Patient Agreements Aimed at Improving Pediatric Dental Self-Compliance and Self-Efficacy

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DEDICATION

To my family for their endless love, support, inspiration, and patience through the duration of this journey.

To my amazing co-residents for the laughs and fond memories.

If friends are the family we choose for ourselves, and families are the compass that guides us, I am on a great path.

Our attitude toward life determines life's attitude towards us.

– John N. Mitchell

University of Washington

Abstract

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Purpose:

The purpose of this study was to describe self-selected oral health goals, perceived self-efficacy, self-reported compliance, and perceived barriers to goal accomplishment of patient caregivers at a university-based pediatric dental clinic. The effect of patient agreements on recall rates was also assessed.

Methods:

This was a longitudinal pilot study in which 100 caregiver-patient pairs who presented for new patient or recall examinations were assigned by convenience to an intervention or comparison group. Patients within each of these groups were further categorized by age. Demographic data was collected to identify risk factors, and individualized age-appropriate anticipatory guidance was reviewed. At the baseline appointment, caregivers in the intervention group were asked to select 1 or 2 home care goals to improve upon. Two follow-up surveys were administered: at a two-week phone call, and at a six-

month in-person exam. The comparison group was matched for age and only used as comparison for attendance rate.

Results:

The two most frequently selected goals by caregivers were to “brush with fluoride toothpaste at least twice daily” (21%) and to have “toothbrush last thing to touch teeth before bed” (17%). Caregivers reported a mean confidence level of 7.5 (SD = 1.7), with respect to accomplishing selected goals (10 representing high confidence). Of the 33 caregivers contacted in two-weeks by phone, 39% were able to recall their chosen goals correctly. Of the 15 caregivers who returned for the six-month recall examination, 26% were able to recall their goals correctly. There was a higher self-reported compliance with goals at 2 weeks than at 6 months. The barrier in goal implementation most commonly reported in both recalls was a “limited time to accomplish goals/ too busy”. There was no difference in recall rate between the intervention and comparison group (p=0.840).

Conclusions:

Caregivers selected goals that were simple and easily incorporated into the daily routine. Therefore, dental providers should not overlook reinforcing simple preventive habits. Caregivers reported high confidence levels in their abilities to achieve these goals. Caregivers had a poor recall of goals yet reported high levels of compliance at the two-week and six-month follow-up phases. The most commonly reported barrier to achieving goals was time limitation. Recall rates were not different between the intervention and comparison group.

TABLE OF CONTENTS

SECTION	PAGE
Abstract	i
Introduction	1
Purpose	4
Methodology	5
Results	10
Discussion	14
Conclusion	19
List of Figures	20
List of Tables	22
List of Graphs	31
List of Appendices	40
References	41

INTRODUCTION

Oral health is an important component of a child's general health and well-being. Although dental caries has declined significantly among children, it has remained the most prevalent chronic disease of childhood.[1,2] The National Health and Nutrition Examination Survey (NHANES) showed that dental caries prevalence has increased in the primary dentition among 2 to 5 year old children and that approximately 25% of children 5 to 7 years of age accounted for 80 percent of the caries experienced. All the while, dental utilization has remained unchanged for this young demographic.[3]

Even with important improvements in oral health trends, significant disparities have persisted between socio-demographic groups, including between those who live in poverty and those who do not.[1] Understanding dental caries trends within socio-demographic groups is an important step towards identifying key factors that promote childhood caries in the US.[2] There exists an inverse relationship between dental caries prevalence and socio-economic status (SES), where children in families of low SES have a higher prevalence of the disease than children of high SES, especially those younger than 12 years.[4] These concerning trends highlight the need for early establishment of dental homes and simple, effective oral care preventive programs for all children as part of a disease prevention management model.[2,3,5]

Early identification of risk indicators and early implementation of oral health preventive practices can reduce or avoid caries progression.[6,7] An individualized caries risk assessment serves as the foundation for health care providers and parents/caregivers to identify and understand the child's risk factors. Caries risk assessment is also the first step in caries management by risk assessment (CAMBRA) whose goal is to prevent disease by identifying and minimizing causative factors and optimizing protective

factors.[7-12] Once risk is assessed, the provider develops an individualized treatment plan, customizes home care recommendations, engages the parent/caregiver in the process by involving them in setting their self-management goals, educates them about age-specific interventions for prevention (anticipatory guidance), and determines the interval for periodic re-evaluation.[6,9,10]

Anticipatory guidance is the process of providing practical, age-appropriate information about children's health to prepare parents for the significant physical, emotional, psychological, and developmental milestones.[11] Parents are given information on the prevention of dental disease that is specific to their child's needs and caries risk factors. The anticipatory guidance approach is designed to take advantage of age-critical opportunities to implement preventive health practices, thus reducing the risk of preventable oral disease.[11]

Parental compliance with recommended treatment protocols is essential for moderate and high caries risk children.[5] Treatment protocols that are family-centered and individualized are more likely to engage parents in change.[5] Parents also need encouragement when new behavioral changes are suggested and should be questioned regarding any perceived barriers to the clinician's recommendations.[5]

Communication is the cornerstone of an effective doctor-patient relationship. It is this relationship that increases the likelihood of patient compliance with the treating recommendation.[13] Dental professionals can enhance the effectiveness of their preventive communication by focusing on a patient-centered brief counseling approach. A patient/parent-centered approach to health promotion and caries prevention has shown promise in engaging parents in preventive practices.[5, 14,15] Setting self-management goals is an effective way to implement this. By establishing and committing to selected goals, the oral health provider can follow-up on behavioral changes and measure compliance and self-

efficacy.

When implemented correctly, preventive measures have been shown to aid in disease reduction. However, patient compliance with preventive measures and self-efficacy to realize preventive goals have been a prevailing problem. Compliance is defined by the *extent* of a patient's behavioral adjustment and their *willingness* to abide by treatment and maintain lifestyle changes recommended by a health care provider.[16] Self-efficacy describes how certain a patient feels about their ability to take the steps necessary to improve symptoms and maintain health.[17] Several interventions have focused on changing the relationship between patients and healthcare practitioners in order to improve the patients' adherence to treatments. Care agreements between healthcare practitioners and patients are one such intervention. In these agreements, one or both parties commit to a set of behaviors related to the care of the patient. As a behavioral strategy aiming at improving patients' adherence, agreements serve to specify a set of rules regarding some behavior of interest and formalize a commitment to adhere to them.[18]

In spite of the prime importance of these recommendations, only a few studies have evaluated the daily oral health preventive compliance of pediatric patients. These studies had conflicting results.[16, 19] Ashkenazi evaluated compliance of pediatric patients (2-18 yrs) with oral hygiene recommendations including brushing, flossing, and fluoride use.[16] The study assessed the effects of consecutive dental examinations on adherence to recommendations and caries experience of patients. No statistical improvement was noted for the two consecutive dental recalls. The study determined that to increase adherence to recommendations, it would be necessary to first determine the reason for noncompliance among children.[16, 20]

Little has been written about dental compliance in combination with reported self-efficacy. No studies to date have evaluated the effects that patient agreements can have on self-reported compliance and self-efficacy within the caregiver-patient pairs.

This project was a patient-centered intervention, focused on improving understanding of the factors that help caregivers become compliant with pediatric dental recommendations. The primary purposes of this study were to describe the self-selected goals, self-reported compliance, perceived self-efficacy, and perceived barriers to goal accomplishment of caregivers, who sought care for their children at the Center for Pediatric Dentistry (CPD), University of Washington School of Dentistry, in Seattle, WA. The secondary goal of the study was to determine if care agreements affected patient recall rates compared to a group of caregivers who did not receive the intervention.

PURPOSE

Primary Objective

To understand caregivers of children seeking care at the CPD in relation to:

1- The goals they selected from a menu of options regarding implementation of oral health preventive practices

2- Their self-reported compliance on achieving these goals

3- Their perceived self-efficacy to achieve their goals

4- Their perceived barriers to accomplishing their goals

Secondary Objective

To compare recall rates for caregivers who entered into an agreement with the dental provider with a group of caregivers who did not receive the intervention.

HYPOTHESIS

H1- There is no difference between recall rates for patients who completed agreements and those who did not.

METHODOLOGY

Study Setting And Design

This was a longitudinal pilot study of caregiver-patient pairs recruited at the CPD. The caregivers of 100 pediatric patients were enrolled in this study. Participants were categorized by child age and enrolled in either the intervention or comparison group by a non-randomized method. Data from administered questionnaires to the intervention group were then gathered at three time periods: baseline, two-week follow-up phone call, and six-month follow-up in the clinic (Figure 1). All data was obtained from the patient caregivers.

This study was approved by the Institutional Review Board of the University of Washington.

Study Population- Inclusion And Exclusion Criteria

Subjects were selected from a convenience sample of caregiver-patient pairs presenting to the CPD for their child's new patient or periodic examinations during a four-week period.

Caregivers of healthy pediatric patients between the ages of 0-12 years were considered for inclusion at that age because they may have a strong influence over their child's behavior. Participation was limited to English-speaking caregivers to decrease loss of information during contact points. The subjects were limited to those planning to continue follow-up care at the CPD to ensure that follow-up data could be collected. Finally, the inclusion criteria were limited to caregivers of patients diagnosed as high caries risk according to the American Academy of Pediatric Dentistry (AAPD) Caries-risk Assessment Tool (CAT).[8] Only one caregiver-patient pair per household was eligible for participation to limit producing similar results and skewing of the data.

Caregivers were excluded if:

- They were non-English speakers
- They had children with a complex medical history
- Their children were over the age of 12 years
- They did not plan to continue care at the CPD
- Their children had a low or moderate caries risk based on the CAT.

Recruitment And Enrollment

For this study, the principal investigator (PI) completed all subject recruitment and enrollment. AxiUm®, a digitalized patient scheduling system used in the CPD, was used to screen for patients presenting for new patient or periodic/recall examinations scheduled for various providers. At the time of the exam, the primary caregivers of these patients were approached by the PI and screened to determine that they met the inclusion criteria, which included administering the CAT to determine caries risk. If the inclusion criteria were met, caregivers were given a verbal description of the purpose of the study and a description of its timeline. All subjects were informed that participation was optional and given the right to opt out at any time during the course of the study. No remuneration or awards were given for participation. Caregivers who agreed to participate signed a consent form and Health Insurance Portability and Accountability Act (HIPAA) Authorization. They were informed of the group they would be enrolled in and their level of participation within the study. The first 50 caregiver-patient pairs enrolled were allocated to the intervention group and the remaining 50 caregiver-patient pairs were allocated to the comparison group. Baseline demographic data was gathered for both groups from the primary caregiver (Appendix 1). Demographic variables collected included: primary caregiver's age, primary caregiver's gender, patient's age, patient' gender, number of children in household, number of adults in household, race/ethnicity, primary caregiver's highest level of education, marital status, type of

insurance, and household income. There was no assent for patient and no alteration in the routine treatment protocol received.

Within each group, the children were categorized by age, according to the CPD's anticipatory guidance protocol, which is an adaptation from the recommendations given by the AAPD. The age categories were:

- 0 – 1 years
- 1 – 3 years
- 3 - 6 years
- 6 - 12 years

In the comparison group, participants were age-matched and used for six-month recall attendance comparison using the axiUm® scheduling system.

No changes were made to the CPD's standard exam protocol in which patients are screened for caries risk and given age-appropriate anticipatory guidance recommendations.

Phase I- Baseline Examination

Intervention Group:

In addition to the demographic survey, the PI conducted an interview following the Baseline Interviewing Script (Appendix 2). This script was written for the purpose of this study and was not previously tested. The anticipatory guidance recommendations specific to that patient's age were presented and reviewed. Caregivers were asked to select one or two goals, from a menu of options regarding implementation of oral health preventive practices, to work on at home for the next 6 months (Appendix 3-6). The reason for selection of the specific goal(s) and caregivers' confidence in

accomplishment was questioned as part of the intervention. Each caregiver was given a copy of the anticipatory guidance form with the selected goal(s).

Comparison Group:

After completion of the demographic survey, no additional information was gathered from the comparison group. As part of the CPD protocol, they received the same anticipatory guidance recommendations specific to that patient's age. However, they were not given the baseline script or asked to identify goals.

Phase II- Two Week Phone Follow-Up

Intervention Group:

All 50 subjects were contacted by phone 2 weeks after their baseline examination. The PI conducted an interview using the Two Week Follow-Up Interview Script (Appendix 7) and completed the Intervention Questionnaire- Part I (Appendix 8). This script and questionnaire were written for the study and were not previously tested. A total of three attempts were made to contact each caregiver. The data points were recorded as missing if no contact was made after the third try.

Comparison Group:

The comparison group was not contacted in this phase of the study.

Phase III- Six Month Follow-Up

Intervention Group:

All 50 subjects were followed to assess recall examination attendance. It was documented whether the patient was not scheduled, scheduled but failed the appointment, presented to the appointment with a

caregiver different from the person who consented to participate (for which no further data was collected), presented to the appointment but the PI was not available, or presented and completed phase III survey. The PI conducted an interview using the Six Month Follow-Up Interview Script (Appendix 9). The caregivers were asked to complete the Intervention Questionnaire- Part II (Appendix 10). This script and questionnaire were written for the study and were not previously tested.

Comparison Group:

The comparison group was tracked to assess recall examination attendance 6 months after enrollment in the study. This was recorded as present or absent. These caregiver-patient pairs were not contacted at this follow-up phase.

Statistical Analysis

The following statistical tests were performed using STATA 12 for Windows software (StataCorp LP, College Station, TX, USA):

- Descriptive statistics (means, standard deviations, counts, and percentages) were calculated for all variables.
- Chi-square test of association and Fisher's Exact Test were performed to determine if demographic variables significantly differed by treatment group and if recall rates significantly differed by treatment group.

A p-value <0.05 was considered to be statistically significant. Data was manually entered into an Excel® spreadsheet by the PI with double entry technique, and databases were compared to ensure accuracy. All paperwork was linked by use of a confidential patient identification number and stored in locked cabinet in a locked room. All spreadsheets were stored on a password-protected database, which only the PI had access to.

RESULTS

Both the intervention and comparison groups were very similar from a demographic standpoint (Table 1 and Graph 1). The majority of primary caregivers were female (76% and 84%, respectively) and the child's parents (98% and 92%, respectively). The average caregiver age was 37.7 (SD = 7.3) years in the intervention group and 37.5 (SD = 9.7) years in the comparison group. No patients were enrolled in the 0-1 year age category, therefore this category was dropped from data analysis. Only three patients (6%) were enrolled in the 1-3 year age category in each category. Fifteen patients (30%) were enrolled in the 3-6 year age category in the intervention group and 16 (32%) for the comparison group. Thirty-two of these participants (64%) were enrolled in the intervention group and 31 (62%) in the comparison group. There were slightly more females in the intervention group (58% vs 44%).

The majority of caregivers were Caucasian (51%) followed by other/multiple races (23%). Fourteen (14%) caregivers were of Hispanic/Latin. The highest reported education level for caregivers was 4-year college degree (41%) and some college or vocational training (40%). Only 2% reported a less than high school level of education. Sixty-three (63%) of caregivers were married. Two thirds of caregivers (66%) had Medicaid (state) insurance, 29 (29%) had private/employee insurance, and 5 (5%) were self-pay. The average number of children living in the caregiver's home was 1.4 (SD = 1.3) and the average number of other adults was 1.0 (SD = 0.9). Finally, 46% of enrolled caregivers reported a household income of >$40,000 while 24% reported making <$20,000. No significant associations were found in relation to demographic when the groups were compared.

Caregivers in the intervention group were asked to select one or two goals to work on at home with their child for the next 6 months (Table 2 and Graph 2). Ninety-seven percent of caregivers selected two

goals. In the 1-3 year age category, the goals most often selected were “less or no juice/soda/sports drink” and “less or no candy and junk food” (33% each). In the 3-6 year age category, the goal most selected was “brush with fluoridated toothpaste at least twice daily” (33%). In the 6-12 year age category, the goals most often selected were “toothbrush last thing to touch teeth before bed” (19%) and “brush with fluoridated toothpaste at least twice daily” (17%). Overall, the two goals most selected were to “brush with fluoride toothpaste at least twice daily” (21%) and to have “toothbrush last thing to touch teeth before bed” (17%). Within all three age categories, the goal “no sleeping with bottle” was not selected. When asked about the motivation behind the goals selected, caregivers stated that they “knew it was needed” and “did not know it was needed” (20% each). Only 14% stated that it was “based on the dentist’s recommendation”. Caregivers reported a mean confidence level of 7.5 (SD = 1.7) with respect to accomplishing selected goals. Confidence level was reported on a 1 to 10 scale with 10 representing “high confidence” (Graph 3).

A two-week follow-up interview was conducted by phone, by the PI, with the intervention group only. Thirty three caregivers were contacted while the remainder did not respond to 3 contact attempts. At this time, parents were asked to recall the goals they had selected two weeks before. Fifty eight percent were able to recall one goal correctly, of which 39% were able to recall both goals correctly. Forty two percent of caregivers were unable to recall any of the selected goals. Twenty (61%) caregivers strongly agreed when asked if they had interest in focusing on their child’s teeth and if the goals selected were worth working on. Sixty four percent strongly agreed that the selected goals were realistic to be accomplished. When asked if they felt capable of achieving these goals, 52% strongly agreed and 42% agreed. During the interview, caregivers were asked if the selected goals had been applied in the past two weeks, to which 16 (49%) agreed and 15 (45%) strongly agreed (Graph 4). When asked to identify specific barriers to accomplishing the selected goals, 39% selected a “limitation in time to accomplish goals/too busy”. Five (13%) reported “no barriers”, and “other’s influence” (Table 3 and Graph 5).

A six-month follow-up interview was conducted when intervention group participants presented for their recall examination. Only 15 patients of the 50 enrolled (30%) showed up for the appointment. At this time, parents were again asked to recall the goals they had selected at the baseline examination. Forty percent were able to recall one goal correctly, of which 26% were able to recall both goals correctly. Sixty percent caregivers were unable to recall any of the selected goals. Thirteen (87%) of caregivers strongly agreed when asked about interest in focusing on their child's teeth. Twelve (80%) strongly agreed the goals selected were worth working on and 9 (60%) strongly agreed that the goals selected were realistic to be accomplished. Seven (47%) strongly agreed and 7 (47%) agreed that they felt capable of achieving these goals. When questioned if the selected goals have been applied in the past six-months, 5 (33%) strongly agreed and 5 (33%) agreed (Table 4 and Graph 4).

Forty percent strongly agreed that the agreement helped them follow the dentist's routine oral hygiene recommendations during their visit and the same percentage strongly agreed that it was helpful to choose the goals. Fifty three percent agreed that selecting the goals made them feel more engaged with the dental team while 47% said that selecting the goals encouraged them to return to the dentist. Six (40%) felt neutral regarding their appreciation for the 2 week follow-up phone call and 10 (66%) felt neutral or disagreed with the idea that an additional phone call would have been helpful. Twenty percent felt that an additional call would be of benefit, of which 2 (14%) felt that a call 1 month after the baseline exam would have been most useful. When asked to identify specific barriers to accomplishing the selected goals, most parents equally reported that they "forgot about them", "my child was resistant", "started but stopped", and "no barriers" existed (Graph 6). When comparing barriers reported from both follow-up phases, the one most often reported was "limited time to accomplish goals/too busy" (Graph 7).

Initial recruitment began July 27th, 2012 and phase III follow-up ended on May 17th, 2013.
During this final phase, the recall rate of the intervention group was evaluated. Twenty-two (44%) of the caregiver-patient pairs where not scheduled for a recall appointment. Five (10%) of those scheduled failed to show up for their appointment. One (2%) patient presented with a caregiver other than the one who consented at baseline. Seven (14%) patients who presented for their appointment did not receive the follow-up intervention, as the PI was not able to be present for their exam. Fifteen (30%) caregiver-patient pairs presented for their recall appointment and completed phase III (Table 5).

Recall rates were evaluated comparing the intervention and comparison groups. There were similar numbers of patients scheduled for recalls between the intervention and comparison groups, (56% and 58%, respectively). A Chi-square test of association did not show a statistically significant association between having the intervention and scheduling for a recall appointment (p=0.840). Additionally, the test showed that was used to evaluate the association between showing up for scheduled appointment and having the intervention. Twenty-three (46%) of those in the intervention group showed up for their scheduled six-month recall appointments while 28 (56%) of those in the comparison group presented for their scheduled appointment. This was not statistically significant (p=0.317) (Table 6).

DISCUSSION

No patients were enrolled in the 0-12 month age group, which was not surprising as most parents bring their child to the dentist after the age of 1 year. All attempts were made to equalize the numbers within the age categories between the intervention and comparison group. However, although very close, the numbers did not exactly match up at the end of the study. The majority of patients enrolled were in the 6-12 year age demographic, which is representative of the patient population at the CPD. The difference between patient genders was statistically insignificant.

The goals most often selected within the three age categories were to "brush with fluoride toothpaste at least twice daily" and "toothbrush last thing to touch teeth before bed". These goals are arguably two of the most basic goals listed. Brushing twice daily is an important self-care activity to reinforce with caregivers. Although this goal is simple, these results show that many caregivers mean to understand the value of oral hygiene.

When asked about their motivation behind selecting specific goals, caregiver responses were split between "knew it was needed" and "did not know it was needed". These conflicting results reveal several important messages to dental providers. First, some caregivers knew what was needed and what was best for their child, yet still were not able to accomplish the goal. Second, an equal percentage of caregivers did not know initially that these same goals were important but rather learned them as a result of the anticipatory guidance they received at their dental visit. Therefore, simple oral health messages should be emphasized by the dental practitioner, as they might not be as well understood by caregivers as practitioners think. Finally, these goals are relatively simple and can be readily incorporated into the caregiver's daily routine.

Within all three age categories, the goal “no sleeping with bottle” was not selected. No patients younger than 1 year of age were enrolled, thus this could be because this goal was not relevant to the age groups represented in the study. Additionally, it could also be that caregivers were not willing to be open to consider this goal as an option for their child.

At the two-week follow-up, of the 33 caregivers contacted in the intervention group, over half were able to recall one goal correctly, and over one third were able to recall both goals correctly. At the six-month follow-up, of the 15 caregivers who presented for their appointment, about one fourth were able to recall both goals correctly. This shows that fewer caregivers could remember their selected goals with time. Therefore, time appears to be a complicating factor with respect to recall rates. One may speculate that more frequent reminders for the purposes of caregiver-patient education might be helpful. Overall, caregivers had a poor recall of the goals they had selected, regardless of when they were surveyed.

Compliance measures both willingness to change and extent of behavioral adjustment.[16] In this study, willingness was measured by caregiver’s combined interest (“I am interested in focusing on my child’s teeth”), assessed worth (“the goals selected were worth working on”), assessed reality (“the goals selected were realistic”), and capability (“I feel capable in achieving these goals”) in achieving the selected goals. Extent was measured by self-reported application of goals. Willingness was measured at both recall periods (>45% strongly agreed to each component). At the two-week phone interview, 31 (94%) of the contacted caregivers stated that the selected goals had been applied, which demonstrates a very high degree of behavioral adjustment and thus a high level of self-reported compliance with self-selected goals. At the six-month interview, when asked about goal application, 10 (66%) of the caregivers that presented for their recall appointment stated they had been applied. This self-reported

compliance was lower than that from the two-week interview, yet still relatively high. This is not surprising as compliance generally decreases with time.[16,20] Unfortunately, achieving patient compliance can be a challenge.[21] There is little research in the dental literature with respect to compliance with preventive measures in pediatric patients.[16] Therefore, further studies are needed.

An interesting finding of this study was the discrepancy in responses between caregivers' ability to recall goals and reported self-compliance with those same goals. Generally, one-third to one-fourth of caregivers were able to recall both goals when surveyed. However, about one-half of these caregivers reported compliance with the same goals that they could not correctly recall. It may be that caregivers chose to provide favorable responses to present themselves positively to the PI. This complicated a true measurement of compliance. Ultimately, this study showed that participants had a poor recall of goals and that compliance decreased with time.

Confidence levels reported by caregivers correlate to self-efficacy, which refers to one's confidence in taking necessary measures to produce specific results.[17] Our results show that caregivers reported an overall high confidence level to accomplish the goals selected at the baseline examination. This may indicate that the goals selected were not perceived to be exceedingly difficult or out of reach. Finlayson et al [22,23] developed an oral health-related self-efficacy (OHSE) measurement tooth which showed that mothers' self-efficacy was significantly correlated with tooth brushing by children. They concluded that mothers who were more confident in their ability to brush their child's teeth prior to bedtime had children who brushed more frequently themselves. For this study, the high confidence level reported by caregivers showed an initial high overall enthusiasm to work on, and accomplish, selected goals.

At the two-week phone follow-up, when asked about perceived barriers to goal accomplishment, one-fourth of caregivers stated a “limited time to accomplish goals/too busy”. At this time, 58% of the caregivers who were contacted still remembered their goals, but listed lack of time as the major obstacle in goal accomplishment. At the six-month follow-up visit, the most commonly stated barriers were “I forgot about them”, “my child was resistant”, “I started but stopped”, and “no barriers”. Within these reported barriers, time is a complicating component of two of them. With time, caregivers are certainly more inclined to forget about the goals selected and thus fail to work on their incorporation. In addition to that, with time, it is more common to start a practice and then stop as reported by caregivers. Access to care is often cited as a barrier to fulfilling oral health needs. This study explored barriers to accomplishing adequate home care.

The secondary objective of this study was to compare the recall rates at 6 months for caregiver-patient pairs in the intervention with those in the comparison group. Nearly half (43%) of the patients were not scheduled for a recall appointment as determined by the axiUm scheduling system. This failure in scheduling can be attributed to failure of follow-up scheduling by the primary provider at the time of the baseline exam, error in the CPD’s recall system, or cancelations of appointments by caregivers. Nonetheless, the results obtained were from the 57% that were scheduled for follow-up care. Of the scheduled patients, few failed to show for their appointed time (6%). One patient presented to the appointment with a provider different than the caregiver initially enrolled in the study. A few patients presented with the initial caregiver, however the PI was not available to conduct the third phase of the intervention. Ultimately, 30% of the intervention group presented to the recall appointment and was surveyed at the six-month phase. Comparison of recall rates between the intervention and comparison group showed no significant difference ($p= 0.840$). Of those that showed for their scheduled recall appointments, there was not a significant difference ($p=0.317$) between the two groups. This indicates

that, if scheduled, both groups had a similar chance of showing for their appointment. This result supports our initial hypothesis that there would not be a difference in recall rates between the two study groups.

Implications

There are several important messages that can be derived from this study.

1- The goals selected most often by caregivers were those which could be easily incorporated in their daily routine at home.
2- Dental providers should not overlook the importance and clinical value of reinforcing the simplest preventive habits. It should likewise not be taken for granted that caregivers understand these preventive recommendations. Although the messages are relatively simple, some caregivers may not understand what is being asked of them.
3- Setting goals that are perceived as obtainable by caregivers may promote higher self-efficacy and strengthen the therapeutic relationship. This can encourage better dental care, attentiveness, and reinforce confidence. Ultimately, it can help bridge the gap and strengthen the relationship between the provider and caregiver-patient pair.

Benefits of Study

There were several benefits of this study. First, it provided a better understanding of the patient demographic at the Center for Pediatric Dentistry. Second, it gave more insight to the prevention practices of our patients and caregivers. Finally, goal selection promoted further conversation between caregivers and the dental team regarding home routine and home care. These conversations were implicitly beneficial for caregivers and patients.

Limitations of Study

There are several limitations to this study. This research was conducted at a single dental clinic. The Center for Pediatric Dentistry's patient demographic may not be generalizable to that of another region. Therefore, it is important to confirm these findings at other academic institutions and private practices in future research. The study had a small sample size. Results could vary with a larger sample size. With a smaller sample size, it is more difficult to generalize results to a larger population. Also, enrolled patients could not be called and reminded about their appointment by the PI. This was part of the established protocol for the study so not to influence recall attendance rates. Had they been reminded, perhaps a higher recall rate would have been noted. Overall, there was poor recall attendance and six-month data was not gathered from many enrolled subject. This high attrition resulted in a limited gathering of data that could not be reflective of the entire population. Future studies are necessary to better understand principles behind compliance and self-efficacy within the pediatric dental population.

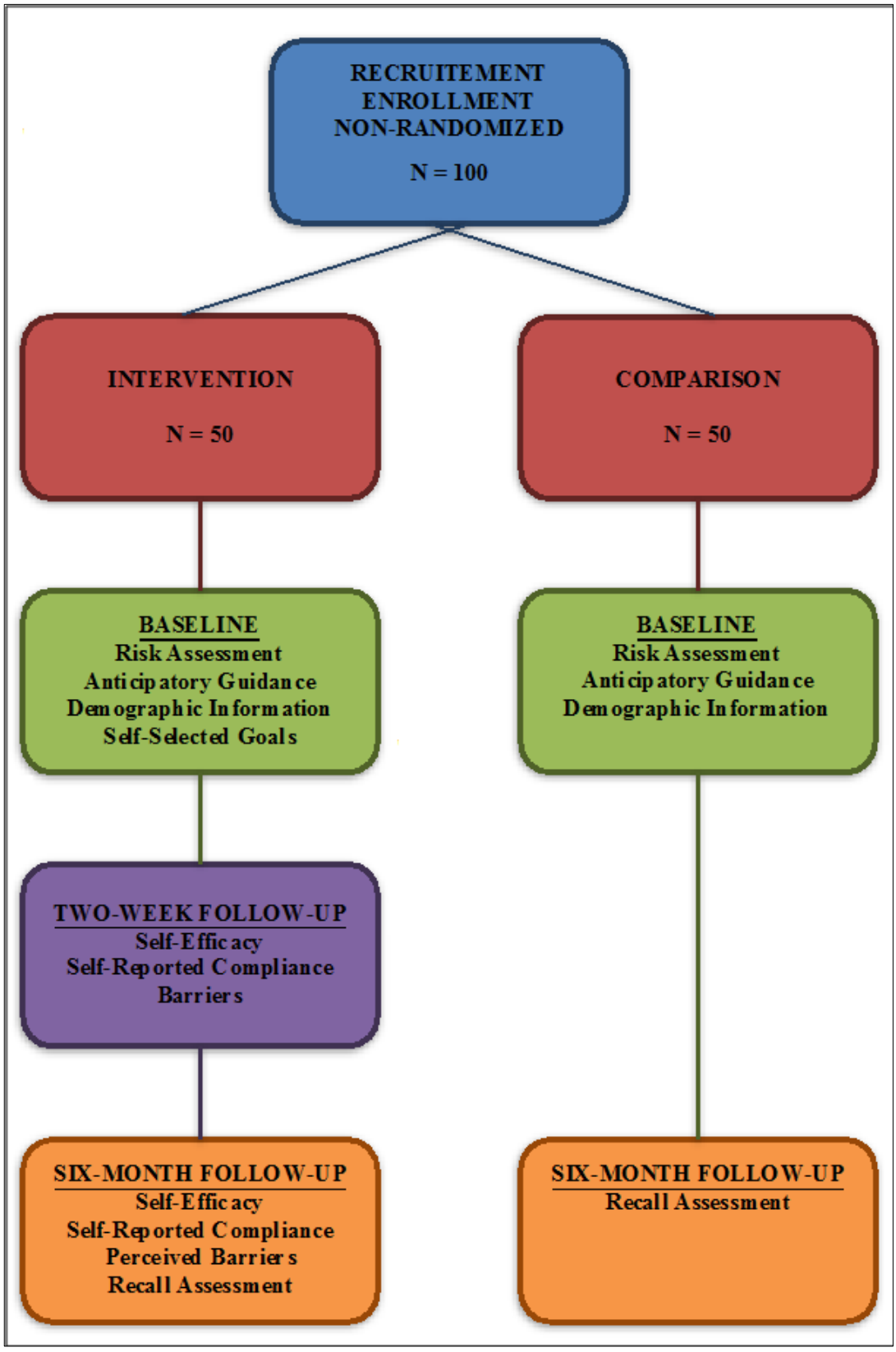
CONCLUSION

The results of this study showed that the goals caregivers were most likely to select were to “brush with fluoride toothpaste at least twice daily” and to have “toothbrush last thing to touch teeth before bed”. Caregivers reported high confidence levels in their abilities to achieve these goals. Caregivers had a poor recall of goals yet reported high levels of compliance at the two-week and six-month follow-up phases. The most commonly reported barriers to achieving goals included time limitations. Finally, recall rates were not different between the intervention and comparison group. This study determined that it is important to emphasize simple messages that are likely to be well received. This approach promotes healthy habits and a positive provider-caregiver relationship.

LIST OF FIGURES

FIGURE	PAGE
1: Study Flow Chart	23

FIGURE 1: STUDY FLOW CHART



LIST OF TABLES

TABLE	PAGE
1: Demographic Characteristics	25
2: Intervention Group Goal Selection Summary	27
3: Two-Week Phone Summary	28
4: Six-Month Recall Summary	29
5: Recall Rate Summary	31
6: Recall Rate Comparison	32

TABLE 1: DEMOGRAPHIC CHARACTERISTICS

Table 1. Demographic Characteristics				
	Intervention	Comparison	Total	P-Value
	N = 50	N = 50	N = 100	
	N (%)	N (%)	N (%)	
Caregiver's Gender				0.317*
Male	12 (24%)	8 (16%)	20 (20%)	
Female	38 (76%)	42 (84%)	80 (80%)	
Caregiver's Relationship to Child				0.426**
Parent	49 (98%)	46 (92%)	95 (95%)	
Grandparent	1 (2%)	2 (4%)	3 (3%)	
Other family	0 (0%)	1 (2%)	1 (1%)	
Other non-family	0 (0%)	1 (2%)	1 (1%)	
Child's Age				1.000**
1-3 years	3 (6%)	3 (6%)	6 (6%)	
3-6 years	15 (30%)	16 (32%)	31 (31%)	
6-12 years	32 (64%)	31 (62%)	63 (63%)	
Child's Gender				0.161*
Male	21 (42%)	28 (56%)	49 (49%)	
Female	29 (58%)	22 (44%)	51 (51%)	
Caregiver's Racial Background				0.798**
American Indian/Alaska Native/Pacific Islander	2 (4%)	2 (4%)	4 (4%)	
Caucasian	23 (46%)	28 (56%)	51 (51%)	
Black or African American	3 (6%)	3 (6%)	6 (6%)	
Asian	7 (14%)	6 (12%)	13 (13%)	
Other/Multiple Races	14 (28%)	9 (18%)	23 (23%)	
No response	1 (2%)	2 (4%)	3 (3%)	
Hispanic or Latin Descent				0.775**
No	41 (82%)	42 (84%)	83 (83%)	
Yes	6 (12%)	8 (16%)	14 (14%)	
No response	3 (6%)	0 (0%)	3 (3%)	
Caregiver's Education				1.000**
Less than high school	1 (2%)	1 (2%)	2 (2%)	
High school/GED	8 (16%)	9 (18%)	17 (17%)	
Some college or vocational training	20 (40%)	20 (40%)	40 (40%)	
4-year college degree	21 (42%)	20 (40%)	41 (41%)	
Caregiver's Marital Status				0.351**
Married	32 (64%)	31 (62%)	63 (63%)	
Separated	1 (2%)	3 (6%)	4 (4%)	
Widowed	0 (0%)	0 (0%)	0 (0%)	
Never married	8 (16%)	10 (20%)	18 (18%)	
Divorced	7 (14%)	2 (4%)	9 (9%)	
Living with a partner	2 (4%)	4 (8%)	6 (6%)	

Table 1. Demographic Characteristics				
	Intervention	**Comparison**	**Total**	**P-value**
	N = 50	**N = 50**	**N = 100**	
	N (%)	N (%)	N (%)	
Caregiver's Insurance Type				0.215**
DSHS (coupons)	29 (58%)	37 (74%)	66 (66%)	
Self-Pay	3 (6%)	2 (4%)	5 (5%)	
Private/Employee Insurance	18 (36%)	11 (22%)	29 (29%)	
Household Income				0.174**
<$20,000	11 (22%)	13 (26%)	24 (24%)	
$20,000 - $39,999	12 (24%)	16 (32%)	28 (28%)	
$40,000 - $59,999	5 (10%)	11 (22%)	16 (16%)	
$60,000 - $79,999	8 (16%)	3 (6%)	11 (11%)	
$80,000 - $99,999	5 (10%)	2 (4%)	7 (7%)	
>$100,000	8 (16%)	4 (8%)	12 (12%)	
No response	1 (2%)	1 (2%)	2 (2%)	
	Mean (SD)	Mean (SD)	Mean (SD)	
Caregiver's Age (years)				0.909†
	37.67 (7.32)	37.48 (9.66)	37.58 (8.52)	
Household Size				0.875†
Number of children living in the home	1.42 (1.18)	1.46 (1.34)	1.44 (1.26)	
Number of adults living in the home	0.98 (0.99)	1.02 (0.85)	1.00 (0.92)	0.826†

*Calculated using Chi-square Test

**Calculated using Fishers Exact Test

†Calculated using Two-Sample T-Test

TABLE 2: INTERVENTION GROUP GOAL SELECTION SUMMARY

Table 2. Intervention Group Goal Selection Summary				
	Age 1-3 Years	**Age 3-6 Years**	**Age 6-12 Years**	**Total**
	N = 6	**N = 30**	**N = 64**	**N = 100**
	N (%)	N (%)	N (%)	N (%)
Selected Goal*:				
Regular dental visits for child	0 (0%)	2 (7%)	9 (14%)	11 (11%)
Brush with fluoridated toothpaste at least 2x/daily	0 (0%)	10 (33%)	11 (17%)	21 (21%)
No sleeping with bottle**	0 (0%)	0 (0%)	N/A	0 (0%)
Only water or milk in sippy cups**	1 (17%)	1 (3%)	N/A	2 (2%)
No soda	0 (0%)	3 (10%)	5 (8%)	8 (8%)
Less or no juice/soda/sports drink	2 (33%)	2 (7%)	5 (8%)	9 (9%)
Drink tap water	0 (0%)	0 (0%)	5 (8%)	5 (5%)
Eat healthy foods	1 (17%)	1 (3%)	4 (6%)	6 (6%)
Less or no candy and junk food	2 (33%)	3 (10%)	4 (6%)	9 (9%)
Chew gum with xylitol	0 (0%)	2 (7%)	5 (8%)	7 (7%)
Regular, in-office fluoride treatment	0 (0%)	0 (0%)	2 (3%)	2 (2%)
Toothbrush last thing to touch teeth before bed	0 (0%)	5 (17%)	12 (19%)	17 (17%)
No second goal selected	0 (0%)	1 (3%)	2 (3%)	3 (3%)
Motivation for Goal Selection:	**N = 3**	**N = 15**	**N = 32**	**N = 50**
I knew it was needed	0 (0%)	4 (26.67)	6 (18.75)	10 (20.00)
I did not know it was needed	1 (33.33)	3 (20.00)	6 (18.75)	10 (20.00)
Based off dentist's recommendation	0 (0%)	1 (6.67)	6 (18.75)	7 (14.00)
Based off of my child's need	0 (0%)	3 (20.00)	5 (15.63)	8 (16.00)
Most practical for my family	1 (33.33)	3 (20.00)	4 (12.50)	8 (16.00)
It seemed the most important	0 (0%)	1 (6.67)	4 (12.50)	5 (10.00)
Other	1 (33.33)	0 (0%)	1 (3.13)	2 (4.00)
Confidence in Goal Accomplishment:	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
	6.33 (1.53)	8.07 (1.09)	7.34 (1.86)	7.5 (1.68)

*Caregivers were allowed to select 1 or 2 goals

**Goals not applicable to age 6-12 year category

TABLE 3: TWO-WEEK PHONE SUMMARY

Table 3. Two-Week Phone Summary				
	Age 1-3 Years	Age 3-6 Years	Age 6-12 Years	Total
	N = 1	N = 11	N = 21	N = 33
	N (%)	N (%)	N (%)	N (%)
Recall 1st Chosen Goal?				
No	0 (0%)	3 (27%)	11 (52%)	14 (42%)
Yes	1 (100%)	8 (73%)	10 (48%)	19 (58%)
Recall 2nd Chosen Goal?				
No	0 (0%)	6 (54%)	14 (67%)	20 (61%)
Yes	1 (100%)	5 (45%)	7 (33%)	13 (39%)
I am interested in focusing on my child's teeth				
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neutral	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Agree	0 (0%)	3 (27%)	10 (48%)	13 (39%)
Strongly agree	1 (100%)	8 (73%)	11 (52%)	20 (61%)
The goals selected are worth working on				
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	1 (5%)	1 (3%)
Neutral	0 (0%)	0 (0%)	1 (5%)	1 (3%)
Agree	0 (0%)	4 (36%)	7 (33%)	11 (33%)
Strongly agree	1 (100%)	7 (64%)	12 (57%)	20 (61%)
The goals selected are realistic				
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neutral	0 (0%)	1 (9%)	1 (5%)	2 (6%)
Agree	1 (100%)	1 (9%)	8 (38%)	10 (30%)
Strongly agree	0 (0%)	9 (82%)	12 (57%)	21 (64%)
I feel capable of achieving these goals				
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neutral	0 (0%)	1 (9%)	1 (5%)	2 (6%)
Agree	1 (100%)	5 (45%)	8 (38%)	14 (42%)
Strongly agree	0 (0%)	5 (46%)	12 (57%)	17 (52%)
The goals selected have been applied in the past two weeks				
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	1 (9%)	0 (0%)	1 (3%)
Neutral	0 (0%)	0 (0%)	1 (5%)	1 (3%)
Agree	0 (0%)	4 (36%)	12 (57%)	16 (49%)
Strongly agree	1 (100%)	6 (55%)	8 (38%)	15 (45%)
Perceived Barriers to Accomplishing Goals*	**N = 1**	**N = 12**	**N = 25**	**N = 38**
I forget about them	0 (0%)	1 (8%)	3 (12%)	4 (10%)
My child is resistant	0 (0%)	1 (8%)	3 (12%)	4 (11%)
Limited time to accomplish goals / Too busy	0 (0%)	6 (50%)	9 (36%)	15 (39%)
Started but stopped	0 (0%)	0 (0%)	1 (4%)	1 (3%)
My job interfered with it	0 (0%)	0 (0%)	1 (4%)	1 (3%)
My child has more important needs	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Do not want to	0 (0%)	0 (0%)	1 (4%)	1 (3%)
Ran out of resources/supplies	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Limited money to accomplish goals	0 (0%)	0 (0%)	0 (0%)	0 (0%)
I am not the child's primary caregiver	0 (0%)	0 (0%)	0 (0%)	0 (0%)
I do not see the value in doing it	0 (0%)	0 (0%)	0 (0%)	0 (0%)
They are just baby teeth and will fall out	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Other's influence	1 (100%)	2 (17%)	2 (8%)	5 (13%)
No barriers	0 (0%)	2 (17%)	3 (12%)	5 (13%)
Other	0 (0%)	0 (0%)	2 (8%)	2 (5%)

*Multiple barriers were able to be selected

TABLE 4: SIX-MONTH RECALL SUMMARY

Table 4. Six-Month Recall Summary				
	Age 1-3 Years	Age 3-6 Years	Age 6-12 Years	Total
	N = 1	N = 4	N = 10	N = 15
	N (%)	N (%)	N (%)	N (%)
Recall 1st Chosen Goal?				
No	0 (0%)	1 (25%)	8 (80%)	9 (60%)
Yes	1 (100%)	3 (75%)	2 (20%)	6 (40%)
Recall 2nd Chosen Goal?				
No	0 (0%)	2 (50%)	8 (80%)	10 (67%)
Yes	1 (100%)	1 (25%)	2 (20%)	4 (26%)
No answer	0 (0%)	1 (25%)	0 (0%)	1 (7%)
I was interested in focusing on my child's teeth	N (%)	N (%)	N (%)	N (%)
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neutral	0 (0%)	0 (0%)	1 (10%)	1 (7%)
Agree	0 (0%)	1 (25%)	0 (0%)	1 (6%)
Strongly agree	1 (100%)	3 (75%0	9 (90%)	13 (87%)
The goals selected were worth working on				
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neutral	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Agree	0 (0%)	0 (0%)	3 (30%)	3 (20%)
Strongly agree	1 (100%)	4 (100%)	7 (70%)	12 (80%)
The goals selected were realistic				
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neutral	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Agree	0 (0%)	1 (25%)	5 (50%)	6 (40%)
Strongly agree	1 (100%)	3 (75%)	5 (50%)	9 (60%)
I felt capable of achieving these goals				
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neutral	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Agree	1 (100%)	2 (50%)	4 (40%)	7 (47%)
Strongly agree	0 (0%)	2 (50%)	5 (50%)	7 (47%)
No answer	0 (0%)	0 (0%)	1 (10%)	1 (6%)
The goals selected have been applied in the past six months				
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	1 (100%)	1 (25%)	1 (10%)	3 (20%)
Neutral	0 (0%)	0 (0%)	2 (20%)	2 (14%)
Agree	0 (0%)	1 (25%)	4 (40%)	5 (33%)
Strongly agree	0 (0%)	2 (50%)	3 (30%)	5 (33%)
The agreement helped me follow the recommendations the dentist gave me				
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neutral	0 (0%)	1 (25%)	3 (30%)	4 (27%)
Agree	1 (100%)	1 (25%)	3 (30%)	5 (33%)
Strongly agree	0 (0%)	2 (50%)	4 (40%)	6 (40%)
It was helpful to choose these goals				
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neutral	0 (0%)	1 (25%)	2 (20%)	3 (20%)
Agree	1 (100%)	1 (25%)	3 (30%)	5 (33%)
Strongly agree	0 (0%)	2 (50%)	4 (40%)	6 (40%)
No answer	0 (0%)	0 (0%)	1 (10%)	1 (7%)

Table 4. Six-Month Recall Summary				
	Age 1-3 Years	Age 3-6 Years	Age 6-12 Years	Total
	N = 1	N = 4	N = 10	N = 15
	N (%)	N (%)	N (%)	N (%)
I appreciated the two week follow-up phone call.				
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neutral	0 (0%)	2 (50%)	4 (40%)	6 (40%)
Agree	0 (0%)	0 (0%)	5 (50%)	5 (33%)
Strongly agree	1 (100%)	2 (50%)	1 (10%)	4 (27%)
Selecting the goals made me feel more engaged with the dental team				
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Neutral	0 (0%)	1 (25%)	3 (30%)	4 (27%)
Agree	0 (0%)	2 (50%)	6 (60%)	8 (53%)
Strongly agree	1 (100%)	1 (25%)	1 (10%)	3 (20%)
Selecting the goals encouraged me to return to the dentist				
Strongly disagree	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Disagree	1 (100%)	2 (50%)	0 (0%)	3 (20%)
Neutral	0 (0%)	1 (25%)	3 (30%)	4 (27%)
Agree	0 (0%)	1 (25%)	6 (60%)	7 (47%)
Strongly agree	0 (0%)	0 (0%)	1 (10%)	1 (6%)
An additional phone call would have been helpful				
Strongly disagree	0 (0%)	0 (0%)	1 (10%)	1 (7%)
Disagree	0 (0%)	1 (25%)	4 (40%)	5 (33%)
Neutral	0 (0%)	2 (50%)	3 (30%)	5 (33%)
Agree	1 (100%)	0 (0%)	0 (0%)	1 (7%)
Strongly agree	0 (0%)	1 (25%)	1 (10%)	2 (13%)
No answer	0 (0%)	0 (0%)	1 (10%)	1 (7%)
When?				
1 week sooner	0 (0%)	0 (0%)	1 (10%)	1 (7%)
1 week later	0 (0%)	0 (0%)	0 (0%)	0 (0%)
1 month later	0 (0%)	1 (25%)	1 (10%)	2 (13%)
2 months later	1 (100%)	0 (0%)	0 (0%)	1 (7%)
4 months later	0 (0%)	0 (0%)	0 (0%)	0 (0%)
No answer	0 (0%)	3 (75%)	8 (80%)	11 (73%)
Perceived Barriers to Accomplishing Goals*	**N = 3**	**N = 9**	**N = 15**	**N = 27**
I forgot about them	1 (33%)	1 (11%)	2 (13%)	4 (15%)
My child was resistant	0 (0%)	2 (23%)	2 (13%)	4 (15%)
Limited time to accomplish goals / Too busy	1 (33%)	0 (0%)	2 (14%)	3 (11%)
Started but stopped	1 (34%)	1 (11%)	2 (13%)	4 (15%)
My job interfered with it	0 (0%)	1 (11%)	0 (0%)	1 (4%)
My child has more important needs	0 (0%)	0 (0%)	1 (6%)	1 (3%)
Did not want to	0 (0%)	1 (11%)	0 (0%)	1 (4%)
Ran out of resources/supplies	0 (0%)	0 (0%)	1 (7%)	1 (4%)
Limited money to accomplish goals	0 (0%)	0 (0%)	0 (0%)	0 (0%)
I am not the child's primary caregiver	0 (0%)	0 (0%)	0 (0%)	0 (0%)
I did not see the value in doing it	0 (0%)	0 (0%)	0 (0%)	0 (0%)
They are just baby teeth and will fall out	0 (0%)	1 (11%)	1 (7%)	2 (7%)
Other's influence	0 (0%)	0 (0%)	0 (0%)	0 (0%)
No barriers	0 (0%)	1 (11%)	3 (20%)	4 (15%)
Other	0 (0%)	1 (11%)	1 (7%)	2 (7%)

*Multiple barriers were able to be selected

TABLE 5: RECALL RATE SUMMARY

Table 5. Recall Rate Summary			
	Intervention	**Comparison**	**Total**
	N = 50	**N = 50**	**N = 100**
	N (%)	N (%)	N (%)
Six Month Recall Appointment Status			
Patient not scheduled for recall	22 (44%)	21 (42%)	43 (43%)
Patient failed to show for appointment	5 (10%)	1 (2%)	6 (6%)
Patient presented with different caregiver	1 (2%)	0 (0%)	1 (1%)
Patient presented but primary investigator was not present	7 (14%)	0 (0%)	7 (7%)
Patient presented for appointment with caregiver	15 (30%)	28 (56%)	43 (43%)

TABLE 6: RECALL RATE COMPARISON

Table 6. Recall Rate Comparison				
	Intervention	Comparison	Total	P-Value
	N = 50	N = 50	N = 100	
	N (%)	N (%)	N (%)	
Scheduled for Recall Appointment				0.840**
No	22 (44%)	21 (42%)	43 (43%)	
Yes	28 (56%)	29 (58%)	57 (57%)	
Showed Up for Scheduled Recall Appointment*				0.317**
No	27 (54%)	22 (44%)	49 (49%)	
Yes	23 (46%)	28 (56%)	51 (51%)	

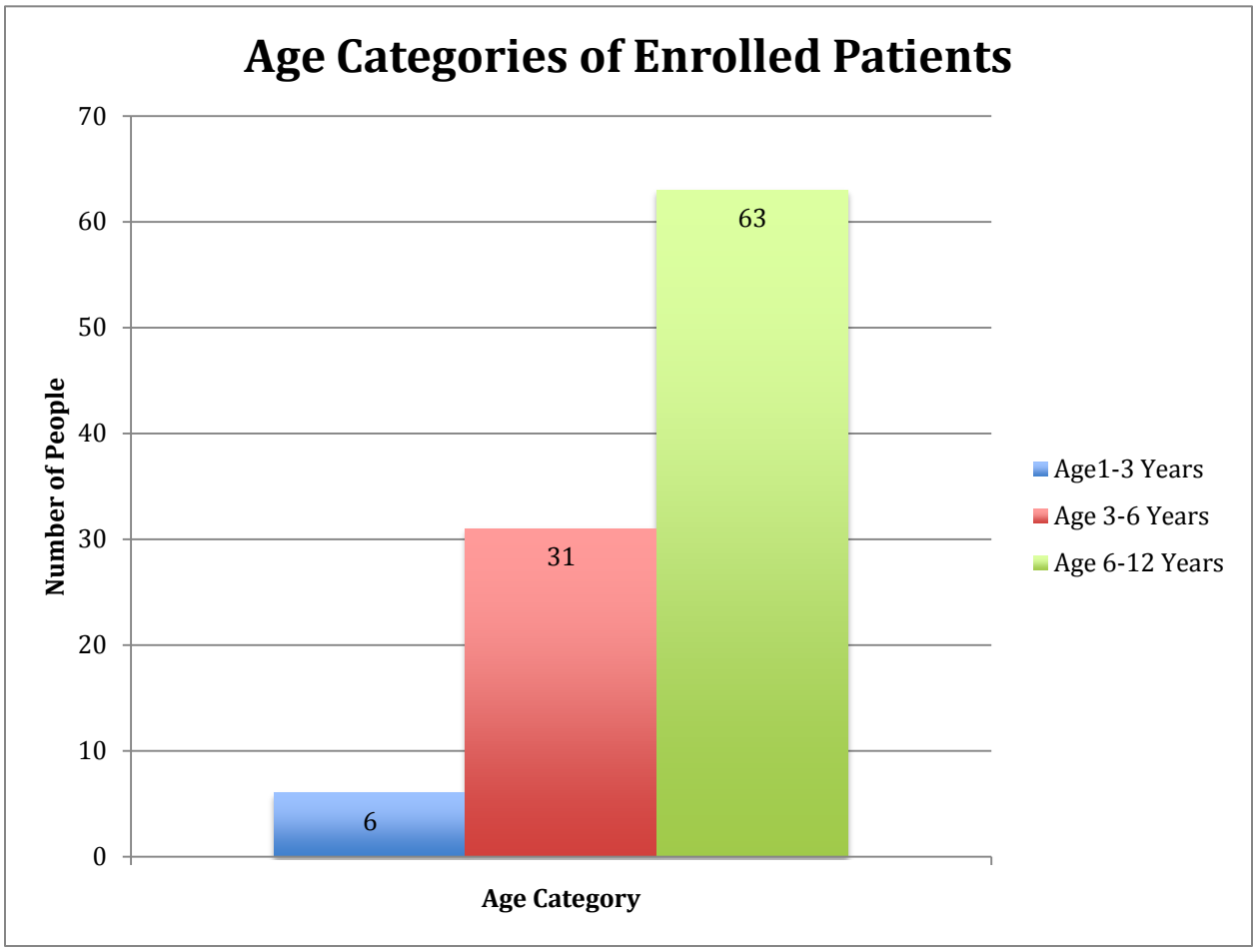
*Within the x patients who were scheduled for recall

**Calculated using Chi-square Test

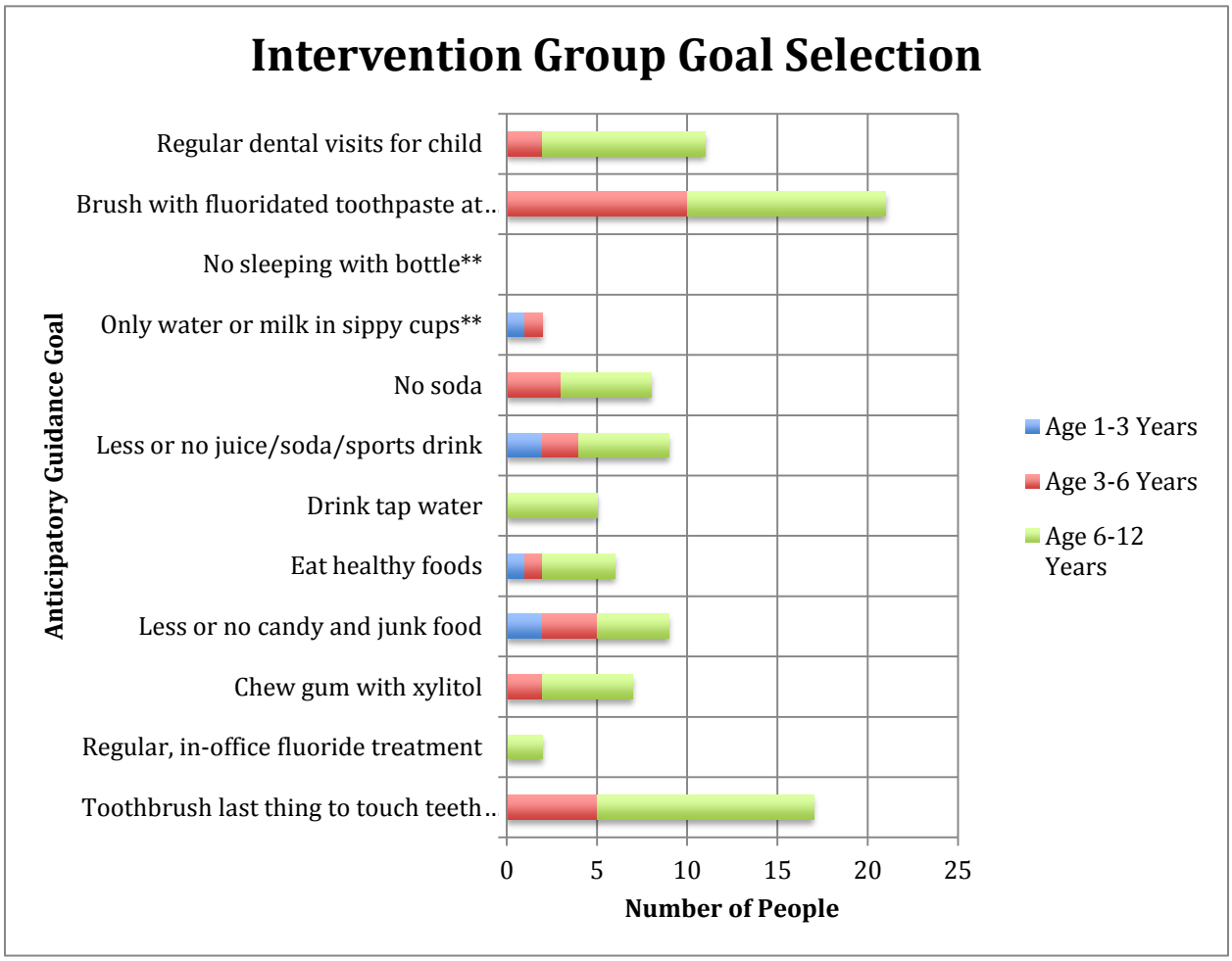
LIST OF GRAPHS

GRAPH	PAGE
1: Age Categories of Enrolled Patients	34
2: Intervention Group Goal Selection	35
3: Caregiver's Confidence in Goal Accomplishment	36
4: Goal Application At Time Of Follow-Up	37
5: Barriers Reported At Two-Week Follow-Up	38
6: Barriers Reported At Six-Month Follow-Up	39
7: Barriers Reported at Follow-Ups	40

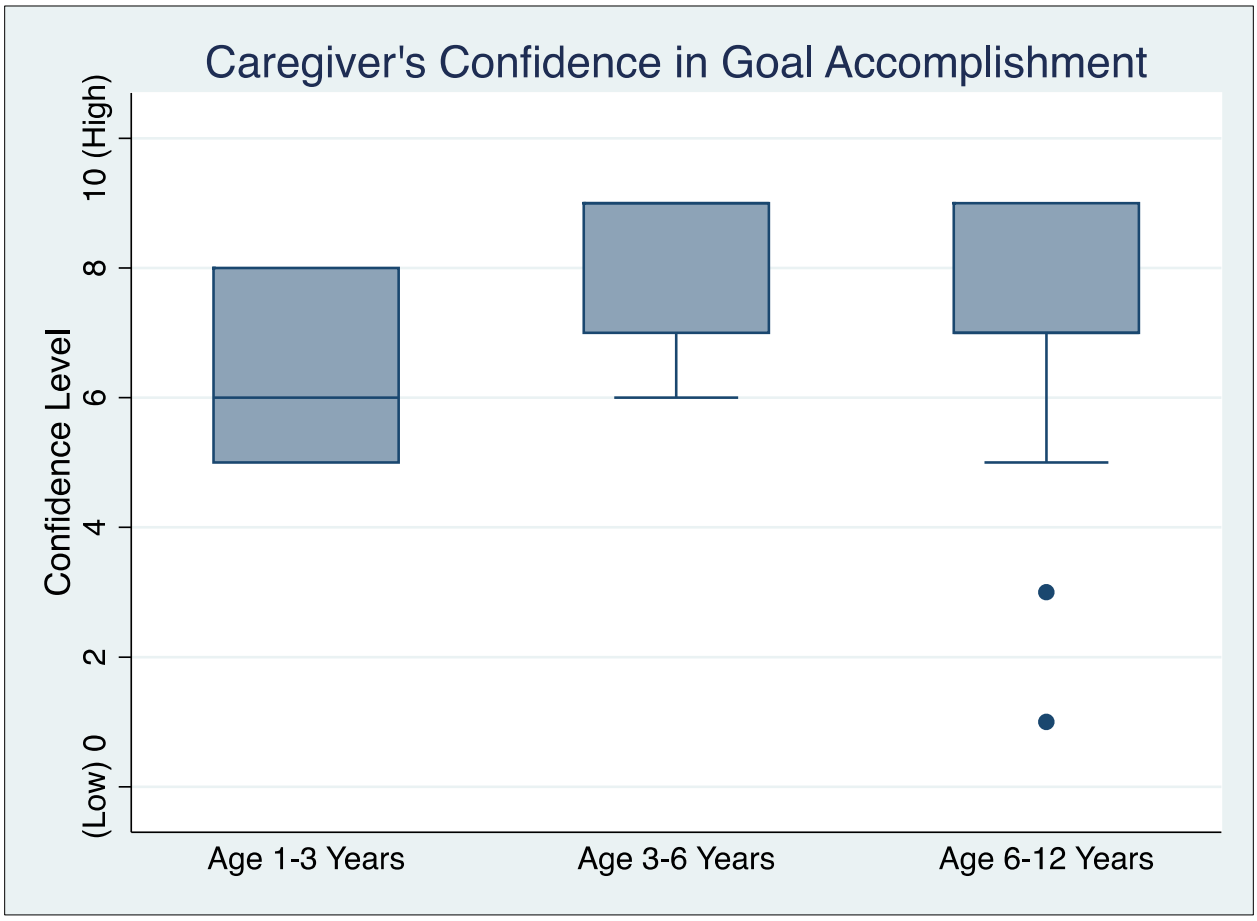
GRAPH 1: AGE CATEGORIES OF ENROLLED PATIENTS



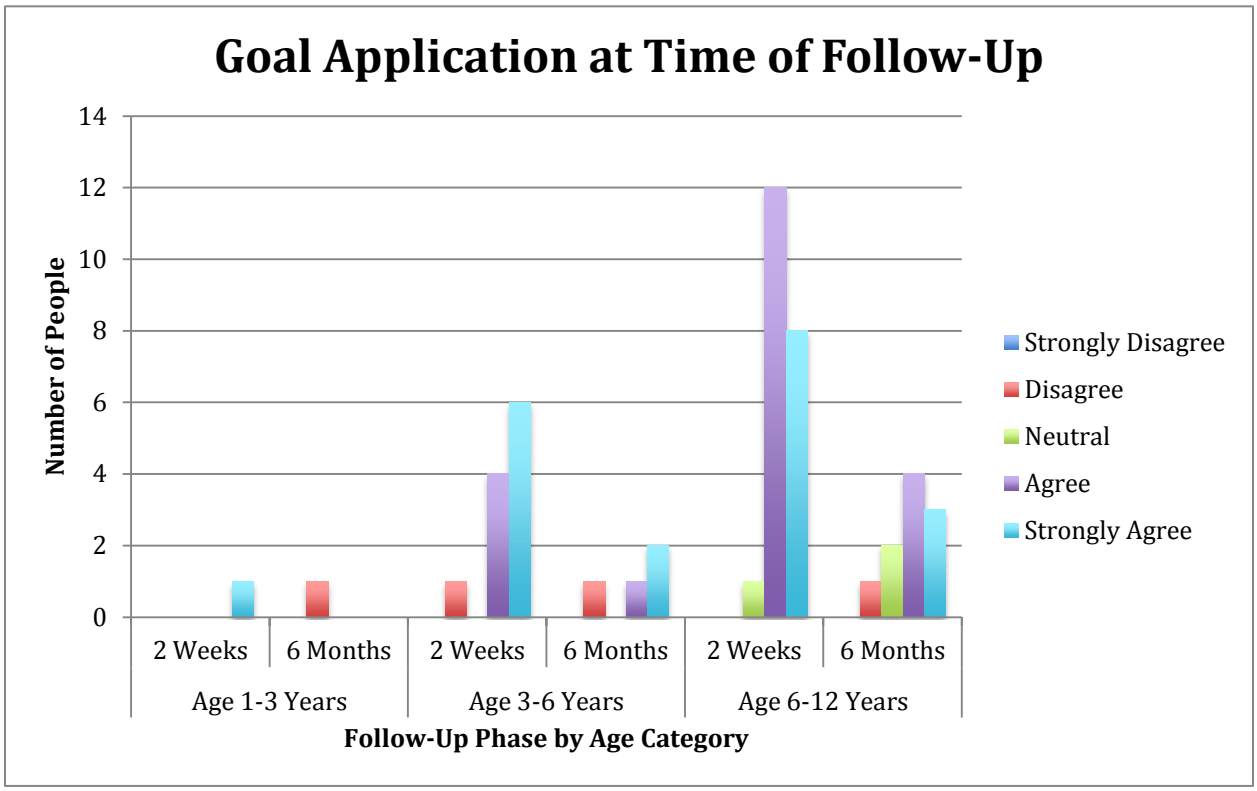
GRAPH 2: INTERVENTION GROUP GOAL SELECTION



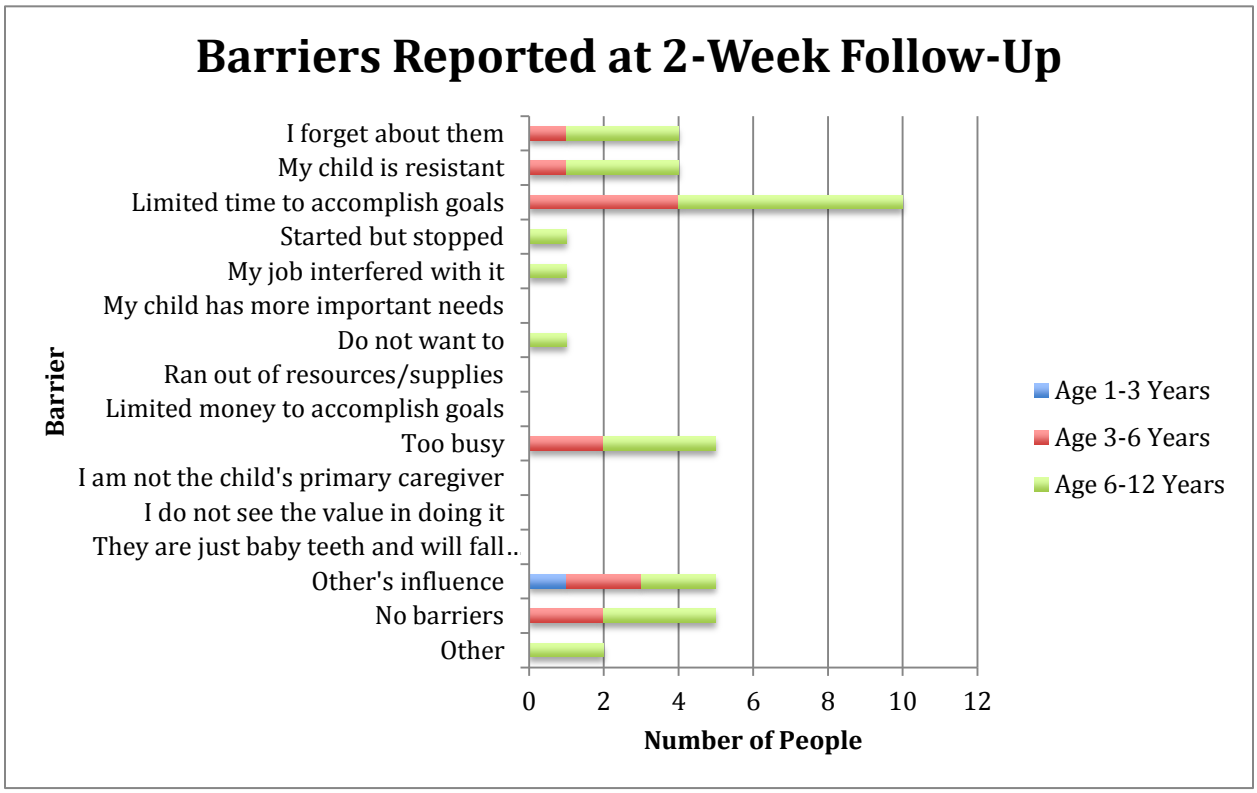
GRAPH 3: CAREGIVER'S CONFIDENCE IN GOAL ACCOMPLISHMENT



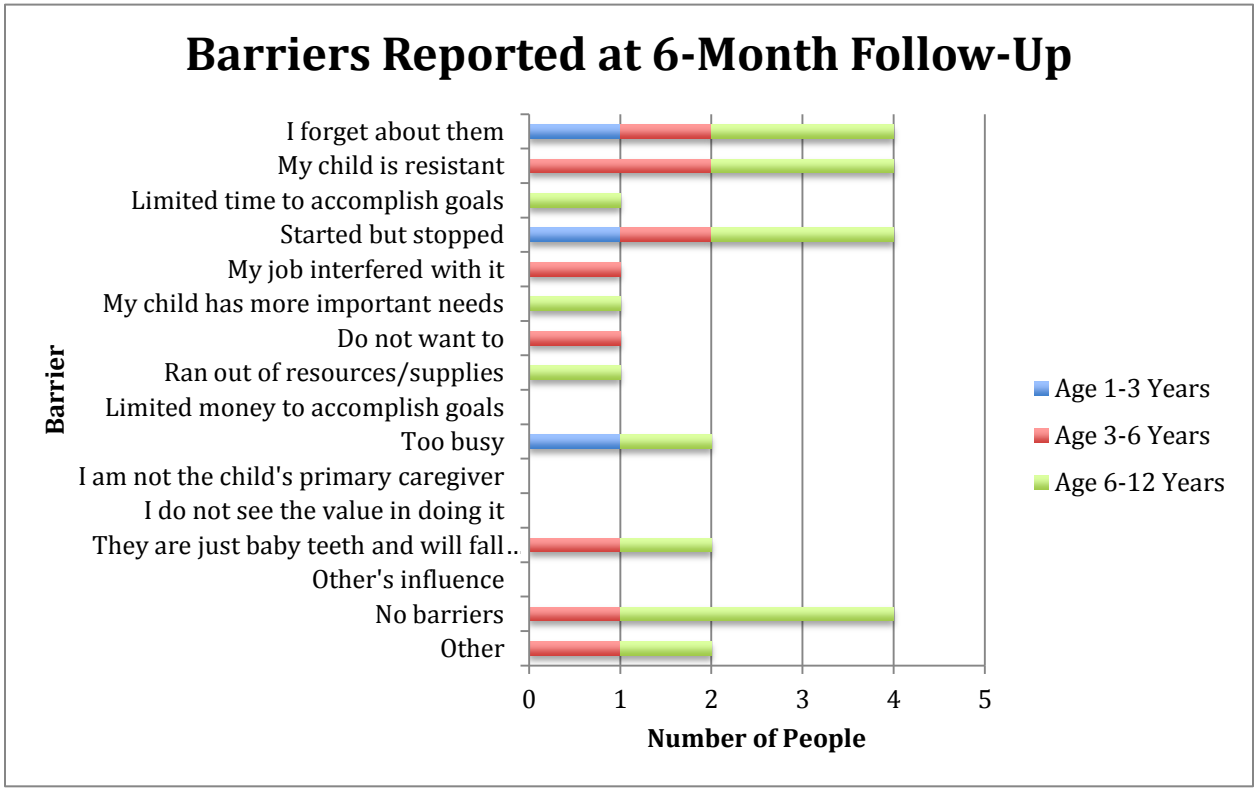
GRAPH 4: GOAL APPLICATION AT TIME OF FOLLOW-UP



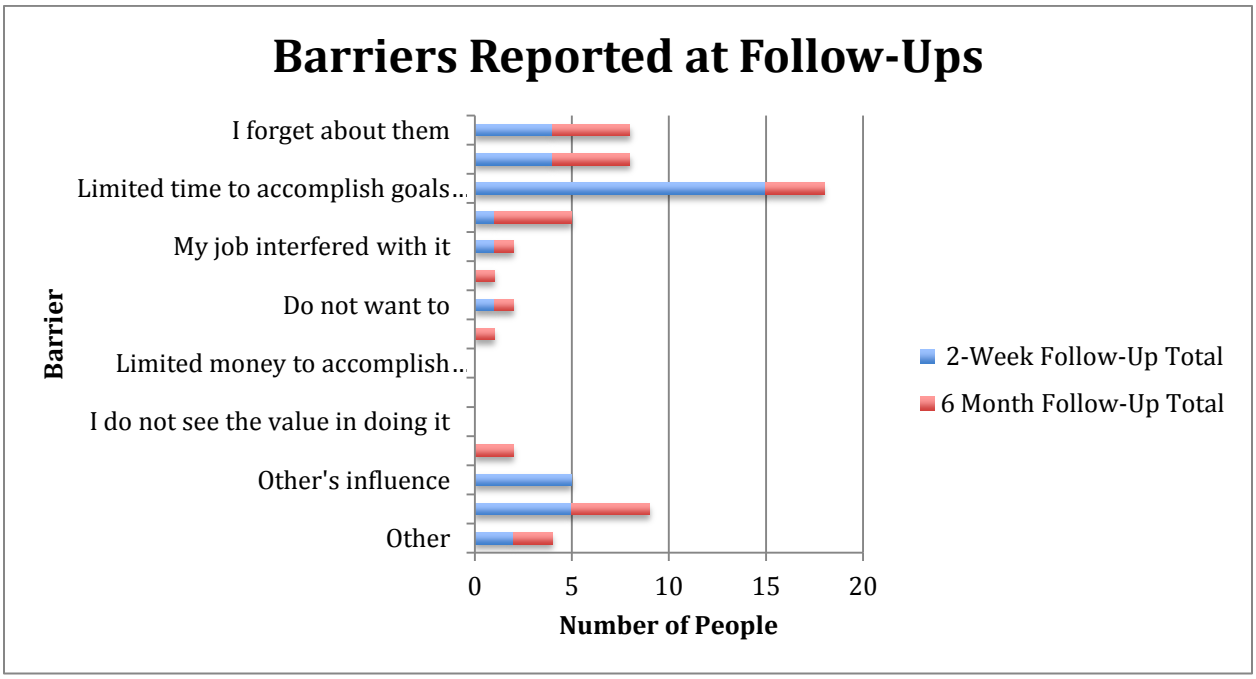
GRAPH 5: BARRIERS REPORTED AT TWO-WEEK FOLLOW-UP



GRAPH 6: BARRIERS REPORTED AT SIX-MONTH FOLLOW-UP



GRAPH 7: BARRIERS REPORTED AT FOLLOW-UPS



LIST OF APPENDICES

APPENDIX	PAGE
1: Demographic survey	42
2: Baseline Interviewing Script	43
3: 0-1 Year Anticipatory Guidance and Goals	44
4: 1-3 Year Anticipatory Guidance and Goals	46
5: 3-6 Year Anticipatory Guidance and Goals	48
6: 6-12 Year Anticipatory Guidance and Goals	50
7: Two-Week Follow-Up Interviewing Script	52
8: Intervention Questionnaire- Part I	54
9: Six-Month Follow-Up Interviewing Script	55
10: Intervention Questionnaire- Part II	57

APPENDIX 1: DEMOGRAPHIC SURVEY

Patient name: _____ Chart #: _____

DEMOGRAPHIC INFORMATION

1. **What is your date of birth?**
_____ (mm/yyyy)

2. **What is your gender?**
O Male O Female

3. **What is your child's date of birth?**
_____ (mm/ yyyy)

4. **What is your child's gender?**
O Male O Female

5. **How many children less than age 18 do you have currently residing in your household? Please circle one.**
1 2 3 4 5 6 7 8 9 10+

6. **How many people older than age 18, including yourself, do you have currently residing in your household? Please circle one.**
1 2 3 4 5 6 7 8 9 10+

7. **Which of the following best describes your racial background? Check all that apply.**
O American Indian or Alaska Native O Black or African American
O Native Hawaiian or Other Pacific Islander O Asian
O White O Other _____

8. **Would you consider your ethnic background to be Hispanic or Latino(a)?**
O Yes O No

9. **What is the highest level of schooling you have completed?**
O Less than high school
O High school/GED
O Some college or vocational training
O 4-year college degree or more

10. **What is your marital status?**
O Married O Widowed O Divorced
O Separated O Never married O Living with a partner

11. **What type of dental insurance do you have?**
O DSHS (coupons) O Private/Employee Insurance
O Self Pay

12. **Which of the following income groups best represents your family household income in the last year?**
O <$ 20,000
O $ 20,000-$ 40,000
O $ 40,000-$ 60,000
O $ 60,000-$ 80,000
O $ 80,000-$ 100,000
O >$100,000

APPENDIX 2: BASELINE INTERVIEWING SCRIPT

SAMPLE INTERVIEWING SCRIPT WITH PARENT

1- The principal investigator will perform a clinical examination including clinical/radiographic assessment, as well as intake of dietary and hygiene habit information.
2- This information will be used to determine the caries risk level in accordance with the AAPD Caries-risk Assessment Tool (CAT).
3- Following the completed assessment, the following interview script will be performed by the principal investigator:

- Tell me about your teeth and your family's teeth?
- Tell me about ___'s teeth?
- When we assessed ___, we found him/her to be at a high caries risk.

- Would you like to do something about that?
- I understand that life can get very busy with many activities taking place at the same time. Sometimes things need extra attention and emphasis to get back on track.
- For example if ___ was failing at math, you would want her to help him/her improve at math, right?
- Right now, ___'s teeth need the same kind of attention.
- I imagine you don't want ___ to have these kinds of problems.
- There are things that may help improve ___'s oral health.

Give anticipatory guidance for appropriate age category
-I would like to review with you some of the recommendations we have for ___ and I would like to see if you can identify a couple of things that you may be able to work on to help improve , ___'s situation and save all of you some time and problems in the future.
- We would like you to select one or two of the following recommendations that you feel you can best help ___ with at home.

Look at menu of goals on anticipatory guidance handouts.
Parent/caregiver agrees to one or two goals.

- Can you tell me what led you to choose that/those specific goals?

O I knew it was needed	**O** I did not know it was needed	**O** Based off dentist's recommendation	**O** Based off of my child's need	**O** Most practical for my family	**O** It seemed the most important
O Other (please explain) _____					

APPENDIX 3: 0-1 YEAR ANTICIPATORY GUIDANCE AND GOALS

Your Child's Oral Health:
0-1 years
Name:_____

Your Baby's Oral Health

- Baby teeth are important for chewing, smiling, talking, jaw development, and self esteem
- Good oral health begins with parents
    - Cavity-causing bacteria from parents pass to babies
    - Visit your dentist for regular checkups and keep your own teeth healthy
    - Don't share things (utensils, food, etc) with your baby that have been in your own mouth

Taking Care of your Baby's Mouth

- Don't be afraid to look inside your baby's mouth. Check for white, brown, or black spots on teeth daily
- Wipe your baby's teeth and gums after feedings
- Begin brushing with a smear of fluoride toothpaste after the first tooth comes in

Eating and Drinking Habits

- Don't let your baby sleep with a bottle containing anything but water
- Avoid frequent use of a "sippy cup" or bottle that contains anything but water
- Frequently exposing your baby's teeth to sugar will cause cavities
- Plan on weaning your baby from the bottle and "sippy cup" by 12 months of age

Mouth Injuries

- Some injuries can be avoided by padding household furniture (coffee tables, etc.) when children are small.
- It is not uncommon that young children injure their teeth and mouths. Call our clinic to speak with the dentist and schedule an evaluation if an injury occurs. (206) 543-5800

Development of the Baby's Mouth

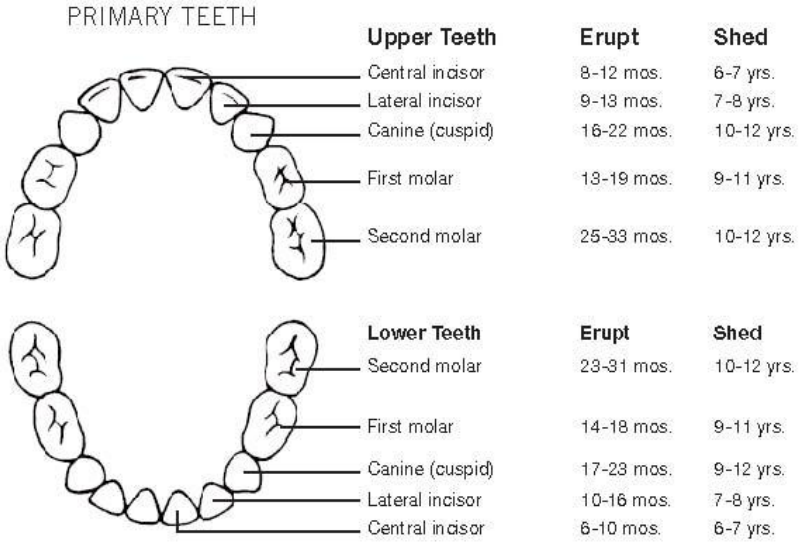
- All children are different, and the age at which their teeth come in varies
- Most typically the first tooth is seen beginning at 6-10 months of age

Advice for Teething:

- Discomfort and fussiness is considered normal during teething
- Erupting teeth may cause "eruption cysts" which look like blood blisters on the gums. They will often get larger, then smaller, usually healing on their own.
- Children's Tylenol can be given to the baby every 6 hours to relieve pain
- A chilled washcloth or teething rings may be of help

Fluoride

- If you use powdered baby formula, it is recommended that you mix it with non-fluoridated water
- A "smear" of fluoridated toothpaste is all that is needed for children under age 2
- Only children who are at high risk for cavities and consume non-fluoridated water need fluoride supplements. Before supplements are prescribed the dentist must evaluate the fluoride needs of each patient through water testing.



Goals To Keep My Baby's Mouth Healthy

- ☐ Regular dental visits for child, as well as the rest of the family, including treatment
- ☐ Brush teeth with fluoride toothpaste, at least two times a day
- ☐ No sleeping with the bottle
- ☐ Only water or milk in sippy cups
- ☐ No soda
- ☐ Less or no juice/soda/sports drinks
- ☐ Drink tap water
- ☐ Eat healthy foods
- ☐ Less or no candy and junk food
- ☐ Chew gum with xylitol (parent, not child)
- ☐ Regular, in-office fluoride treatment
- ☐ THE LAST THING THAT TOUCHES TEETH BEFORE BED IS THE TOOTHBRUSH

Please check **1 or 2 goals** that you would like to focus on before your next visit.

How confident are you that you can accomplish these goals?

1 2 3 4 5 6 7 8 9 10

Not confident **Confident**

APPENDIX 4: 1-3 YEAR ANTICIPATORY GUIDANCE AND GOALS

Your Child's Oral Health:
1-3 years
Name:_____

Your Child's Oral Health

- Baby teeth are important for chewing, smiling, talking, jaw development, and self esteem
- Good oral health begins with parents
    - Cavity-causing bacteria from parents pass to babies
    - Visit your dentist for regular checkups and keep your own teeth healthy
    - Don't share things (utensils, food, etc) with your baby that have been in your own mouth

Taking Care of your Child's Mouth

- Don't be afraid to look inside your child's mouth. Check for white, brown, or black spots on teeth daily
- Parents should brush their child's teeth with fluoride toothpaste. Ask the dentist how much to use for your child

Eating and Drinking Habits

- Don't let your baby sleep with a bottle containing anything but water
- Avoid frequent use of a "sippy cup" or bottle that contains anything but water
- Frequently exposing your child's teeth to sugar will cause cavities
- Children Should consume no more than 4-6 oz of juice daily
- Fresh fruits, vegetable, cheese, and cold cut meats are the best snacks
- Avoid having your child snack on crackers, cookies, dried fruit, and fruit snacks

Mouth Injuries

- In this age group accidents involving the teeth and mouth are very common
- Some injuries can be avoided by padding household furniture (coffee tables, etc.) when children are small.
- If a baby tooth is knocked out, do not put it back in the child's mouth
- Call our clinic to schedule an evaluation if an injury occurs (206)543-5800

Development of the Child's Mouth

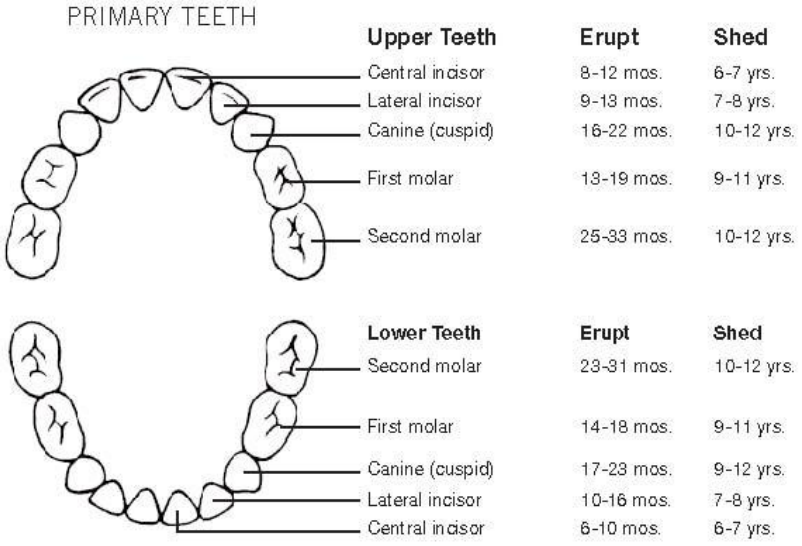
- All children are different, and the age at which their teeth come in varies
- By age 3 most children will have all 20 primary teeth

Advice for Teething

- Discomfort and fussiness is considered normal during teething
- Erupting teeth may cause "eruption cysts" which look like blood blisters on the gums. They will often get larger, then smaller, usually healing on their own.
- Children's Tylenol can be given to the baby every 6 hours to relieve acute pain
- A chilled washcloth or teething rings may be of help

Fluoride

- A "smear" of fluoridated toothpaste is all that is needed for children under age 2
- Children over the age of 2 can have a "pea sized" amount of fluoride toothpaste twice a day
- Only children who are at high risk for cavities and consume non-fluoridated water need fluoride supplements. Before supplements are prescribed the dentist must evaluate the fluoride needs of each patient through water testing.



Goals To Keep My Baby's Mouth Healthy

- ☐ Regular dental visits for child, as well as the rest of the family, including treatment
- ☐ Brush teeth with fluoride toothpaste, at least two times a day
- ☐ No sleeping with the bottle
- ☐ Only water or milk in sippy cups
- ☐ No soda
- ☐ Less or no juice/soda/sports drinks
- ☐ Drink tap water
- ☐ Eat healthy foods
- ☐ Less or no candy and junk food
- ☐ Chew gum with xylitol (parent, not child)
- ☐ Regular, in-office fluoride treatment
- ☐ THE LAST THING THAT TOUCHES TEETH BEFORE BED IS THE TOOTHBRUSH

Please check **1 or 2 goals** that you would like to focus on before your next visit.

How confident are you that you can accomplish these goals?

1 2 3 4 5 6 7 8 9 10

Not confident **Confident**

APPENDIX 5: 3-6 YEAR ANTICIPATORY GUIDANCE AND GOALS

Your Child's Oral Health:
3-6 years
Name:_____

Your Child's Oral Health

- Baby teeth are important for chewing, smiling, talking, jaw development, and self esteem
- Good oral health begins with parents
  - Cavity-causing bacteria from parents pass to babies
  - Visit your dentist for regular checkups and keep your own teeth healthy
  - Don't share things (utensils, food, etc) with your baby that have been in your own mouth

Taking Care of your Child's Mouth

- Don't be afraid to look inside your child's mouth. Check for white, brown, or black spots on teeth daily
- Parents should brush their child's teeth with fluoride toothpaste. Children 2 years and older can use a pea size amount of toothpaste
- When the spaces between your child's teeth close you may begin flossing every day

Eating and Drinking Habits

- Frequently exposing your child's teeth to sugar will cause cavities
- Children Should consume no more than 4-6 oz of juice daily
- Fresh fruits, vegetable, cheese, and cold cut meats are the best snacks
- Avoid having your child snack on crackers, cookies, dried fruit, and fruit snacks
- After eating brush teeth or rinse with water when brushing is not an option

Mouth Injuries

- In this age group accidents involving the teeth and mouth are very common
- Some injuries can be avoided by padding household furniture (coffee tables, etc.) when children are small
- If a baby tooth is knocked out, do not put it back in the child's mouth
- Call our clinic to speak with the dentist and schedule an evaluation if an injury occurs (206) 543-5800

Development of the Child's Mouth

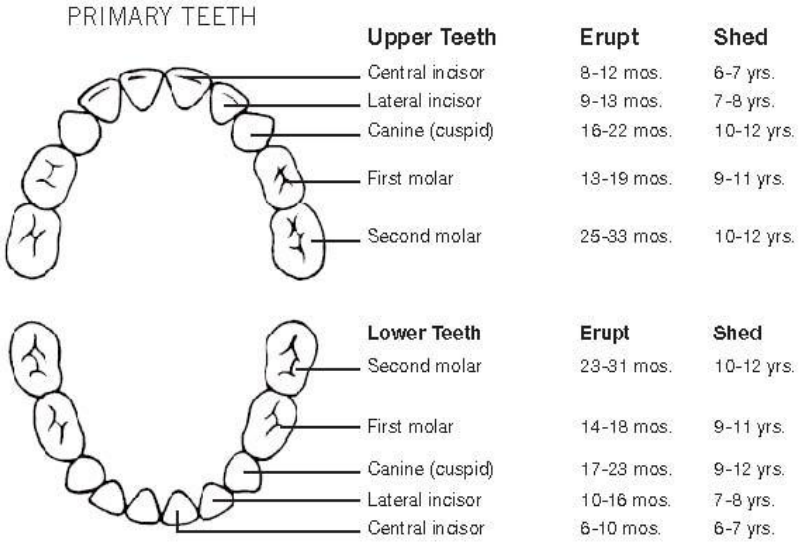
- All children are different, and the age at which their teeth come in varies
- Often around 5-6 years of age children begin getting permanent teeth

Habits

- Thumb and finger sucking can cause changes in the way your child's mouth develops. Helping your child stop these habits by 3 years of age. If habits persist, ask the dentist what can be done.

Fluoride

- Only children who are at high risk for cavities and consume non-fluoridated water need fluoride supplements. Before supplements are prescribed the dentist must evaluate the fluoride needs of each patient through water testing.



Goals To Keep My Baby's Mouth Healthy

- ☐ Regular dental visits for child, as well as the rest of the family, including treatment
- ☐ Brush teeth with fluoride toothpaste, at least two times a day
- ☐ No sleeping with the bottle
- ☐ Only water or milk in sippy cups
- ☐ No soda
- ☐ Less or no juice/soda/sports drinks
- ☐ Drink tap water
- ☐ Eat healthy foods
- ☐ Less or no candy and junk food
- ☐ Chew gum with xylitol
- ☐ Regular, in-office fluoride treatment
- ☐ THE LAST THING THAT TOUCHES TEETH BEFORE BED IS THE TOOTHBRUSH

Please check **1 or 2 goals** that you would like to focus on before your next visit.

How confident are you that you can accomplish these goals?

1 2 3 4 5 6 7 8 9 10

Not confident **Confident**

APPENDIX 6: 6-12 YEAR ANTICIPATORY GUIDANCE AND GOALS

Your Child's Oral Health:
6-12 years
Name:_____

Your Child's Oral Health

- Teeth are important for chewing, smiling, talking, jaw development, and self esteem

Taking Care of your Child's Mouth

- Don't be afraid to look inside your child's mouth. Check for white, brown, or black spots on teeth daily
- Parents should brush their young child's teeth with fluoride toothpaste 2 times a day
- Until age 8 we suggest you "finish the Job" after your child has brushed their own teeth
- Children over the age of 6 may use more than a pea-sized amount of fluoridated toothpaste
- Floss the teeth daily, assisting your child as needed

Eating and Drinking Habits

- Frequent exposure of your child's teeth to sugar will cause cavities
- Children Should consume no more than 4-6 oz of juice daily
- Fresh fruits, vegetables, cheese, and cold cut meats are the best snacks
- Avoid having your child snack on crackers, cookies, dried fruit, and fruit snacks
- After eating brush teeth or rinse with water when brushing is not an option
- Chewing sugarless gum is a good way to prevent cavities in-between meals
- Choose water to quench children's thirst during sports activities, not sports drinks

Mouth Injuries

- In this age group accidents and injuries involving the teeth and mouth are very common, especially when children participate in sports
- Always wear a helmet while bicycling, skateboarding, rollerblading, etc.
- Talk to the dentist about mouthguard use for sports activities
- Permanent teeth that are knocked out should be immediately replaced into the tooth socket. If this is not possible, place the tooth in cold milk and call the dentist immediately
- Call our clinic to schedule an evaluation if an injury occurs (206)543-5800

Development of the Child's Mouth

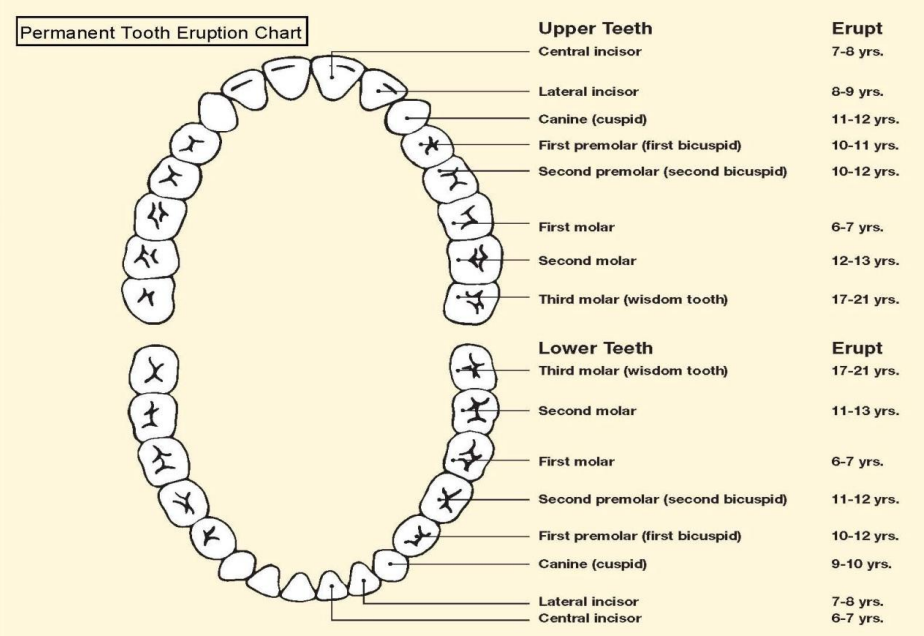
- All children are different, and the age at which baby teeth are lost and permanent teeth come in varies.
- In some cases children can benefit from early orthodontic treatment while their jaws are developing. Ask the dentist if you have concerns about the way your child's mouth is growing.

Advice for Teething

- Discomfort and fussiness is considered normal during teething
- Erupting teeth may come in with "eruption cysts" which look like blood blisters on the gums. They will often get larger, then smaller, usually healing on their own.
- Children's Tylenol can be given to the baby every 6 hours to relieve acute pain
- A chilled washcloth or teething rings may be of help

Fluoride

- Only children who are at high risk for cavities and consume non-fluoridated water need fluoride supplements, the dentist must evaluate the fluoride needs of each patient through water testing.



Goals To Keep My Child's Mouth Healthy

- ☐ Regular dental visits for child, as well as the rest of the family, including treatment
- ☐ Brush teeth with fluoride toothpaste, at least two times a day
- ☐ No soda
- ☐ Less or no juice/soda/sports drinks
- ☐ Drink tap water
- ☐ Eat healthy foods
- ☐ Less or no candy and junk food
- ☐ Chew gum with xylitol
- ☐ Regular, in-office fluoride treatment
- ☐ THE LAST THING THAT TOUCHES TEETH BEFORE BED IS THE TOOTHBRUSH

Please check **1 or 2 goals** that you would like to focus on before your next visit.

How confident are you that you can accomplish these goals?

1 2 3 4 5 6 7 8 9 10

Not confident **Confident**

APPENDIX 7: TWO-WEEK FOLLOW-UP INTERVIEWING SCRIPT

The principal investigator will call 2 weeks after the initial visit for a follow-up phone call. This is a sample script of what will be said:

- *Can I please speak to _____ (the parent of pt XXX who was interviewed at the initial visit)?*
- *This is Dr. Hannanvash. I met you 2 weeks ago when you presented at The Center for Pediatric Dentistry for ____'s visit.*
- *As I mentioned to you last time, I am calling for a follow-up conversation.*
- *I wanted to continue our last conversation with some questions to assess how ___ is doing.*
- *As you remember last time, I asked you to select a goal to work on at home with ____.*
- *Can you remember the goal you selected?*
    - *If they answer correctly: Great! You are correct.*
    - *If they answer incorrectly: The goal you selected is _____ (read off the goal to them).*
- *I am going to ask you 5 questions for which I want you to answer with the following choices: I strongly agree, agree, neutral, disagree, or strongly disagree.*
    - *Question #1- I am interested in focusing on my child's teeth. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
    - *Question #2- The goals selected are worth working on. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
    - *Question #3- The goals selected are realistic. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
    - *Question #4- I feel capable of achieving these goals. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
    - *Question #5- The goals selected have been applied in the past two weeks. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
- *I have one last question for you.*
    - *What do you think the barriers are to accomplishing these goals? I am going to read a list of options. Please let me know all that apply:*
        - *I forget about them*
        - *My child is resistant*
        - *There is a limited time to accomplish goals*
        - *I started but stopped.*
        - *My job interfered with it*
        - *My child has more important needs*
        - *I do not want to*
        - *I ran out of resources or supplies*
        - *I have limited money to accomplish goals*
        - *I am too busy*

        - *I am not the child's primary caregiver*
        - *I do not see the value in doing it*
        - *They are just baby teeth and will fall out*
        - *Other (please explain)*
- *Thank you so much for taking time to answer these questions. I appreciate your time and consideration. I look forward to speaking to you again when ___ returns for his 6 month check up.*

APPENDIX 8: INTERVENTION QUESTIONNAIRE- PART I

PART I (Two week phone follow-up) N=50

- Ask parents to recall chosen goals
- Tell them their chosen goals

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
1- I am interested in focusing on my child's teeth.	◯	◯	◯	◯	◯
2- The goals selected are worth working on.	◯	◯	◯	◯	◯
3- The goals selected are realistic.	◯	◯	◯	◯	◯
4- I feel capable of achieving these goals.	◯	◯	◯	◯	◯
5- The goals selected have been applied in the past two weeks.	◯	◯	◯	◯	◯

6- What do you think the barriers are to accomplishing these goals? Check all that apply.

◯ I forget about them	◯ My child is resistant	◯ Limited time to accomplish goals	◯ Started but stopped	◯ My job interfered with it	◯ My child has more important needs
◯ Do not want to	◯ Ran out of resources/supplies	◯ Limited money to accomplish goals	◯ Too busy	◯ I am not the child's primary caregiver	◯ I do not see the value in doing it
◯ They are just baby teeth and will fall out	◯ Other_____				

APPENDIX 9: SIX-MONTH FOLLOW-UP INTERVIEWING SCRIPT

The principal investigator will approach parents when they present for their child's 6 month recall appointment. This is a sample script of what will be said:

- *Hello! I am Dr. Hannanvash. I met you when you were here for ____'s visit 6 months ago. I wanted to continue our conversation with some questions to assess how ___ is doing.*
- *As you remember last time, I asked you to select a goal to work on at home with ____.*
- *Can you remember the goal you selected?*
    - *If they answer correctly: Great! You are correct.*
    - *If they answer incorrectly: The goal you selected is _____ (read off the goal to them).*
- *I am going to ask you 11 questions for which I want you to answer with the following choices: I strongly agree, agree, neutral, disagree, or strongly disagree.*
    - *Question #1- I am interested in focusing on my child's teeth. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
    - *Question #2- The goals selected were worth working on. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
    - *Question #3- The goals selected were realistic. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
    - *Question #4- I felt capable of achieving these goals. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
    - *Question #5- The goals selected have been applied in the past six months. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
    - *The agreement helped me follow the recommendations the dentist gave me. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
    - *It was helpful to choose these goals. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
    - *I appreciated the week follow-up phone call. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
    - *Selecting the goals encouraged me to return to the dentist. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
    - *An additional phone call would have been helpful. Do you strongly agree, agree, neutral, disagree, or strongly disagree?*
        - *If yes: when would this phone call have been most helpful?*
- *I have one last question for you.*
    - *What do you think the barriers were to accomplishing these goals? I am going to read a list of options. Please let me know all that apply:*
        - *I forgot about them*
        - *My child was resistant*

    - *There was a limited time to accomplish goals*
    - *I started but stopped.*
    - *My job interfered with it*
    - *My child had more important needs*
    - *I did not want to*
    - *I ran out of resources or supplies*
    - *I had limited money to accomplish goals*
    - *I was too busy*
    - *I am not the child's primary caregiver*
    - *I did not see the value in doing it*
    - *They are just baby teeth and will fall out*
    - *Other (please explain)*
- *Thank you so much for taking time to answer these questions. I appreciate your time and consideration. Thank you for your willingness to help us with the research project so that we can better understand ___ and other patients who come to our clinic for care.*

APPENDIX 10: INTERVENTION QUESTIONNAIRE- PART II

PART II (Six month follow-up) N=50

- Ask parents to recall chosen goals
- Tell them their chosen goals

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
1- I was interested in focusing on my child's teeth.	◯	◯	◯	◯	◯
2- The goals selected were worth working on.	◯	◯	◯	◯	◯
3- The goals selected were realistic.	◯	◯	◯	◯	◯
4- I felt capable of applying these goals.	◯	◯	◯	◯	◯
5- The goals selected have been applied in the past six months.	◯	◯	◯	◯	◯
6- The agreement helped me follow the recommendations the dentist gave me.	◯	◯	◯	◯	◯
7- It was helpful to choose these goals.	◯	◯	◯	◯	◯
8- I appreciated the two week follow-up phone call.	◯	◯	◯	◯	◯
9- Selecting the goals made me feel more engaged with the dental team	◯	◯	◯	◯	◯
10- Selecting the goals encouraged me to return to the dentist.	◯	◯	◯	◯	◯
11- An additional phone call would have been helpful.	◯	◯	◯	◯	◯
12- If YES (#11), when would be most helpful?	◯ 1 week sooner	◯ 1 week later	◯ 1 month later	◯ 2 months later	◯ 4 months later

13- What do you think the barriers were to accomplishing these goals? Check all that apply.

◯ I forgot about them	◯ My child was resistant	◯ Limited time to accomplish goals	◯ Started but stopped	◯ My job interfered with it	◯ My child has more important needs
◯ Did not want to	◯ Ran out of resources/supplies	◯ Limited money to accomplish goals	◯ Too busy	◯ I am not the child's primary caregiver	◯ I did not see the value in doing it
◯ They are just baby teeth and will fall out	◯ Other_____				

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