow. 78% of participants shared open ended questions they would use to incorporate oral health within a CCS counseling approach in their interaction with clients.

Focus Group Summary

BACKGROUND

Altarum held two focus groups on April 18 and 19, 2016, and two more on September 13, 2016, with the WIC clinic staff who received the BRUSH training in January 2016. Through the focus groups, Altarum Institute gathered information to help assess the staff’s perspective on the training and pilot activities, obtained feedback to adjust and improve implementation processes. The second round of focus groups were conducted to gather additional information regarding pilot implementation, and to gain an understanding of any barriers encountered by WIC clinic staff.

INTRODUCTION

Altarum Institute held a focus group discussion with 4 staff from Moms & Babes Too at Woodward on April 18, 2016. Altarum Institute held another focus group with 4 staff from Arab American & Chaldean Council (clinics at Joy Greenfield, 7 Mile, Lappin, and Harper) on April 19, 2016. For the second round of focus groups, Altarum Institute held two more focus groups on September 13, 2016, with 5 staff Mom & Babes Too at Woodward and 3 staff from Arab American & Chaldean Council, at their respective local agency locations. WIC clinic staff provided information via group discussion.

The discussion was designed to gather information from the clinic staff in the following areas:

1. To understand what staff feels is working well with implementing this new pilot activity
2. To understand what staff feels could be improved in the pilot activities, including both the initial training and with clinic implementation

3. To understand how staff have been integrating this new oral health training with their client centered services counseling approach, and the impact of the training on their comfort level discussing oral health as a topic with families
4. To understand how parents and caregivers have been receiving this new topic
5. To understand any barriers that staff have experienced, as well as to gather their input on how to overcome the indicated barriers

WIC STAFF PERSPECTIVES

What Staff Feels is Working Well in Pilot Implementation

Almost all of the participants noted liking the new dental referrals. A common theme was the impact that the oral health education had in informing WIC mothers that the recommended age of the first dental visit is 1 year. It was noted that many families were still under the impression that age 3 was the appropriate age, "very surprised that they can take a baby to the dentist at 1 year old."

The BRUSH curriculum visual aids for the families (large toothbrush, large mouth model, flip chart, poster, handouts) were commonly reported as being very effective as conversation starters with families. Staff noted different strategies for incorporating the oral health topic into their client interactions:

> *Encouraging children to play with the mouth model - "One of the nutritionists named their teeth" "the kids color and draw on them and they clean very well."*
>
> *Optimizing the flip chart – "I developed a filing label and put it on the flip chart so I can flip to [the priority topic] quickly. [The flip chart] is time consuming. It's helpful… [to have] tabs on the side."*
>
> *Framing the conversation – "I use the conversation with a parent that we don't want the kids to start school with caries."*
>
> *Using personal experience – "My favorite is talking about saliva slowing down at night. I notice my own kids brushing more at night and after dinner."*

Staff noted that many of the families had already been introduced to the oral health topic by the child's pediatrician, so they were grateful to be delivering a common message to the family that aligned with the other recommendations from other health professionals, "A lot of our kids have gone to the dentist or have a pediatrician who does a fluoride treatment."

What Staff Feels Could Be Improved Upon in the Pilot Activities

The staff had no negative feedback related to the training, they noted it was more comprehensive than they had expected, "the training has helped a lot." One commonly noted issue with the pilot activities

were the limited zip codes included in the dentist referral list:

> *"We need to add a few zip codes… the child may be more likely to go to appointments with the grandparents who are in a different zip code."*
>
> *"I had one client who did not want to be referred to a dentist in the city of Detroit, she wanted to go to a dentist in another area"*
>
> *"…not always easy to do the referrals."*

A few staff noted receiving questions regarding the child's dental coverage, and would have liked more training or resources to reference for checking on a child's dental coverage status. WIC staff often provide families with community referral resources, and work to empower families to seek care. Enabling staff with appropriate information regarding navigating accessing care will help them in this regard.

Most Well Received Components of the WIC Oral Health Pilot Activity

The top positive feature mentioned by participants include the visual aids for oral health education discussions with families.

> *"Fake teeth are often a conversation starter – kids get interested. That display is really helpful because if we forget to talk about it, it usually comes up."*
>
> *"By having the flip charts up, we flip the chart to [accommodate] whoever is coming in."*
>
> *"It [oral health] is something we already talked about but now we have the materials, a visual aspect, and it doesn't add any more time or anything like that."*
>
> *"I like the [flip chart section] with the baby bottle tooth decay. In our culture they stay on the baby bottle for a long time. So this one is really important. The parents get shocked that this would be their future."*

Parents' receptiveness to the oral health topic was also very positively noted.

> *"[Parents have been reacting] very good. They are very surprised that they can take a baby to the dentist at 1 year old."*

> *"They either are very on board with it or are very surprised that they need to take [their child] so early."*
>
> *"A lot of them are surprised about the information we've been giving them…'wow, I didn't know fruit juice or soda could cause that'."*

Other positives include:

> *Incentives for families – "Giving out the toothbrushes is great. Not everyone knows about the finger toothbrushes or washing their gums. Everyone likes getting toothbrushes free."*
>
> *Increased confidence in discussing oral health with families - "[the training] made it a lot easier to discuss with a client."*
>
> *Increased referral opportunities – "I feel more comfortable with my recommendations and referrals." "Zip codes in there are nice for referring."*
>
> *Using oral health as a way to discuss a topic the parent is not necessarily open to: "Sometimes if I have a kid who is drinking a lot of juice and the kid is overweight but they don't want to talk about it – I may talk about it in the oral health way which is another way to get that conversation in." "A lot of clients are more receptive to oral health education than some of our nutrition information."*

ADDITIONAL AREAS FOR IMPROVEMENT IN THE WIC ORAL HEALTH PILOT ACTIVITY

Staff gave helpful constructive feedback related to the components of the pilot activity, and many of them had developed solutions to barriers or offered suggestions for improvement. Challenges and barriers reported included:

Not all materials are used consistently by staff.

> *"We aren't really using the magnetic board. We don't know if this is a must have resource. Money could be spent in the future on other things."*
>
> *"Too many topics on the flip chart. I think there is 19. It is time consuming to keep flipping."*

Several participants commented that there was skepticism about referring to dentists without knowing anything about the dentist.

> *"Is there anything we could use to make us more confident in our referral? ...A dentist visit at 1 or 3 can make or break their experience."*
>
> *"I'd hate to recommend if, for example, they can't take 1 year olds. If you look at the [limited] number of pediatric dentists we can refer to, it could happen."*

Staff used the handouts to varying degrees, from not at all, to giving out too many.

The mouth model and large toothbrush, although effective at initiating conversations, have become a hygiene issue, "Kids put it in their mouth." – Staff noted wanting a way to maintain the cleanliness of that resource.

Staff indicated some interest in more resources and education for pregnant mothers.

> *"There are pregnant women too that don't know they can go to the dentist. I say yes, you can."*

RECOMMENDED PILOT CHANGES FROM APRIL FOCUS GROUPS

It is clear from the responses and discussions that WIC staff were pleased with the training and the new resources they are able to offer their clients. They want to provide their clients with quality education and referral resources, and are willing to get creative to overcome barriers such as lack of time. WIC clinic staff have made modifications to the materials and offer several ideas about changes they believe would make it easier to conduct the oral health counseling with families. Recommended changes fall into three categories: flip chart, workflow/implementation, and continued education.

Flip Chart:

- Add tabs to identify the topics to make it easier to flip to the topic of choice.
- Streamline the number of topics included in the flip chart.
- Offer electronic versions of the flip chart or handouts to be emailed out to families or posted to the Facebook page of the WIC clinic.

Workflow/Implementation:

- Encourage staff to give the take-home toothbrush for the child at the end of the visit, so the child does not get focused on unwrapping it and playing with it as opposed to playing with the mouth model or other visuals.
- Increase the number of zip codes in the referral list to include a greater area.

- Add educational resources about the child's dental coverage for the families.
- Change the way the toothbrushes are packaged to offer a variety of colors in each box as they're unpacked, to avoid having only one color to offer a family, or having gender-specific colors to hand out.
- Set up pre-determined behavior goals in MI-WIC related to the oral health topic.

Continued Education:

- Offer webinar covering the BRUSH training for new staff to onboard, and be available to trained staff as a reference.
- Offer educational resources for the staff on how to instruct parents and caregivers about being a supportive parent at the dentist visit.
- Add training and resource materials for WIC clinic staff on children's dental coverage pertinent to their county.

PROCESS IMPROVEMENTS IMPLEMENTED DURING PILOT

There were a number of process improvements revealed from the April focus groups that were incorporated into WIC BRUSH Pilot within the current pilot year (2016). These included:

- Additional dentists added to the Referral List by zip codes as requested.
- Additional educational resources related to the Healthy Kids Dental benefit (child's dental coverage) were provided by Delta Dental.
- Altarum worked with Michigan WIC and McMillen Health to determine a list of common behavior goals related to the oral health topic to be added into the MI-WIC system to improve usability of the interface for WIC staff, this is in the process of being added into the MI-WIC system.

FINDINGS FROM SEPTEMBER 2016 FOCUS GROUPS

The second round of focus groups was conducted on September 13, 2016 to gather more information regarding staff perceptions on the WIC pilot implementation. Conducting focus groups at this time allowed for better analysis of the referral process, including more opportunity to follow-up with clients on how their referral to a particular clinic went. Several new themes were revealed.

A major issue revealed by staff was clients returning after a referral and noting that the dentist would not accept them.

> *"I still have a lot of parents who say the dentist told them they don't need to be seen by 3."*
>
> *"Yes, we get that a lot."*

> *"They say they try to take them and they won't accept them at that age."*
>
> *"Dentists say 3 [years old] often, sometimes 2."*
>
> *"I have them come back and say, I called that dentist that you referred and he says that he doesn't take under 3!"*

However, in the experience of the staff, those who were accepted generally started going on a regular basis.

> *"I've had some that say they go every 6 months. They show me the card and say, see I'm going."*
>
> *"I had a couple clients say when they go in for their treatment, if they have their baby with them the dentist will look at their teeth."*
>
> *"Once they go, they go every 6 months unless they have other issues. They might have transportation issues or whatnot that get in the way, but they will go back eventually"*
>
> *"Yes, they will establish a regular visit schedule."*
>
> *"Nobody says they aren't ever going back."*

Staff again largely emphasized the need for feedback on dentists they are referring to. Some noted they received feedback from clients who did not like a particular dentist and would like a way to track that for future reference. One individual indicated, "the referrals are still a little rough because of lack of…feedback," with another adding "some way to have feedback on dentists would be useful."

Secret Shopper Phone Calls

SUMMARY

In the second round of focus groups conducted by Altarum, WIC staff provided feedback regarding the dental referral process. A major issue revealed by staff was clients returning after a referral and noting the dentist would not accept them if their child was under 3-years-old. Specifically, staff said "I still have a lot of parents who say the dentist told them they don't need to be seen by 3," and "They say they try to take them and they won't accept them at that age," and "I have them come back and say, I called that dentist that you referred and he says that he doesn't take under 3!"

In order to address these concerns, Altarum Institute conducted “secret shopper” calls—phone calls to each dental clinic in which an Altarum staff member acted as a mother seeking dental care for a one-year-old child, wondering if the dental clinic in question accepted children of that age.

In calling dental clinics, the caller always started with the same line: “Hi, I have a 12 month old—I was just wondering, do you accept children that age at your clinic?”

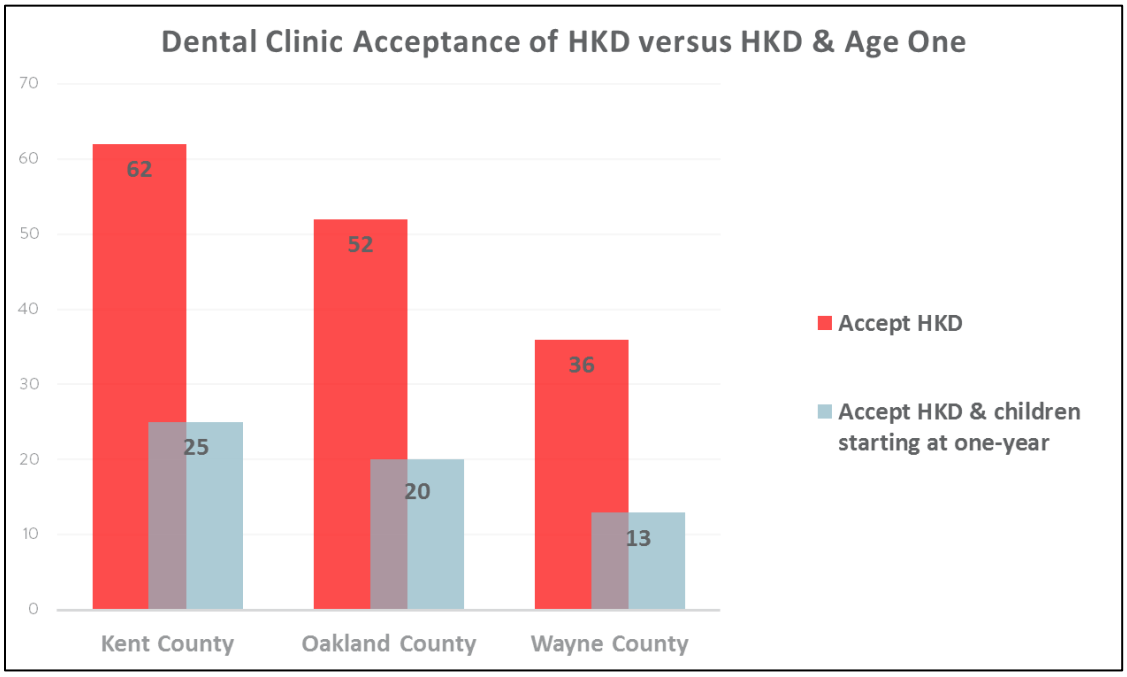
The caller was often asked something along the lines of, “Are they having a problem, or did you just want to come in for a routine check-up?"

The caller would then always say,

“Well, my pediatrician had recommended starting visits at this age and I also read a lot of information online from the ADA stating that you should start dental visits this early, so I just wanted to start looking for a dentist and schedule the first appointment.”

Results

Responses revealed that a large proportion of clinics accepting Healthy Kids Dental (HKD) do not accept children starting at one year of age. Specifically, out of the 150 total clinics accepting HKD, only 58



(38.6%) agreed to accept a child at one year. Wayne County had the lowest acceptance rate, with 36.1% of their 36 HKD-accepting clinics accepting one-year-olds, while Kent County had the highest at 40.3%, and Oakland County had 38.5%.

Of those who said they do not accept children starting at one year, this is the range of responses received:

Some simply noted they do not accept children of that age and offered no explanation.

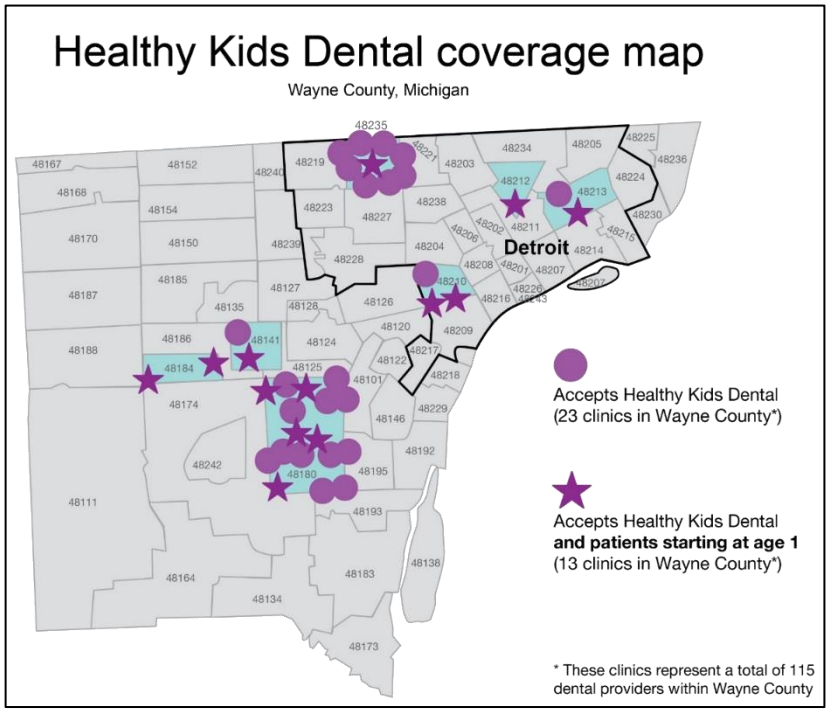
Others noted they do not accept children of that age and referred to a pediatric dentist in the area.

Many said that they don't recommend bringing children in until they are 3 years of age and explained why that may be so. Of these, most reasoned that younger children do not sit still and it is difficult to actually examine them.

A few stated that whatever information the caller had read was wrong and that the recommendation is to start bringing children in when they are three years old—others claimed it was two years old. When this happened, the caller did not argue with them or push the topic, as it was assumed those being referred are not likely to argue with them either.

Some initially said no, but after checking with the dentist in the clinic they said they would accept. After doing this, some seemed to question whether the caller was absolutely sure they wanted to do that as they would only be sitting them in the chair and doing an oral health screening as opposed to a full teeth cleaning. There was only one individual the caller talked to that seemed very enthusiastic in recommending this option.

With year 1 pilot activities taking place in Wayne County, we provided a map to show the geographical disparities of dental clinics accepting HKD near participating WIC clinics versus accepting HKD and 1 year olds:



Evaluation of WIC Referrals and Subsequent Dental Visits

OBJECTIVES AND APPROACH

Data from the WIC program office were used to assess the frequency and characteristics of dental referrals following the Brush Curriculum training and to determine the percent of referrals that result in a dental visit. Program utilization data were then linked to Michigan Medicaid enrollment and utilization utilization data to estimate the percent of children referred who had a dental visit following the referral. In order to determine whether this WIC pilot program increased the rate of dental visits, dental visit rates for WIC clients referred to a dental practice were compared to rates observed for a matched control group.

METHODS

WIC referral data were obtained for each client referred to a dentist and characterized in terms of age of client, WIC clinic, referral month, number of referrals, dental organizations referred to, and the percent of all WIC client visits resulting in a dental referral. WIC client-level data were linked to Medicaid enrollment and claims encounter data based on the Medicaid ID to determine the percent of referrals that resulted in a dental visit. Validity checks were performed by comparing the Medicaid enrollment age with the WIC-reported age. Medicaid enrollment age was defined as the age at the time of the visit data based on the patients date of birth. The WIC data reported age, but not date of birth. A WIC case that was linked to Medicaid enrollment data based on Medicaid ID was deemed valid if there was both an exact match on Medicaid age and the WIC age varied by no more than one year.

Populations studied: Three populations of children under five years were compared in this analysis: children with a WIC visit resulting in a dental referral, children enrolled in Medicaid residing in Wayne County, and a subset of Wayne County residents matched to WIC cases who were enrolled in Medicaid. Propensity score matching was used to match controls from Wayne county to WIC clients receiving dental referrals. A stepwise logistic regression was estimated based on all Medicaid enrolled children under 5 years residing in Wayne county. Cases were defined as WIC clients with a dental referral in 2016 from one of the five participating WIC clinics. An index date was defined for cases as the date of the first WIC visit where the child received a dental referral. For all others, an index visit date was assigned as the 15th of the month (index month) in a randomly selected month in 2016. Because WIC clinic visits visits with a dental referral were clustered in the first six months of 2016, we forced the random selection of index months to reflect the frequency of index months for the cases. Independent variables include age at the index date, gender, race, month of index date, and a variable representing whether the child had any dental visits in the 6 months before the index month. In order to be able to report dental visits for the six months prior to the index month and 6 months following the index month, we further required individuals to have a minimum of 12 months of eligibility during the 13 month period surrounding the index date (six months before the index month, the index month, and six months after the index month). The outcome measures used for this analysis were dichotomous variables indicating any dental visit within in 1, 2, 3, and 6 months following dental referral.

Measures: The key measures of interest is the percent of individuals who had a claim for dental services in 1-, 2-, 3-, and 6-months following the index date. Medicaid dental and professional claims and encounter data for 2015 through June of 2017 were searched for evidence of dental claims with a Current Dental Terminology (CDT) code (prefix='D') to indicate a dental claim. We searched both dental and professional (medical) claims because some dental services are provided in medical settings (physician office and outpatient settings). For example, the State of Michigan reimburses physician offices for oral health screens (CDT code D0190). We excluded any claim with a CDT code prefix 'D' where the rendering provider specialty indicated the provider was not a dental provider (eg, pedicatrician, family medicine). In addition, for those individuals who had a dental visit in either the 6 months prior to the index date or the six months following the index date, we summarized the type of service provided as either preventive (two-digit CDT code 'D1'), restorative (CDT code 'D2') and other (all other CDT codes).

Statistical Analysis: Descriptive analysis of characteristics of the populations studied were made using t-tests and chi-square tests. Comparisons of outcome measures between cases and matched controls were made using chi-square tests.

RESULTS

Program Utilization

There were 1,025 children under 5 years who visited one of the five pilot WIC clinics and received a referral to one or more dentists in 2016 (Table 1) with most (96%) having only one visit in the year. The mean number of referrals received at each visit was 1.8 with 52% receiving referrals to one dental practice, 25% to two dental practices, 18% to three, and 6% to four or more practices. Two thirds of all children receiving referrals to dental practices were under 3 years of age. Three of the five participating clinics accounted for 87% of all referrals. Children were referred to seventeen dental practices over the course of the year, with the top three practices accounting for almost 60% of all referrals. Most of the dental practices referred to (14 out of 17) received at least one referral from all five clinics. The number of referrals diminished over the course of 2016 with 75% occurring in the first half of 2016. The reduction in referrals over the year was consistent across the three clinics accounting for the majority of referrals.

TABLE 1. CHARACTERISTICS OF WIC REFERRALS TO DENTAL PRACTICES

Characteristic	N	Percent
Number of visits resulting in a dental referral	1,064	
Number of referrals by WIC pilot clinic		
Detroit Health Department WIC at Woodward Avenue	347	22%
ACC WIC Clinic -- Joy Greenfield	293	28%
ACC WIC Clinic – Lappin	290	27%
ACC WIC Clinic – Harper	77	7%
ACC WIC Clinic – 7 mile	57	5%
Number of practices referred to at referral visit		
1	551	52%
2	262	25%
3	187	18%
4 or more	64	6%
Frequency of referrals to dental providers		
Michigan Community Dental Clinics Inc	662	34%
Ahmad I Shannir DDS PC	249	13%
Jewell Dental of Rose Vision	205	11%
Norman Koepp DDS PC	152	8%
Hollis W James DDS PC	118	6%
Diane I Hines DDS PC	101	5%
Deliver Dental Solutions Inc.	75	4%
Covenant Community Care	70	4%
St John Health System-Detroit Macomb Campus	50	3%
Jewell Dental PC	48	2%
Apple Denture Center & More LLC	40	2%
Stephen J. Krawiec DDS PC	40	2%
Jefferey Jaskolski	39	2%
Detroit Community Health Connect	28	1%
Vernor Dental Care	23	1%
Zeena Kazangy DDS	15	1%
Detroit Health Care for the Homeless	13	1%
Total	1,928	100%

Note: *ACC: Arab American Chaldean Council*

Of the 1,025 WIC pilot cases with a dental referral in 2016, 814 (79%) were linked to Medicaid enrollment data. Most of the cases that could not be linked did not have a Medicaid id listed in the WIC referral data. Of the 814 cases linked, we compared the age listed on the WIC referral data (date of birth was not available in the WIC referral data) with the date of birth data in the Medicaid enrollment data. All cases matched to within one year between the two data sets and no additional exclusions were made. No other variables were avaialable to evaluate the validity of the data linkages. Of these 814 cases, 649 (80%) had eligibility for at least 12 of the required 13 months (6 months before the index month, the index month, and six months after) and were considered continuously eligible and constituted the cases for the analysis. The stepwise logistic regression retained (at 0.05 significance for inclusion) the variables race, age at index date, gender, and dental utilizationin the 6 months prior to the index date. Only the month of the index date failed to enter the stepwise regression. Propensity score

matching resulted in all 649 cases being matched to controls (1 to 1 matching) and resulted in exact matching of all characteristics.

The cases receiving a dental referral at the WIC pilot clinics differed in important ways from the rest of the Wayne County population under 5 years enrolled in Medicaid (Table 2). Race, Age at Index Visit, Gender, and dental visit in prior 6 months were all significantly different between the WIC cases and the rest of Wayne County. After propensity score matching, there were no differences in the distribution of these variables between the cases and matched controls.

TABLE 2. CHARACTERISTICS OF THE POPULATIONS STUDIED

Characteristic	Rest of Wayne County (N=53,864)	All WIC Cases (N=1,025)	WIC Cases with Continuous Medicaid Enrollment (N=649)	Matched Controls (N=649)	p-value for comparison of WIC cases with rest of Wayne County
Age					p < .0001
< 1 year	15%	8%	7%	7%	
1 year	21%	34%	34%	34%	
2 years	21%	25%	23%	23%	
3 years	21%	20%	21%	21%	
4 years	21%	14%	15%	15%	
Race					p < .0001
Black	55%	NA[1]	86%	86%	
White	27%		5%	5%	
Hispanic	7%		2%	2%	
Other/Unknown	12%		7%	7%	
Gender					p = .0503
Male	51%	NA[1]	55%	55%	
Female	49%		45%	45%	
Dental Visit in 6 Months Before Index Date	18%	NA[1]	10%	10%	p < .0001

Note: *Data on race, gender, prior dental utilization only available for WIC linked cases.*

Dental Visits Following Referrals

In the unadjusted comparison of WIC cases and the rest of Wayne County, WIC cases were significantly less likely (p<.0001) to have had a dental visit in the six months before the WIC referral visit (Table 3). WIC cases age 1 and 2 years were significantly more likely to have a dental visit following the WIC referral visit by 6 months after the referral.

TABLE 3. FREQUENCY OF DENTAL VISTIS: WIC CASES VERSUS REST OF WAYNE COUNTY

Age Group	Number of observations		6 months pre		1 month post		2 months post		3 months post		6 months post	
	ROW	WIC	ROW	WIC	ROW	WIC	ROW	WIC	ROW	WIC	ROW	WIC
All ages	53,965	647	17.8%	10.3%*	4.3%	3.8%	8.3%	8.4%	12.1%	13.1%	23.2%	25.1%
< 1 year	8,191	48	0.5%	0.0%	0.2%	0.0%	0.5%	0.0%	0.8%	0.0%	2.8%	4.2%
1 year	11,335	220	4.3%	1.8%	1.2%	2.7%	2.5%	5.5%*	4.0%	10.9%*	9.1%	18.2%*
2 years	11,490	151	12.6%	9.9%	3.3%	3.3%	6.5%	9.3%	9.7%	12.6%	20.7%	28.5%*
3 years	11,390	136	27.7%	15.4%*	6.8%	5.9%	12.5%	9.6%	18.4%	16.2%	35.2%	32.4%
4 years	11,559	95	38.8%	28.8%*	8.8%	6.3%	16.7%	16/8%	23.4%	21.1%	41.8%	35.8%

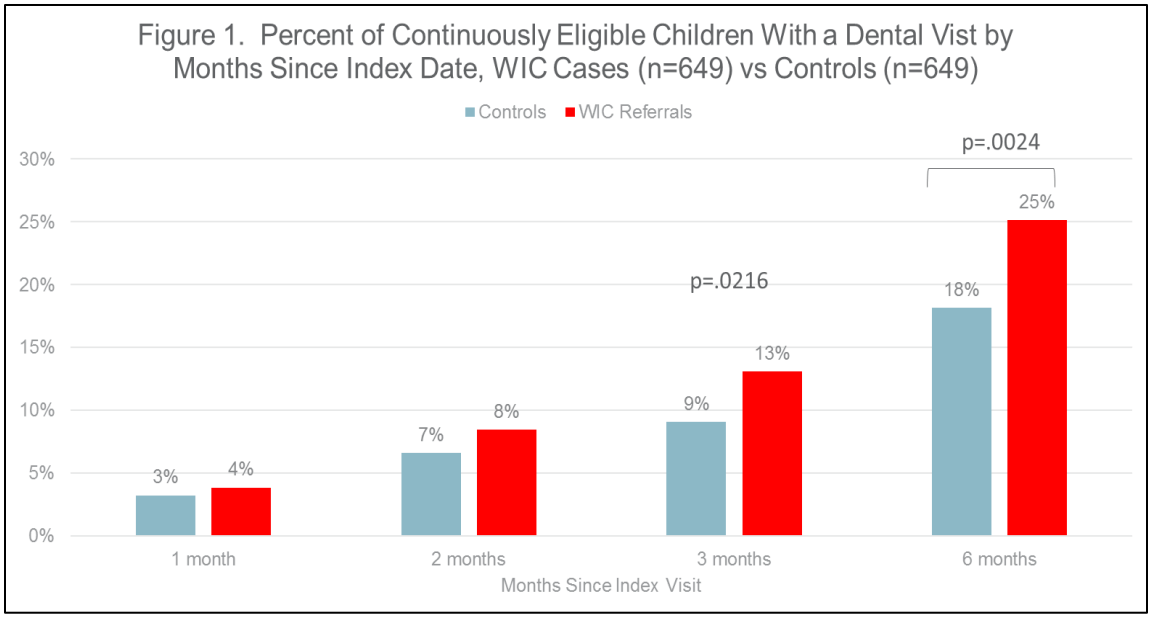
Note: *ROW: Rest of Wayne County. *Significant at the .05 level*

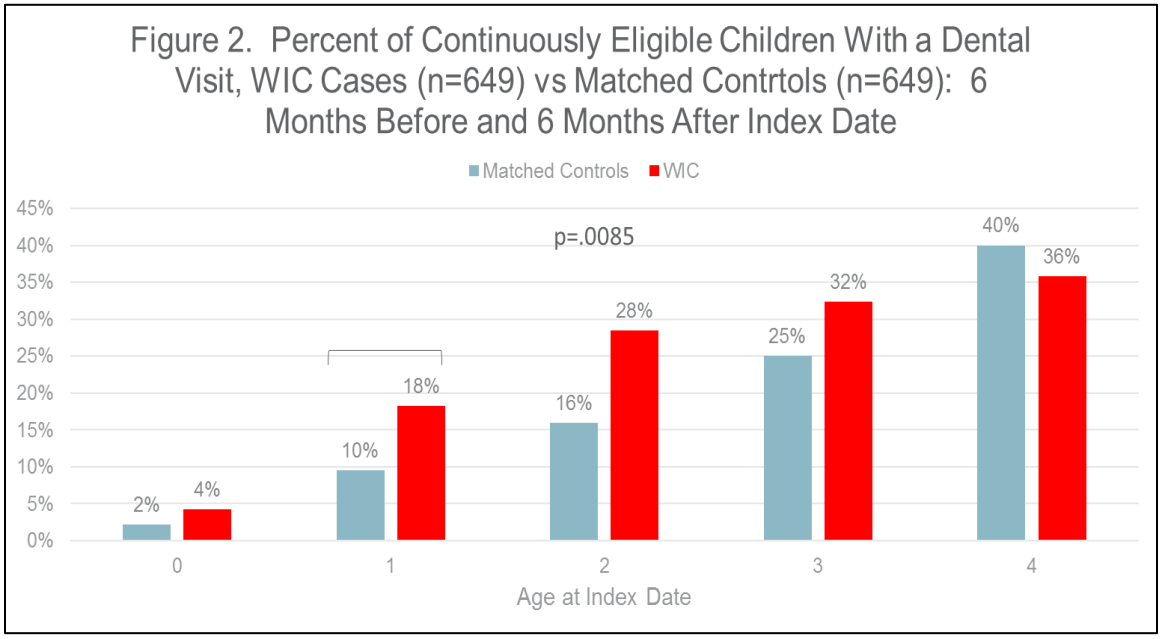
In the analysis of WIC cases and propensity-score matched controls, both cases and controls had the same likelihood of having dental viists in the six months prior to the index date (Table 4, Figure 1). This is because cases and controls were matched on prior dental vist. WIC cases were significantly more likely to have a dental visit in the follow-up period than matched controls, beginning at month 3. Children ages one and two years were also more likely to have a visit in the six months following the referral visit compared to controls (Figure 2).

TABLE 4. COMPARISON OF WIC CASES AND MATCHED CONTROLS

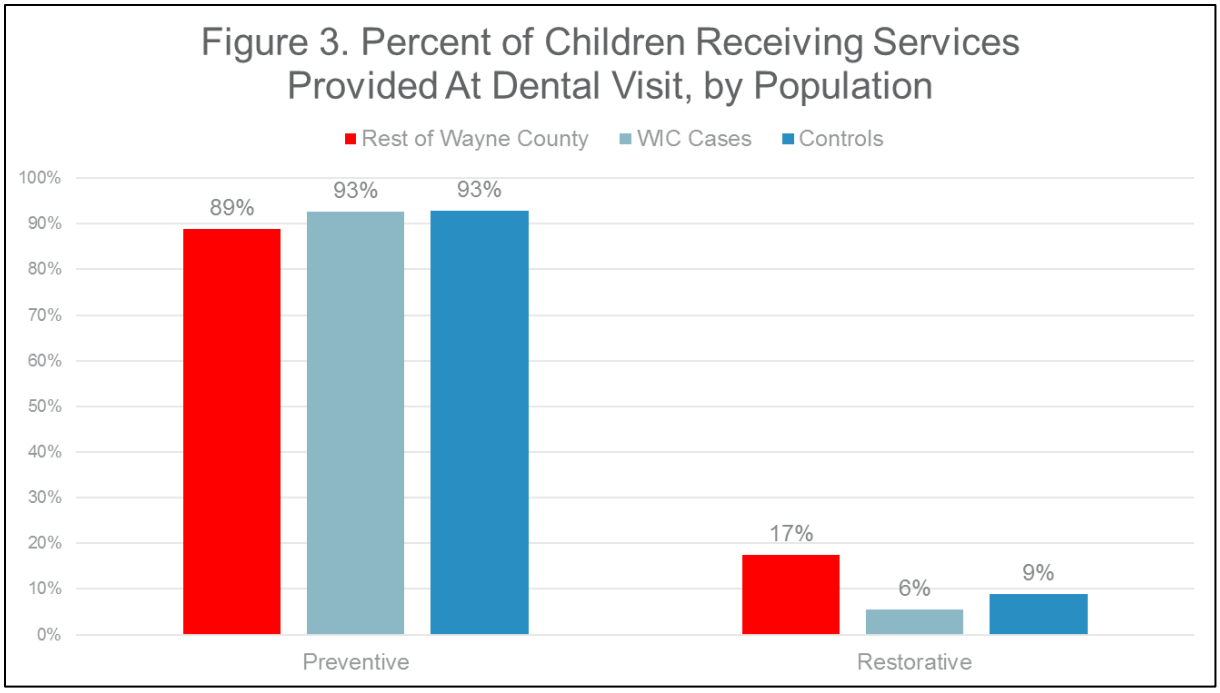
Age Group	Number of observations		6 months pre		1 month post		2 months post		3 months post		6 months post	
	CTL	WIC	CTL	WIC	CTL	WIC	CTL	WIC	CTL	WIC	CTL	WIC
All ages	647	647	10.3%	10.3%	3.2%	3.9%	6.6%	8.5%	9.1%	13.1%*	18.2%	25.1%*
< 1 year	48	48	0.0%	0.0%	2.1%	0.0%	2.1%	0.0%	2.1%	0.0%	2.1%	4.3%
1 year	220	220	1.8%	1.8%	0.9%	2.7%	3.6%	5.5%	4.1%	10.9%*	9.5%	18.2%*
2 years	151	151	9.9%	9.9%	3.3%	3.3%	5.3%	93%	8.6%	12.6%	15.9%	28.5%*
3 years	136	136	15.4%	15.4%	7.4%	5.9%	11.8%	9.6%	14.0%	16.2%	25.0%	32.4%
4 years	95	95	28.4%	28.4%	3.2%	6.3%	10.5%	16.8%	17.9%	21.1%	40.0%	35.8%

Note: *CTL: matched controls. *Significant at the .05 level*





For both cases and matched controls, over 90 percent of children who had a visit to the dentist after the index date received preventive services. While fewer controls (n=124) than WIC cases (n=163) had a visit to the dentist in the 6 month follow-up period, a larger percentage of controls received restorative care (9%) compared to cases (6%), though this difference was not statistically significant.



DISCUSSION

This analysis of the 2016 WIC pilot dental referrals suggests that referral of children to the dentist by WIC staff resulted in an increase in dental visits. Moreover, this project appears to have targeted a population that may have historically low rates of dental vistis as reflected in the lower rates of dental visits in the months prior to the WIC visit. After controlling for baseline characteristics, 25.1 percent of WIC pilot participants had a dental visit after referral compared to the dental visit rate of 18.2% for matched controls; an increase of 38%. This increase in dental visit rates at 6 months was consistent across all ages, but most pronounced for children aged 1 and 2 years; a group that has traditionally been least likely to have dental visits. Finally, it further appears that most of the children referred by the WIC clinics who saw a dental provider received preventive services. This is particularly important since numerous pediatric and dental organizations stress the importance of having chidren establish a dental home at an early age to minimize the occurrence of early childhood caries.

These data also point to opportunities for further improvement. First, the decline in the number of WIC referrals in the second half of 2016 suggest that there may be a need for a 'booster shot' to reinforce the need for dental referrals. Also, as mentioned earlier in this report, WIC staff may become discouraged from referring children for dental care if the dentists are not accepting younger patients. Second, while this analysis suggests an increase in the number of chilfen seeing a dentist at early ages, less than half of children referred to a dentist actually saw a dentist. There are numerous reasons for this, only some of which were addressed by this program including transportation barriers, parental reluctance, and the aforementioned reluctance of many dentists to accept children under 3 years of age.

There are a number of limitations to this analysis. We were only able to link 63% of the WIC pilot participants to Medicaid claims and encournter data for a full 6 months before and after the referral

visit. Also, this is a non-randomized, observational study. While our effort to match cases and controls on key variables is likely to reduce many of the factors that could confound the relationship between referral and subsequent dental visits, we are not able to measure some important factors that may bias our results. This analysis is one of association, not causation. Despite these limitations, this is one of a very few studies to assess the value of referral of young children for dental care. As such, we believe this represents an important first step in better understanding how WIC staff trained in the Brush Curriculum can improve the utilization of dental serices in this critical population.

Summary

We have a variety of lessons learned from the pre-post training surveys, focus groups, secret shopper calls, and the Medicaid claims data that can be applied moving into year 2 of the pilot program.

Thank you to everyone involved, especially to the Delta Dental Foundation for providing funding for this important work.

With the year 2 pilot expansion, an additional 46,000 children, or 20 percent of the state's WIC participation, will have access to the program —spreading education, knowledge, and healthier smiles across the state. New clinics started their pilot efforts in April 2017, and the year two funding continues to support the clinics from the first year.

Appendix A: Pre and Post-Training Surveys

***Brush* Resource Materials Pre-Training Survey**

1. **What is your job title?** _____

2. **How long have you worked in WIC?**
   - ☐ 0-5 months
   - ☐ 6-11 months
   - ☐ 12-23 months
   - ☐ 2-5 years
   - ☐ 6-10 years
   - ☐ 11-20 years
   - ☐ 21+ years

3. **Have you had any previous training on oral/dental health topics?**
   - ☐ YES, and the training was adequate
   - ☐ YES, and the training was NOT adequate
   - ☐ NO

If yes, please describe the training: _____

4. **What is the recommended age for a child's first dental visit?** _____

5. **How comfortable are you discussing dental issues with clients now?**
   - ☐ Very Comfortable
   - ☐ Somewhat Comfortable
   - ☐ Neutral
   - ☐ Not Very Comfortable
   - ☐ Extremely Uncomfortable

6. **Do you typically/routinely refer clients to dental services?**
   - ☐ YES
   - ☐ NO

If **NO**, why not? (Check all that apply)

- ☐ Client does not have a dental risk
- ☐ Client has too many other risks
- ☐ Client is not interested
- ☐ Client does not want to take child to a dentist or go to a dentist
- ☐ Do not know of any dental clinics to refer to
- ☐ Do not have time during the clinic visit
- ☐ Other _____

7. Do you follow-up on dental referrals at the next clinic visit?

- ☐ YES
- ☐ NO

If **YES**, what feedback do you get?

If **NO**, why not? (Check all that apply)

- ☐ Dentist won't take Medicaid
- ☐ Dentist won't accept infants
- ☐ Not a priority for parent
- ☐ Parent does not have time
- ☐ Other _____
- ☐ No documentation of referral
- ☐ No time
- ☐ I forgot

Other _____

***Brush* Resource Materials Post-Training Survey**

1. Please describe your impression of this training in one statement (or just a few words).

_____

2. What was your favorite part of the *Brush* Training?

_____

3. What was your least favorite part of the *Brush* Training?

_____

4. Would you recommend this training to your coworkers who did not attend, or to colleagues in other WIC Local Agencies?
   - ☐ YES
   - ☐ NO. Why not? _____

5. Do you feel barriers and/or challenges to implementing the *Brush* resource materials, and other pilot activities, exist at your clinic?
   - ☐ NO
   - ☐ YES. Please describe _____

6. What is the recommended age for a child's first dental visit? _____

7. Now that you've completed the *Brush* training, how comfortable do you think you will be discussing dental issues with clients?
   - ☐ Very Comfortable
   - ☐ Somewhat Comfortable
   - ☐ Neutral
   - ☐ Not Very Comfortable
   - ☐ Extremely Uncomfortable

8. How do you envision incorporating the *Brush* resource materials with your CCS counseling approach? For example, what open-ended questions could you use to introduce the oral health topic?

   _____
   _____