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Assessment of Pediatric-Focused Brief Motivational Interviewing Training of Dental Students and Pediatric Dental Residents

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Dentistry at Virginia Commonwealth University.

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Abstract

ASSESMENT OF PEDIATRIC-FOCUSED BRIEF MOTIVATIONAL INTERVIEWING TRAINING OF DENTAL STUDENTS AND PEDIATRIC DENTAL RESIDENTS

By Victoria Onesty, DDS

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Dentistry at Virginia Commonwealth University.

Virginia Commonwealth University, 2018

Thesis Advisor: Elizabeth Berry, DDS, MPH, MSD

Program Director, Department of Pediatric Dentistry

Purpose: To assess dental students and pediatric dental residents' knowledge and attitudes towards motivational interviewing and evaluate the efficacy of a pediatric-focused brief motivational interviewing training program.

Methods: A total of 66 participants were enrolled; 35% were third year dental students, 46% were fourth year dental students and 18% were pediatric dental residents. Participants completed three questionnaires: the first before the training, the second immediately after the training and the third approximately 3.5 months after the training.

Results: A significant increase in correct responses was found for 4 of the 5 questions assessing participants' knowledge. Participants were satisfied with the training (94%) and were interested in further training (89%). Participants believed patients and their parents would benefit from the intervention (97%).

Conclusions: The pediatric-focused BMI training program is a valuable addition to pre-doctoral and residency curricula by preparing students and residents to employ this beneficial technique.

Introduction

Motivational interviewing (MI) is a client-centered behavioral intervention in which practitioners engage their patient's intrinsic motivations to facilitate change and encourage the pursuit of personal goals.[1] Its derivative, Brief Motivational Interviewing (BMI), is a modified approach for practitioners to promote behavior change within the limited time allotted in busy medical contexts.[2]

Although abbreviated, the BMI intervention follows the spirit and fundamental theory of MI. The following principles delineate the use of BMI: it can be implemented in a flexible manner in time-limited consultations; it may be used with patients at varying levels of readiness to change; it should be taught to practitioners in no more than 12-15 hours; and it involves the discussion of behavior change with respect and sensitivity.[2] BMI is guided by the belief that in a brief intervention, even if significant behavior change is not achieved, gradual progress towards change is made. Britt et al. proposed that the use of brief behavior change interventions in healthcare settings may increase levels of satisfaction and achievement for both patients and practitioners, as a patient's improvement in readiness to change may be perceived as progress, without necessarily reaching the goal of complete behavior change.[3]

The effectiveness of MI as a behavior change intervention has been demonstrated through extensive research.[4] It has been found that MI, and its derivative, BMI, are valuable approaches for changing health behaviors. Borrelli et al. conducted a meta-analysis examining 25 studies and

found that MI had a positive effect on improving health behaviors such as exercise, diet, weight loss, oral health, and smoking cessation.[5]

There is also evidence to suggest that MI can be an effective intervention in pediatric healthcare, including pediatric dentistry. Erikson et al. reviewed the use of MI among children, adolescents, and parents.[6] Although it is unclear whether MI can be used directly with young children, MI was found to be very effective in adolescents and the parents of young adolescents. Intervening with parental health risk behaviors has been found to have an effect on the whole household, thus strengthening the value of MI as a means of providing benefit for the children in the household.

Within pediatric dentistry, the research conducted by Borrelli et al. found that MI is associated with improvements in pediatric oral health-related behaviors.[5] In the four studies assessed, MI had a positive, significant effect on oral health-related behaviors, such as tooth brushing or visiting the dentist, compared with control groups. Other studies also validate these findings; for instance, Harrison et al. found that in families who received treatment with MI, children had a 46% lower rate of decayed-missing-filled surfaces (DMFs) and were more likely to be taken to the dentist to receive fluoride varnish treatment.[7] Similarly, the study of Weinstein et al. found that children whose families had received personalized MI counseling presented with decreased incidence of carious lesions at their one year follow up.[8] This is also corroborated by the work of Gonzalez et al., who found both a decrease in incidence and severity of caries as well as a lower plaque score in children whose families received an MI intervention.[9] Additionally, in the research of Saengtipbovorn, the use of MI in conjunction with caries risk assessment (MICRA) was found to decrease the plaque index, and incidence of cavitated and non-cavitated lesions in preschool children.[10]

While evidence supports the use of motivational interviewing for various forms of behavior change, there are many challenges that practitioners face when applying these interventions in clinical settings. This has been found in both general medical settings as well as in a dental context. Based on studies of medical practitioners' experiences implementing MI, barriers such as insufficient time, limited training, resistant patients, and the increased energy and effort required, limit the ability to conduct MI interventions in clinical settings.[11] Moreover, in research conducted on dental hygienists' experiences with MI, insufficient time was identified as the most significant barrier to implementing MI during appointments.[12] In order to fit MI within the appointment, participants reported abbreviating the intervention. Participants were also asked to describe factors that act as facilitators to the implementation of MI; factors that were most frequently identified included a supportive office climate and developing a routine.

Multiple studies in varying fields of healthcare have consistently identified the positive results of training programs as a means to help practitioners learn about and improve the delivery of MI interventions. In a general healthcare context, Nesbitt et al. conducted a pilot study to teach MI to nurse practitioner students.[13] The training was found to be effective as students significantly increased use of affirmations, reflections, and summarizing at the end of the session, while decreasing advising without permission. In addition, 100% of the participants reported using MI in their clinical practicums and either agreed or strongly agreed the training was very useful. White et al. found similar results when conducting small group training and practice role plays with medical students, where 83% of participants felt that the curriculum would help them be more comfortable in discussing behavior change and 98% felt it was an important skill for physicians.[14] Furthermore, in the randomized trial of Lozano et al. which evaluated teaching BMI to pediatric residents and fellows, a BMI curriculum was adapted for the pediatric setting.[15] The study found

an increase in resident use of MI-consistent behaviors (such as affirmations, open-ended questions, and reflections) in the training group in relation to the untrained control group.

Within the dental field, Koerber et al. studied the effect of teaching dental students BMI for smoking-cessation counseling.[16] The post-training measures demonstrated clinically significant improvements in sessions conducted by dental students after the BMI training compared with dental students who had no training. As in the research of Nesbitt et al., trained students were more likely to use the techniques and were able to elicit more patient involvement in the sessions.[13]

Miller et al. conducted a randomized trial of methods to help clinicians learn MI, and found that upon completing follow-up, many clinicians had changed work environments as they preferred to work in settings with a more client-centered approach.[17] The authors believe that training individual practitioners does not help create systemic change in an existing environment where authoritarian, confrontational counseling styles are the norm. They propose using a model that promotes the training of individual practitioners in MI combined with a more systemic acceptance of the technique in the workplace.

Researchers have applied different methods for delivering MI training with varying results. One source of variation relates to the length of training instruction. Cannick et al. evaluated the use of a single, brief training session to test dental students' competency in communication skills for tobacco cessation.[18] They found that there were no statistically significant differences from baseline to post-test between the intervention and control groups. As a result, the authors suggest that a comprehensive communication skills training course may be more beneficial than a single event intervention. This view is also supported by the work of Miller et al., who conducted a longer

workshop over a period of two days and found significant increases in participants' motivational interviewing skills.[19]

Nevertheless, it appears that under certain conditions, single session training programs can also be effective in MI/BMI training. Martino et al. conducted a 2-hour training session on students that had received previous communication training.[20] In this instance, authors found an increase in the use of BMI consistent behaviors, BMI knowledge, confidence, and commitment to utilizing BMI in the future. This finding suggests that single session training events may be more likely to succeed in a context where participants have a foundation of skills.

With regards to course structure, multiple variations of MI training have been tested as well. Moyers et al. conducted consultation phone calls as a supplementary component of MI training and found no improvement in comparison with the MI skills of participants who received only workshop training.[21] White et al. evaluated participants' perceptions on the effectiveness of training structure, and found that only 68% reported the MI lecture component was beneficial, while 90% reported the small group session with role plays was beneficial.[14] Finally, the study of Mounsey et al. did not find any differences in the use of standardized patients in comparison with student role-play in an evaluation of MI skills development for medical students.[22]

While evidence supports the use of motivational interviewing for various forms of behavior change, there are many challenges that practitioners face when applying these interventions in clinical settings. It is likely that in pediatric dentistry, practitioners' experience similar barriers as general clinicians, with increased time limitations due to the high volume of appointments that is typical in a pediatric dental practice. The purpose of this study was to develop a training program to assist dental students and residents with the implementation of

BMI interventions in a pediatric dental environment and evaluate the training in relation to participants' knowledge, confidence and attitudes regarding BMI.

Materials and Methods

Participants for this study were recruited from the period of June 2017 to September 2017. The inclusion criteria for participants in this study were as follows:

1) Third or fourth year dental students on rotation at the VCU Pediatric Dental Clinic.
2) First or second year pediatric dental residents at VCU.

The only exclusion criterion for participants was previous certification in MI from the Motivational Interviewing Network of Trainers (MINT).

Participants completed a series of three questionnaires: the first before the training session, the second immediately after the training session, and the third at least 3 months after completing the training session. All three questionnaires were divided into two components: 1. assessment of participants' knowledge regarding the use of MI/BMI in pediatric dental settings and 2. assessment of participants' perceived confidence and attitudes towards adoption of BMI. The first component of all three questionnaires was the same; participants answered three multiple choice questions and two true and false questions based on findings from recent research on the use of MI/BMI in pediatric dental settings. The questions in the second component differed slightly in each of the three questionnaires in order to ensure clarity as participants moved from one stage of the research to another. In addition, in the first questionnaire, participants provided demographic information regarding their level of training, age, gender, and plans upon completion of their degree.

All questionnaires were sent to the participants as a unique link in three separate emails. Before completing the training, participants received the first email which included a participant information sheet (Appendix 1). The information sheet indicated that participation was voluntary and that completion of the questionnaire confirmed their consent to participate. The participants did not receive any financial incentives. A decision to participate or not participate did not affect the grades of the dental students on rotation.

After submitting the first questionnaire, participants then completed the pediatric-focused BMI training program. The first component of the training required participants to view a PowerPoint presentation at their own pace, which included reading through two practice cases independently (Appendix 2). The second component of the training required that participants work in pairs and role-play two cases. During this component, participants continued viewing the PowerPoint presentation for guidance with the cases (Appendix 2). The participants alternated role-playing as the dentist and the parent or patient for each of the cases. All cases used in the training were fictional but depicted commonly confronted issues in pediatric dentistry. For each case, participants were given the chief complaint, dental history, and social history. Throughout the training session participants were monitored by the student investigator to ensure all components of the training were completed in the specified order and with diligence.

Immediately after finishing the training, participants received an email with a link to the second questionnaire (Appendix 3). Approximately 3 months after completing the training, participants received a final email with a link to the third questionnaire (Appendix 4).

Data were collected and managed using REDCap electronic data capture tools hosted at Virginia Commonwealth University. REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies.[23] Only the statistician

was able to access the study data stored in the password-secured REDCap electronic database, including the patient identifiers. This study was approved by Institutional Review Board, Committee on Human Research of Virginia Commonwealth University (VCU), Richmond, Virginia (#HM20009086).

Statistical Methods

The participant demographics and responses were summarized using descriptive statistics (counts and percentages). The responses to the questionnaires administered before and after the training module were compared using Chi-squared tests for agreement (McNemar's and Bowker's). SAS EG v.6.1 was used for all analyses. Significance level was set at 0.05.

Results

A total of 66 third and fourth-year dental students and pediatric dental residents enrolled in the study. All 66 completed both the pre-test and the first follow-up. The breakdown by program year was as follows: 35% were D3s, 47% D4, and 18% pediatric residents. Eighty percent of students were between the ages of 25 and 34, there was a roughly equal split of males (45%) and females (55%). Among the dental students, 33% were interested in residencies after graduation. The most common specialties of interest were pediatric (n=7, 13%) and periodontics (n=4, 7%). Full demographics are given in Table 1.

Before the educational intervention, the rate of correct responses ranged from 26% to 91%, with three of the five questions right around 50% responding correctly. After the educational intervention, there was as significant increase in correct responses for all the knowledge questions except the question regarding how MI may promote sustainable health behaviors for the whole family which 91% correctly responded at baseline and 97% at the first post-test (p-value=0.4232). Full results are given in Table 2 and Figure 1.

In addition to the knowledge questions, participants were also asked about their interest and comfort with motivational interviewing at each time point (Table 3). There was a marginal improvement in student confidence using MI techniques (p-value=0.0517). After the intervention, the 5% who were initially extremely unconfident had increased their comfort.

Overall, those who were slightly confident or extremely confident improved from 53% to 74%. Additionally, 89% reported interest in further training, 90% believed it would be a beneficial addition to the curriculum, and 94% were satisfied with the training module. In terms of implementation, 93% believe they would use MI in their daily practice with pediatric patients and their parents and 97% believe the patients and parents would benefit from the use of this approach. Complete breakdown of responses is given in Table 4.

3-Month Follow-up

Three months after the initial intervention, a follow-up survey was sent to participants to evaluate the retention of their knowledge and their behaviors. A total of 33 participants responded to the follow-up email survey (50%). There were no differences in age or gender distribution for those who did respond to the follow-up survey, however there were differences in the response rate based on the current level of dental training (p-value=0.0001). Residents were significantly most likely to respond (83%), followed by third year dental students (70%), and fourth year dental students were least likely to respond (23%). After excluding current pediatric residents, there were no differences in post-graduate plans for the D3/D4 students (p-value=0.3407). The average time to follow-up was 105.5 (range: 89-154) days or about 3.5 (range: 3.0-5.1) months.

Among the 33 participants who completed all three surveys, there was a rebound in the knowledge at the 3-month follow-up (**Figure 2**). Despite the rebound, there was still a significant change in knowledge from baseline for 2 of the questions (effective for reducing plaque score, 46% reduction in DMFs rate). There was marginal improvement for the question regarding motivating adolescent patients (p-value=0.0706).

The three-month follow-up also included questions about a respondents' practices since the training and their thoughts on the future use of motivational interviewing (Table 5). Among the 33 students who completed the three-month follow-up survey, 79% agreed or strongly agreed that they were competent in performing brief motivational interviewing with pediatric patients or their parents. Fifty-eight percent reported thinking differently about their interactions with patients and parents often or very often since their training. Eighty-five percent of respondents agreed or strongly agreed that they have the knowledge to use brief motivational interviewing with pediatric patients.

Knowledge was compared between students based on year in school and gender. There were statistically significant associations between year in school and knowledge for two of the five questions. At baseline, there were significant differences among the years in school (D3, D4, Resident) regarding whether or not BMI could affect both the caries risk and ICDAS (p-value=0.0405). Third year dental students had the highest baseline knowledge (70% correct), followed by residents (42%) and fourth year dental students (35%). At the three-month follow-up, the third-year dental students also had the highest retention for the question regarding the use of BMI on adolescent patients (94% correct) compared to 70% of residents and 43% of fourth-year dental students. No responses were dependent on respondent gender.

Discussion

The findings from this study suggest that a pediatric-focused BMI training program can improve students' and pediatric dental residents' knowledge, attitudes, and confidence in the use of BMI. After completion of the training, participants' attitudes regarding the value of the program were highly positive; a majority of participants supported the use of BMI in daily practice (93%) and its addition to the curriculum (90%).

The knowledge component of the questionnaire focused on the following topics: the general effect of the use of MI in a pediatric setting, the recipients of the intervention, and the relationship of MI with DMFs rates, plaque score, and severity of caries as measured by International Caries Detection and Assessment System (ICDAS) level. Prior to completing the training, participants had varied exposure to MI as a general intervention for behavior change but had not received specific instruction on the use of BMI in a pediatric context. Consequently, after the training, participants demonstrated a significant improvement in their responses to the knowledge questions that were based on findings from pediatric MI and BMI research. At approximately 3 months after the training, 85% percent of respondents agreed or strongly agreed that they have the knowledge to use brief motivational interviewing with pediatric patients. Similar results were found by Rubel et al.; after a 2-day clinical training workshop, counselors' knowledge was found to significantly increase on a 15- item multiple choice questionnaire.[24] In the study of Miller et al., participants self-reported substantial increases in their understanding of

the basic ideas and principles of MI after a 2-day training workshop; however, the level of change in actual practice behavior was significantly less substantial.[19]

The structure of the study, which asked the same knowledge questions before and after the training, may have helped reinforce participants' understanding of the training's content by focusing their attention on specific topics. Additionally, retention of the material may have improved due to the concise, visual arrangement of the information in a PowerPoint presentation. In the guidelines of Edwards et al. regarding teaching BMI to medical students, the importance of providing evidence for the approach to increase credibility and "buy-in" from students is emphasized.[25] As is the case with medical students, it is possible that dental students and residents may believe that developing communication skills is desirable but not critical, and thus may not perceive the need for instruction. By increasing participants' awareness of the positive effects of BMI/MI in the context of pediatric dentistry, the first and more didactic component of the training may have helped participants appreciate its applicability in clinical practice.

Correct responses to one of the five knowledge-based questions regarding the effectiveness of MI in pediatric settings did not increase significantly. A ceiling effect likely influenced this finding, as a very high percentage of participants (91%) responded correctly at baseline, which only increased to 97% at the second questionnaire. In addition, the position of this question as the last of the five knowledge questions may have helped participants as previous questions may have alluded to the correct response.

In similar research with comparable groups, findings were mixed but generally positive regarding self-reported confidence after MI training sessions. Brown and Oriel found a significant increase in medical students' self-reported confidence after a 14-hour interactive

program.[26] In the research of Curry-Chiu, dental hygienists who had received training as students reported varied confidence in their skills, but all participants were at minimum moderately confident.[12] In the study of Sargeant et al., physicians reported increased self-confidence and comfort in working with patients after a 2-hour workshop; these factors were initially identified as barriers to implementing MI by the participants.[27] In a study on incorporating MI in the communication skills curricula for dental students, students self-reported higher levels of confidence in communication with patients, which increased as they progressed to the second year of the program.[28] Additionally, after a 2-day training workshop for oral health counsellors, a statistically significant increase was found in participants' confidence.[29] The results from this pediatric-focused BMI training aligns with these studies, as an increase was found in participants' confidence, with greatest increases in the top two categories: slightly and extremely confident. The increase in confidence may have been facilitated by the background of participants, who already had an existing foundation of clinical communication skills as they were all 3rd and 4th year dental students and residents. Although self-reported confidence is not necessarily analogous to competence, this measure is useful as perceived confidence may increase the likelihood that participants adopt the use of BMI or related skills in daily practice.

In this study, the majority of participants (94%) demonstrated satisfaction with the pediatric-focused BMI training. A few factors may have contributed to this result. The training was pediatric-focused and took place while participants were treating patients in the pediatric clinic, which may have increased its relevance and participants' appreciation for the intervention. Additionally, a framework based on the four central processes of MI: Engage, Focus, Evoke, Plan, was used. [30] The sequential, yet flexible framework helped participants construct a mental outline and guide their interactions during the role-play. This approach is supported by the

research of Edwards et al., which recommends providing students with a scaffold to follow when learning BMI.[25]

Despite a high level of satisfaction, 89% of participants reported interest in further training. The need for additional instruction is also consistent with existing research. In the research of Rindlisbacher et al, 74.5% of students expressed interest in learning more about communication for motivating patients; however, the desire for further training decreased as students progressed through dental school.[28] After completing a training module, graduate nursing students demonstrated further interest in MI skill acquisition by attending continuing education programs and, in one case, selecting the topic for their master's project.[13] This interest in further training is expected as it is challenging to achieve mastery of MI and BMI which involves continuously practicing a complex combination of communication skills.

The top two post-graduation career plans reported by participants were general dentistry and pediatric dentistry, this comprised 80% of responses. Clinicians in these two subsets of dentistry are those who are most likely to be the primary provider of comprehensive preventative and routine oral health care for children. In addition, the second most commonly selected post-graduation specialty after pediatric dentistry was periodontics (7%), a field which places a focus on chronic disease management. Given these predilections for specialties with inherent preventative education and behavior modification, it is reasonable that the majority of participants also believed they would use the intervention in daily practice (93%). This aligns with the study by Sargeant et al., which found that after a 2-hour workshop for primary-care physicians, 95.3% reported an intention to modify their practice.[27]

There was a difference in response rates to the 3rd questionnaire completed at approximately 3.5 months after the training likely due to participant's level of association with the pediatric clinic. Residents, who were present in the clinic daily and were most aware of the research had the highest response rate (83%) followed by 3rd year students who were taking a pediatric dentistry course and were verbally reminded to respond (70%). Finally, 4th year students who did not have further rotations or classes with the pediatric department had the lowest response rate (23%).

At the third questionnaire, retention of the material decreased. There was only a significant increase in knowledge from baseline for two of the five knowledge questions and a marginal improvement compared to baseline for a third question. This stands in contrast to a study by Martino et al., where 4 weeks after a 2-hour training of third year medical students, knowledge was generally sustained. This highlights the importance of providing booster training sessions to participants as a means of maintaining knowledge and skills, which has also been suggested by the literature.[13]

Certain limitations must be taken into account with regard to the findings of this research. Although multiple sessions and feedback would likely improve retention of the training and skills further, this study was limited in its ability to conduct extensive training due to the large number of participants involved and the time constraints with their schedules. Additionally, while participants would have been more objectively assessed using the Motivational Interviewing Treatment Integrity (MITI) standards, this study sought to reduce complexity and time requirements from participants by using self-reported evaluations. Finally, as the clinical practice involved role-play, interactions may have lacked authenticity and it was not possible to

assess if the participants' interventions would correlate with actual behavior change. However, this format allowed for more uniformity in the BMI practice experience among participants.

This study provides a strategy for BMI training with a specific focus on pediatric dentistry. While courses on communication and interpersonal interactions are offered at dental schools, often in the clinical years more attention is given to refining manual skills.[31] It is important to bring BMI training opportunities into the clinical contexts in which students practice dentistry and in the rotations through the specialty clinics to help students reinforce skills and identify the communication techniques that are most suitable in different contexts. This study demonstrates that it is feasible for a pediatric-focused BMI training to be incorporated into already demanding pediatric pre-doctoral or residency curricula. Furthermore, this research shows that even a short exercise with a pediatric focus could be beneficial to dental students and pediatric dental residents.

The results of this study provide support for the inclusion of BMI in a pediatric dentistry curriculum for pre-doctoral and post-doctoral students. As dentists initially develop their foundation of communication skills while first treating patients in the pre-doctoral and post-doctoral clinics, this is an ideal time to promote the use of behavioral interventions, such as BMI.[32] In this way, dentists will develop more versatile communication skills that promote behavior change as they practice, instead of trying to modify an already established style of communication. Training in the use of BMI in pediatric dentistry is currently relevant as the code D9993, Dental Case Management-Motivational Interviewing, which was submitted by the American Academy of Pediatric Dentistry, was recently approved. As dentists may now use the code to document the use of this behavioral intervention with their patients, it is vital that an accepted protocol for training and instruction in the use of this treatment is provided for students

and residents starting dental practice. Finally, if a pediatric-focused BMI training program is incorporated throughout pediatric dental programs and involves all residents, it may facilitate more widespread acceptance and use of BMI in pediatric clinical settings.

Given the increasing importance of preventative care in pediatric dentistry, continued research on the instruction and adoption of BMI is particularly important as it is a non-invasive intervention that can improve a patients' oral health and reduce the need for dental treatment. Further research is needed on the integration of pediatric-focused BMI training in clinical practice and, more specifically, on improving the compatibility of BMI within pediatric dental clinical settings. While this study addressed the first three levels of Miller's pyramid of clinical competence (factual recall, application in clinical scenarios, and demonstration of clinical skills), the fourth level (performance integrated into practice) remains an area that requires further study.[33] Moreover, the literature has recognized that the application of these skills may not be feasible without systemic changes in the environments in which pediatric dentists practice.[17] Further research on the drivers that create a more conducive environment that facilitates the adoption of this intervention is recommended.

Conclusions

This research sought to train dental students and residents in BMI within a pediatric dental environment and assess their knowledge, confidence and attitudes regarding pediatric-focused BMI. After completion of the training, participants demonstrated a significant increase in knowledge of pediatric-focused BMI on 4 of the 5 questions asked. Participants' levels of satisfaction and interest in further training were high, at 94% and 89% respectively. A majority of participants believed their patients and their parents would benefit from the intervention (97%). The findings from the final questionnaire, at approximately 3.5 months, demonstrated a significant increase in knowledge from baseline for two of the five knowledge questions and a marginal improvement for a third question. This suggests that participants were able to moderately maintain the knowledge gained from the training program, although retention was noticeably higher immediately after completion of the training, highlighting the importance of additional reinforcement sessions. This study provides support for the value of training dental students and pediatric dental residents in pediatric-focused BMI. Additional research focused on understanding how BMI might be better integrated into pediatric clinical settings and how the external environment might be adjusted to facilitate the adoption of BMI would be valuable to support the use of this intervention in pediatric dentistry.

Literature Cited

1. Miller WR, Rollnick S. Ten things that motivational interviewing is not. *Behav Cogn Psychother*. 2009;37(2):129-140. doi:10.1017/S1352465809005128.

2. Rollnick , S . , Heather, N ., Bell A. Negotiating behaviour change in medical settings : The development of brief motivational interviewing. *J Ment Heal*. 1992;(1):25-37.

3. Britt E, Hudson SM, Blampied NM. Motivational interviewing in health settings: A review. *Patient Educ Couns*. 2004;53(2):147-155. doi:10.1016/S0738-3991(03)00141-1.

4. Gayes, L.A., Steele RG. A meta-analysis of motivational interviewing interventions for pediatric health behavior change. *J Consult Clin Psychol*. 2014;82(3):521-535.

5. Borrelli B, Tooley EM, Scott-Sheldon LAJ. Motivational Interviewing for Parent-child Health Interventions: A Systematic Review and Meta-Analysis. *Pediatr Dent*. 2015;37(3):254-265.

6. Erikson SJ, Gerstle M, Feldstein SW. Brief interventions and motivational interviewing with children, adolescents and their parents in pediatric health care settings. *Arch Pediatr Adolesc Med*. 2005;159 SRC-:1173-1180. doi:10.1001/archpedi.159.12.1173.

7. Harrison R, Benton MST, Everson-stewart MAS, Weinstein MSP. Effects of motivational interviewing on rates of early childhood caries: A randomized trial. (1):16-22.

8. Weinstein, P., Harrison, R., & Benton T. Motivating parents to prevent caries in their young children. 2004.

9. González-Del-Castillo-McGrath M, Guizar-Mendoza J-M, Madrigal-Orozco C, Anguiano-Flores L, Amador-Licona N. A parent motivational interviewing program for dental care in children of a rural population. *J Clin Exp Dent*. 2014;6(5):e524-9. doi:10.4317/jced.51662.

10. Saengtipbovorn S. Efficacy of Motivational Interviewing in Conjunction with Caries Risk Assessment (MICRA) Programmes in Improving the Dental Health Status of Preschool Children: A Randomised Controlled Trial. *Oral Health Prev Dent*. 2017;15(2):123-129. doi:10.3290/j.ohpd.a37924.

11. Sannes HJ. Barriers to Using Motivational Interviewing for Lifestyle Counseling. 2011.

12. Curry-chiu ME, Catley D, Voelker MA, Bray KK. Dental Hygienists ' Experiences with Study. 2015;(August):897-906.

13. Nesbitt BJ, Murray DA, Mensink AR. Teaching motivational interviewing to nurse practitioner students: A pilot study. *J Am Assoc Nurse Pract*. 2014;26(3):131-135. doi:10.1002/2327-6924.12041.

14. White LL, Gazewood JD, Mounsey AL. Teaching students behavior change skills: description and assessment of a new Motivational interviewing curriculum. *Med Teach*. 2007;29(4):e67-71. doi:10.1080/01421590601032443.

15. Lozano P, McPhillips H a, Hartzler B, et al. Randomized trial of teaching brief motivational interviewing to pediatric trainees to promote healthy behaviors in families. *Arch Pediatr Adolesc Med*. 2010;164(6):561-566. doi:10.1001/archpediatrics.2010.86.

16. Koerber A, Crawford J, O'Connell K. The effects of teaching dental students brief motivational interviewing for smoking-cessation counseling: a pilot study. *J Dent Educ*. 2003;67(April):439-447.

17. Miller WR, Yahne CE, Moyers TB, Martinez J, Pirritano M. A randomized trial of methods to help clinicians learn motivational interviewing. *J Consult Clin Psychol*. 2004;72(6):1050-1062. doi:10.1037/0022-006X.72.6.1050.

18. Cannick GF, Horowitz AM, Garr DR, et al. Use of the OSCE to evaluate brief communication skills training for dental students. *J Dent Educ*. 2007;71(9):1203-1209. doi:71/9/1203 [pii].

19. Miller WR, Mount KA. a Small Study of Training in Motivational Interviewing: Does One Workshop Change Clinician and Client Behavior? *Behav Cogn Psychother*. 2001;29(1972):457-471.

20. Martino S, Haeseler F, Belitsky R, Pantalon M, Fortin IV AH. Teaching brief motivational interviewing to Year three medical students. *Med Educ*. 2007;41(2):160-167. doi:10.1111/j.1365-2929.2006.02673.x.

21. Moyers TB, Manuel JK, Wilson PG, Hendrickson SML, Talcott W, Durand P. A Randomized Trial Investigating Training in Motivational Interviewing for Behavioral Health Providers. *Behav Cogn Psychother*. 2008;36(November 2007):149-162. doi:10.1017/S1352465807004055.

22. Mounsey AL, Bovbjerg V, White L, Gazewood J. Do students develop better motivational interviewing skills through role-play with standardised patients or with student colleagues? *Med Educ*. 2006;40(8):775-780. doi:10.1111/j.1365-2929.2006.02533.x.

23. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)-A metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009;42(2):377-381. doi:10.1016/j.jbi.2008.08.010.

24. Rubel EC, Sobell LC, Miller WR. Do continuing education workshops improve

participants' skills? Effects of a motivational interviewing workshop on substance-abuse counselors' skills and knowledge. *Behav Ther*. 2000;23(4):73-77,90.

25. Edwards EJ, Bannatyne AJ, Stark AC. Twelve tips for teaching brief motivational interviewing to medical students. *Medical Teacher*. 2017:1-6.

26. Brown RL, Oriel K. Teaching motivational interviewing to first-year students. *Acad Med*. 1998;73(5):589-590.

27. Sargeant J, Valli M, Ferrier S, MacLeod H. Lifestyle counseling in primary care: Opportunities and challenges for changing practice. *Med Teach*. 2008;30(2):185-191. doi:10.1080/01421590701802281.

28. Rindlisbacher F, Davis JM, Ramseier CA. Dental students' self-perceived communication skills for patient motivation. *Eur J Dent Educ*. 2017;21(3):166-174. doi:10.1111/eje.12196.

29. Raheb J, Arrow P. An evaluation of workshop training in motivational interviewing for oral health counsellors. *J Contemp Med Educ*. 2013;1(4):220-224. doi:10.5455/jcme.20131012104030.

30. Miller WR, Rollnick S. Motivational Interviewing: Helping People Change: Helping People Change: Helping People Change. *Help People Chang*. 2012;33(6):6. doi:10.1080/02615479.2014.894351.

31. Gonzalez MAG, Abu Kasim NH, Naimie Z. Soft skills and dental education. *Eur J Dent Educ*. 2013;17(2):73-82. doi:10.1111/eje.12017.

32. Curtin S, Trace A. Exploring motivational interviewing and its philosophical alignment to an undergraduate behavioural science programme in dentistry. *Eur J Dent Educ*. 2013;17(2):83-87. doi:10.1111/eje.12009.

33. Miller GE. The assessment of clinical skills/competence/performance. *Acad Med*. 1990;65(9):S63-7. doi:10.1097/00001888-199009000-00045.

Tables

Table 1: Demographics of Study Participants

		n	%
Age			
	18 - 24	10	15%
	25 - 34	53	80%
	35 - 44	3	5%
Gender			
	Male	30	45%
	Female	36	55%
Year in School			
	D3	23	35%
	D4	31	47%
	Resident (Pediatric)	12	18%
Plans Post Dental School (n=54, Residents Removed)			
	OMFS	1	2%
	General Dentistry	36	67%
	Pediatric Dentistry	7	13%
	Periodontics	4	7%
	Prosthodontics	1	2%
	Endodontics	2	4%
	Orthodontics	2	4%
	Other	1	2%

Table 2: Comparison of Responses to Knowledge Questions Before and After Training Module

	Baseline		Post Test 1		
Statement:	**n**	**%**	**n**	**%**	**P-value***
In the literature, it has been found that MI is:	17	26%	51	77%	<0.0001
In the pediatric population it has been found that motivational interviewing is effective in reducing DMFs rates in comparison with control groups, but there has been no difference in severity of caries (ICDAS level) in children whose families have received MI vs. those who have not.	32	48%	49	74%	0.0011
In the literature, it was found that children of families that received MI had a(n) _____ DMFs rate in comparison with the control group?	38	58%	64	97%	0.0004
MI has proven to be useful in motivating change in adolescents engaging in high risk behaviors. MI is less effective when conducted with both the parent and child together.	33	50%	53	80%	0.0003
When motivational interviewing is used in pediatric settings	60	91%	64	97%	0.4232

*P-value from Chi-squared test of agreement

Table 3: Comparison of Confidence with MI Techniques Before and After Training Module

Confidence	Baseline	Post Test 1	p-value*
Extremely unconfident	5%	0%	0.0517
Slightly unconfident	5%	8%	
Neither confident nor unconfident	38%	18%	
Slightly confident	50%	59%	
Extremely confident	3%	15%	

*P-value from McNemar's Chi-squared test

Table 4: Summary of Post Educational Intervention Sentiments

	n	Percent
After receiving initial pediatric BMI training, do you have any interest in receiving further training in MI?		
Strongly disinterested	0	0%
Somewhat disinterested	3	5%
Neutral	4	6%
Somewhat interested	27	41%
Strongly interested	32	48%
Do you believe you would use MI in your daily practice with your pediatric patients and their parents?		
Definitely not	0	0%
Probably not	1	2%
Might or might not	3	5%
Probably yes	26	39%
Definitely yes	36	55%
Do you believe parents of the pediatric patients you see in the clinic would benefit from the use of this approach?		
Definitely not	0	0%
Probably not	0	0%
Might or might not	2	3%
Probably yes	19	29%
Definitely yes	45	68%
Are you satisfied with the pediatric-focused BMI training module?		
Extremely unsatisfied	0	0%
slightly unsatisfied	0	0%
Neither satisfied nor dissatisfied	4	6%
Slightly satisfied	29	44%
Extremely satisfied	33	50%
Do you believe this would be a beneficial addition to the pediatric dental rotation curriculum?		
Definitely not	0	0%
Probably not	3	5%
Might or might not	3	5%
Probably yes	30	45%
Definitely yes	30	45%

Table 5: Summary of Overall Competence with BMI After Training

	n	%
Competence in performing brief motivational interviewing with a patient or their parents		
Strongly Agree	9	27%
Agree	17	52%
Neutral	5	15%
Disagree	2	6%
Strongly Disagree	0	
After completing the Brief Motivational Interviewing training in the Pediatric Dentistry Department, do you think differently about the interactions you have with your patients or their parents?		
Very Often	8	24%
Often	11	33%
Sometimes	13	39%
Rarely	1	3%
Never	0	0%
Knowledge of the use of brief motivational interviewing with pediatric patients		
Strongly Agree	13	39%
Agree	15	45%
Neutral	3	9%
Disagree	2	6%
Strongly Disagree	0	0%

Figures

Figure 1: Comparison of Responses from First and Second Questionnaires

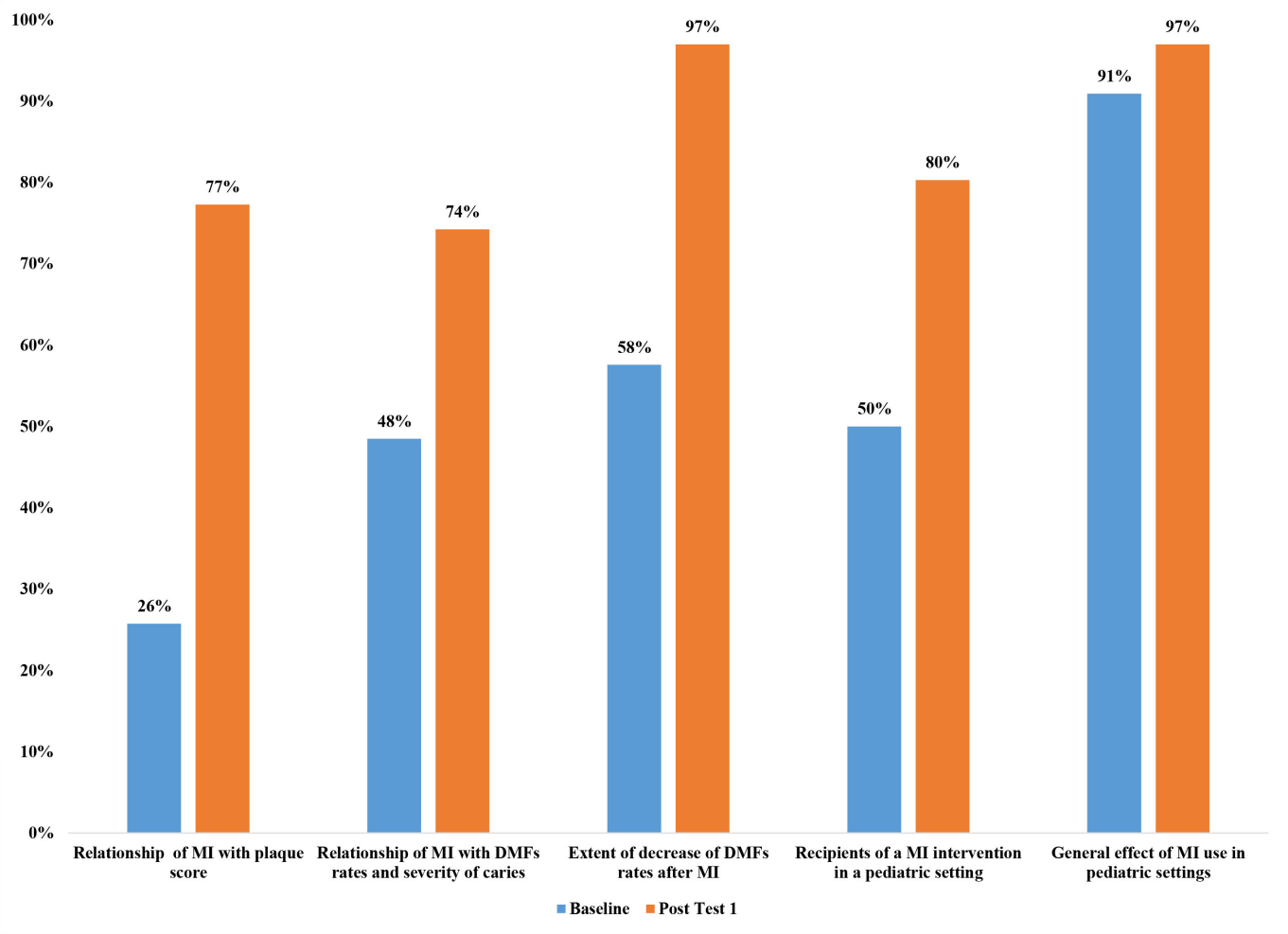
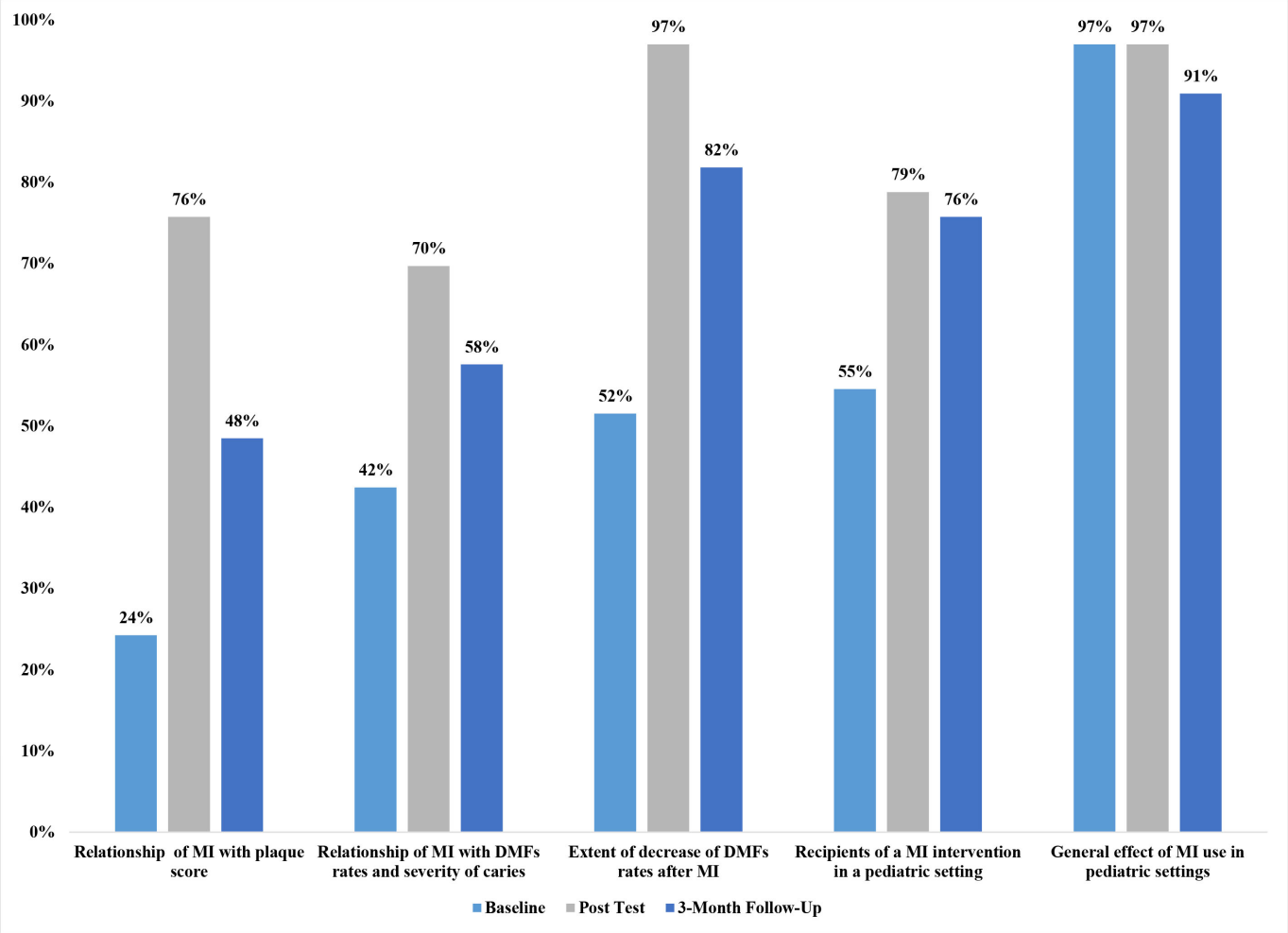


Figure 2: Comparison of Responses from First, Second, and Third Questionnaires



Appendices

Appendix 1

Pre Test

Title: Assessment of Pediatric-Focused Brief Motivational Interview Training of Dental Students and Pediatric Dental Residents

Procedure of the Study

As a participant in this study you will need to complete an initial electronic survey and pre-test. During your pediatric dentistry rotation, you will complete a pediatric motivational interviewing training module (approximately 30 minutes), and the associated training exercises (approximately 20 minutes). You will then be asked to complete a survey and post-test. Three months after the training, you will be sent an email with a second post-test and survey to complete. Completion of each pre and post-test will take approximately 10 minutes.

Participation in this research study is completely voluntary, and you may choose not to participate. All responses are anonymous. The results will be used for research purposes only. There is no compensation for participating in the study, and no risks for participating are anticipated. Completion of the initial pre-test and survey will indicate your consent to participate in this research.

If you have questions about your rights as a research subject, you may contact:

Victoria Maria Onesty DDS

onestyvm@mymail.vcu.edu

In the literature, it has been found that MI is

◯ effective for improving children's Frankl score
◯ effective for lowering children's level of anxiety
◯ effective for improving children's flossing technique
◯ effective for lowering children's plaque score

In the pediatric population it has been found that motivational interviewing is effective in reducing DMFs rates in comparison with control groups, but there has been no difference in severity of caries (ICDAS level) in children whose families have received MI vs. those who have not.

◯ True
◯ False

In the literature, it was found that children of families that received MI had a(n) _____ DMFs rate in comparison with the control group?

◯ 24% lower
◯ 46% lower
◯ 62% lower
◯ 78% lower

MI has proven to be useful in motivating change in adolescents engaging in high risk behaviors. MI is less effective when conducted with both the parent and child together.

◯ True
◯ False

When motivational interviewing is used in pediatric settings:

◯ It may promote sustainable health behaviors for the whole family
◯ It is often ineffective as parents are very busy due to other demands
◯ The child should be the only participant in the intervention
◯ A child's behaviors are as ingrained as they are in an adult

What is your level of dental training?

◯ Current D3
◯ Current D4
◯ Current Pediatric Dental Resident

What is your age?

◯ 18 - 24
◯ 25 - 34
◯ 35 - 44
◯ 45 +

What is your gender?

◯ Male
◯ Female
◯ Other

What are your plans upon completion of DDS degree?

◯ OMFS
◯ General Dentistry
◯ Pediatric Dentistry
◯ Periodontics
◯ Prosthodontics
◯ Endodontics
◯ Orthodontics
◯ Dental Public Health
◯ Other

Please describe your plans upon graduation:

_____

What is your interest in learning to use MI?

◯ Strongly interested
◯ Somewhat interested
◯ Neutral
◯ Somewhat disinterested
◯ Strongly disinterested

How would you rate your current confidence in using MI with pediatric patients?

◯ Extremely confident
◯ Slightly confident
◯ Neither confident nor unconfident
◯ Slightly unconfident
◯ Extremely unconfident

Do you believe you would use MI in your daily practice with your pediatric patients and their parents?

◯ Definitely yes
◯ Probably yes
◯ Might or might not
◯ Probably not
◯ Definitely not
◯ Not applicable

Do you believe parents of the pediatric patients you see in the clinic would benefit from the use of this approach?

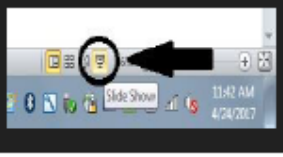
◯ Definitely yes
◯ Probably yes
◯ Might or might not
◯ Probably not
◯ Definitely not

Appendix 2

MOTIVATIONAL INTERVIEWING IN PEDIATRIC DENTISTRY

PLACE ON PRESENTATION MODE

THEN, CLICK TO BEGIN



INSTRUCTIONS

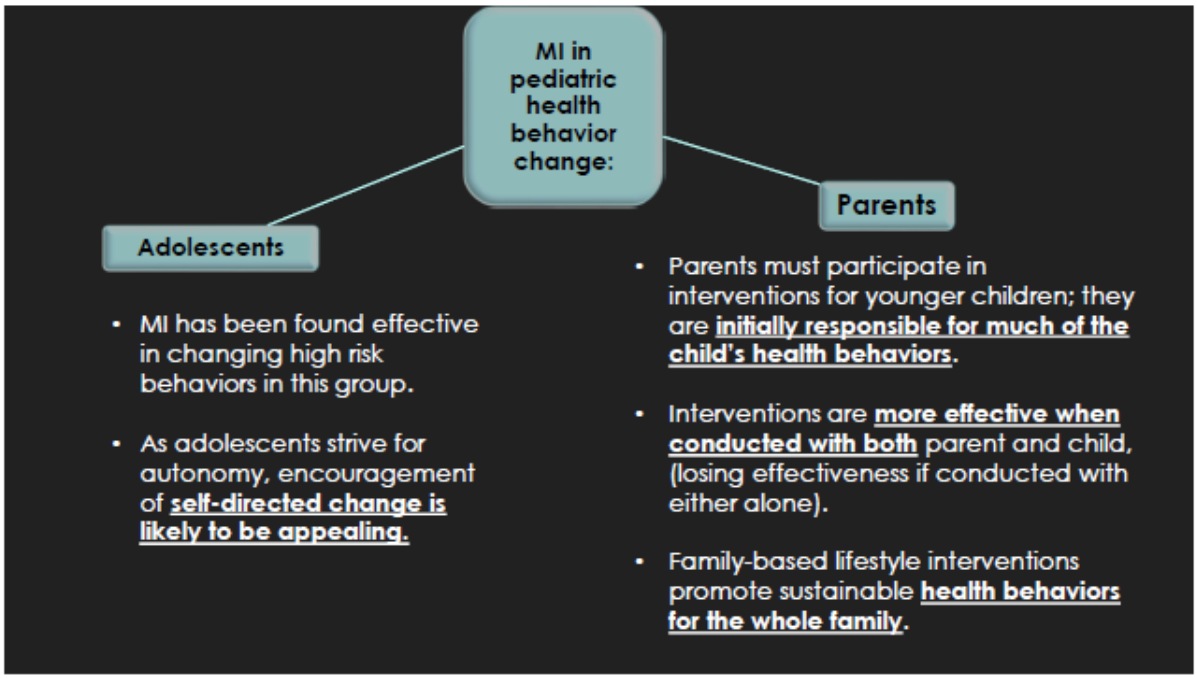
- **First**, read about the use of brief motivational interviewing (BMI) in behavior change and pediatric dentistry.
- **Second**, practice applying BMI by reading through two practice cases on your own.
- **Third**, with your partner, role-play the remaining two practice cases. For one case you will play the dentist, for the other case you will play the patient or parent.

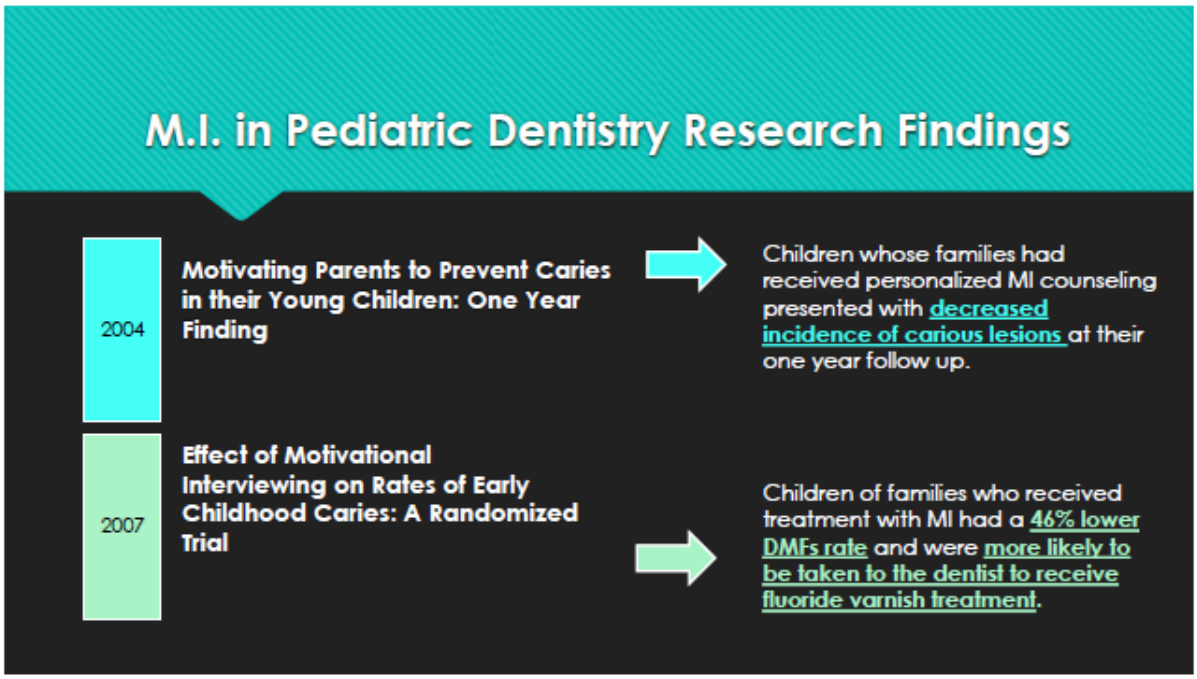
Quick refresh: WHAT IS MOTIVATIONAL INTERVIEWING?

- Motivational Interviewing (MI) is a client-centered behavioral intervention in which practitioners engage their patient's intrinsic motivations to facilitate change and encourage the pursuit of personal goals.
- Its derivative, Brief Motivational Interviewing (BMI), is a modified approach for practitioners to promote behavior change within the limited time allotted in busy medical contexts.
- "a collaborative, person-centered form of guiding, to elicit and strengthen motivation for change" (Miller & Rollnick, 2009)

MI in pediatric health behavior change:




MI in pediatric health behavior change:
Adolescents
Parents
• MI has been found effective in changing high risk behaviors in this group.
• As adolescents strive for autonomy, encouragement of self-directed change is likely to be appealing.
• Parents must participate in interventions for younger children; they are initially responsible for much of the child's health behaviors.
• Interventions are more effective when conducted with both parent and child, (losing effectiveness if conducted with either alone).
• Family-based lifestyle interventions promote sustainable health behaviors for the whole family.


M.I. in Pediatric Dentistry Research Findings
2004
Motivating Parents to Prevent Caries in their Young Children: One Year Finding
Children whose families had received personalized MI counseling presented with decreased incidence of carious lesions at their one year follow up.
2007
Effect of Motivational Interviewing on Rates of Early Childhood Caries: A Randomized Trial
Children of families who received treatment with MI had a 46% lower DMFs rate and were more likely to be taken to the dentist to receive fluoride varnish treatment.

2014	**A Parent Motivational Interviewing Program for Dental Care in Children of a Rural Population**	A decrease in incidence and severity of caries (ICDAS level) as well as a lower plaque score was found for children whose families received an MI intervention.
2015	**Motivational Interviewing for Parent-child Health interventions: A systematic review and meta-analysis**	MI had a positive, significant effect on oral health behaviors, such as tooth brushing or visiting the dentist, compared with control groups.

Now, review the following framework, which we will apply in the practice cases:

1. ENGAGE	2. FOCUS	3. EVOKE	4. PLAN
Questions should be unique to patient, not generic. Assess: 1. Patient's comfort in speaking openly 2. Providers understanding of the patient's concerns 3. If tone of conversation is collaborative.	• What change goals does the patient have vs. what needs to be changed. • Are goals achievable?	• Help elicit change talk • Ensure you are not arguing for change with the "righting reflex"	• Consider making written plan with bullet points • Try to secure commitment, but do not pressure patient

Now, click through and read the responses to the 2 practice cases.

CASE 1

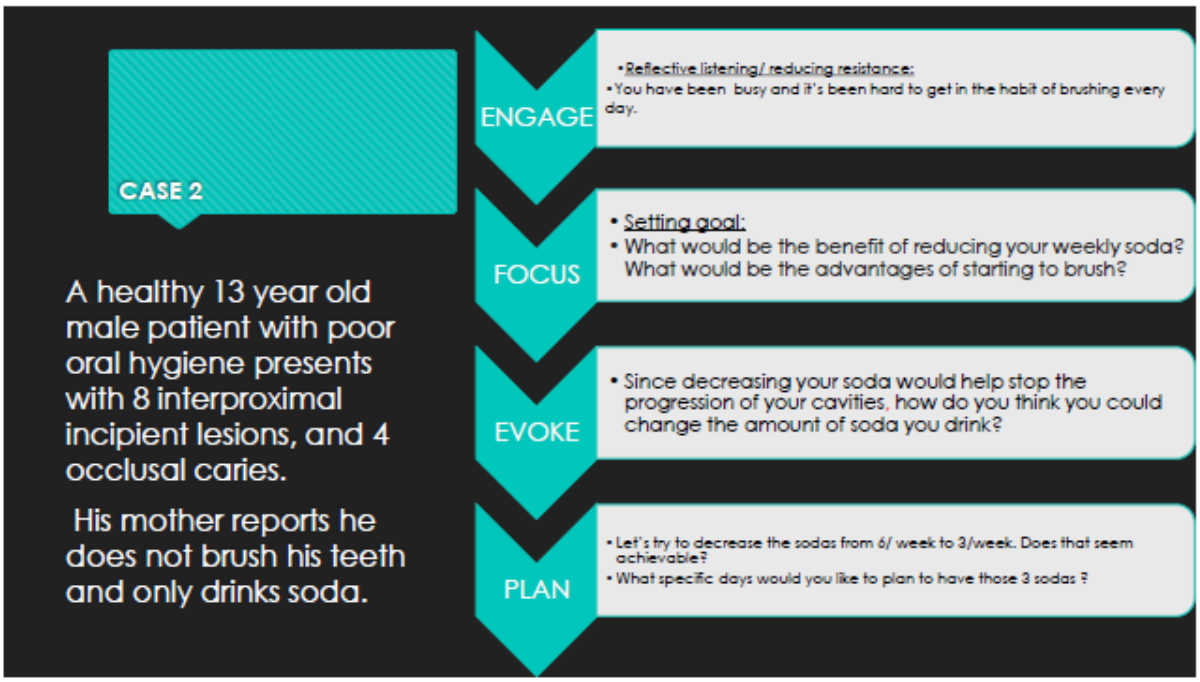
"What is the point of putting a filling on this tooth if it will fall out anyways?

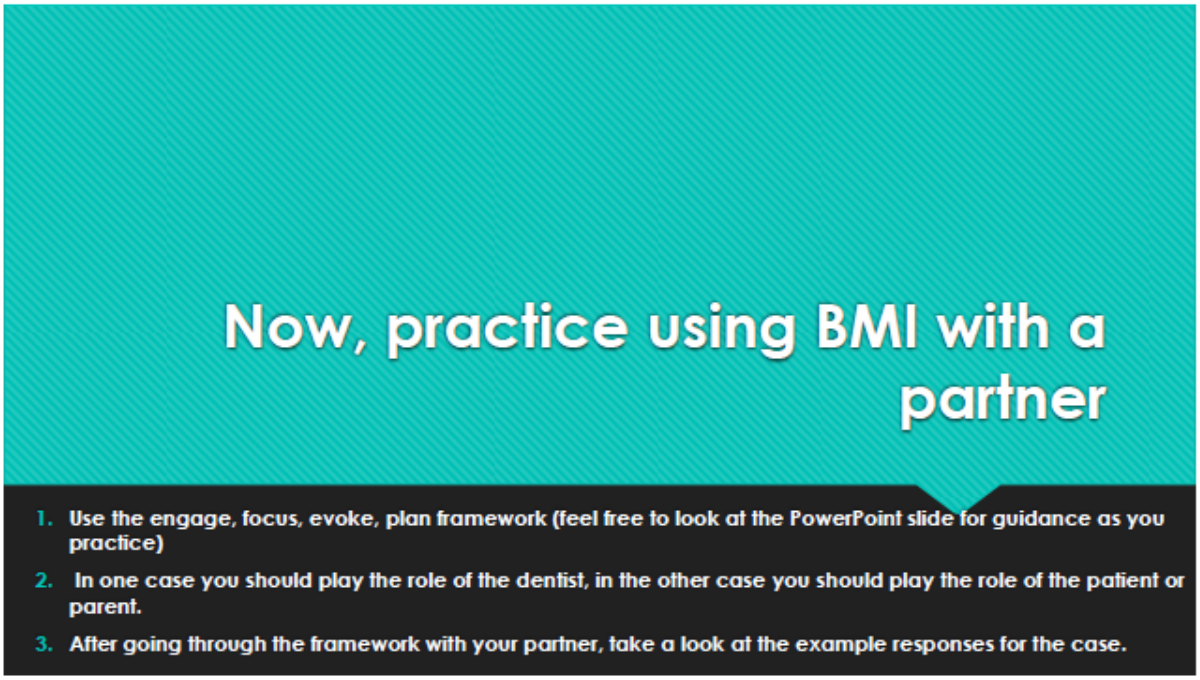
I don't understand why you want to do anything for a baby tooth."

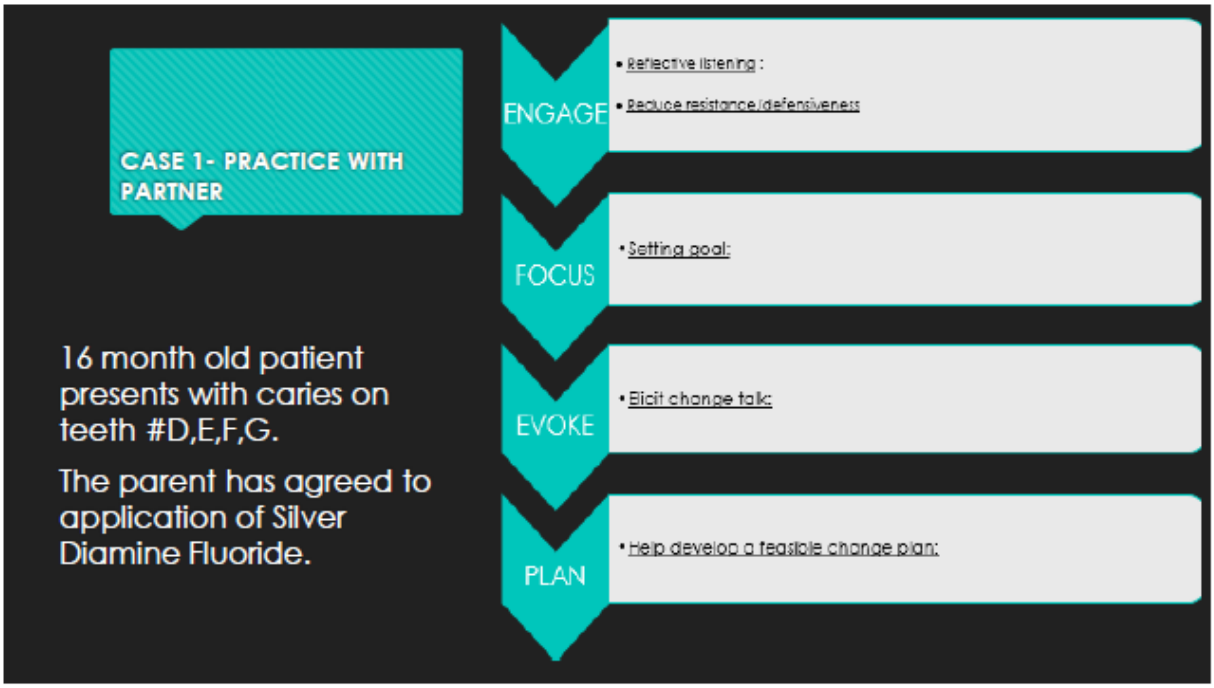


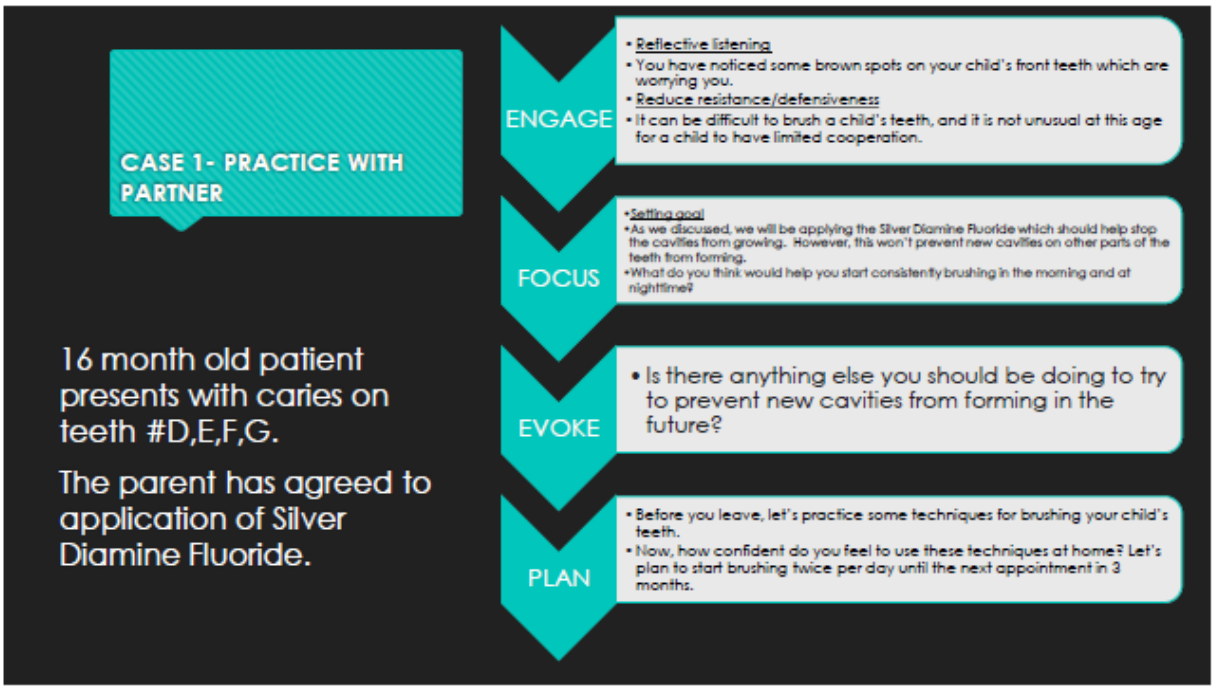

CASE 1
"What is the point of putting a filling on this tooth if it will fall out anyways?
I don't understand why you want to do anything for a baby tooth."
ENGAGE
• Reflective listening
• "It can be confusing why baby teeth, which eventually fall out, require treatment"
• Reduce resistance/defensiveness
• "We do not recommend any unnecessary, additional treatments for our patients. However, it is important for a cavity to be treated so it does not cause pain or infection, or damage the permanent tooth that is beneath it."
FOCUS
• Setting goal:
• What is your goal for your child's oral health?
• What do you think about the goal that your child not have any infection or decay in their mouth?
EVOKE
• What would need to be done, at home and at our clinic, to make this possible?
PLAN
• The treatment plan to take care of your sons teeth will involve 2 appointments with white fillings on 3 teeth.
• How do you feel about this plan?

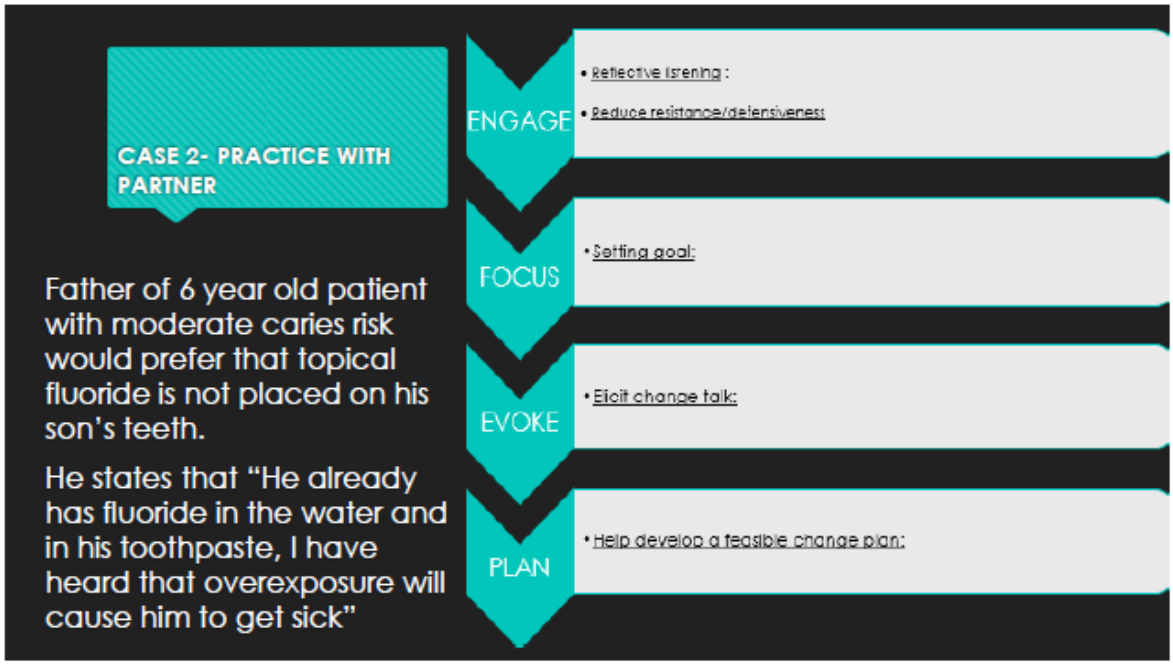

CASE 2
A healthy 13 year old male patient with poor oral hygiene presents with 8 interproximal incipient lesions, and 4 occlusal caries.
His mother reports he does not brush his teeth and only drinks soda.
ENGAGE
• Reflective listening :
• Reduce resistance/defensiveness
FOCUS
• Setting goal:
EVOKE
• Elicit change talk:
PLAN
• Help develop a feasible change plan:

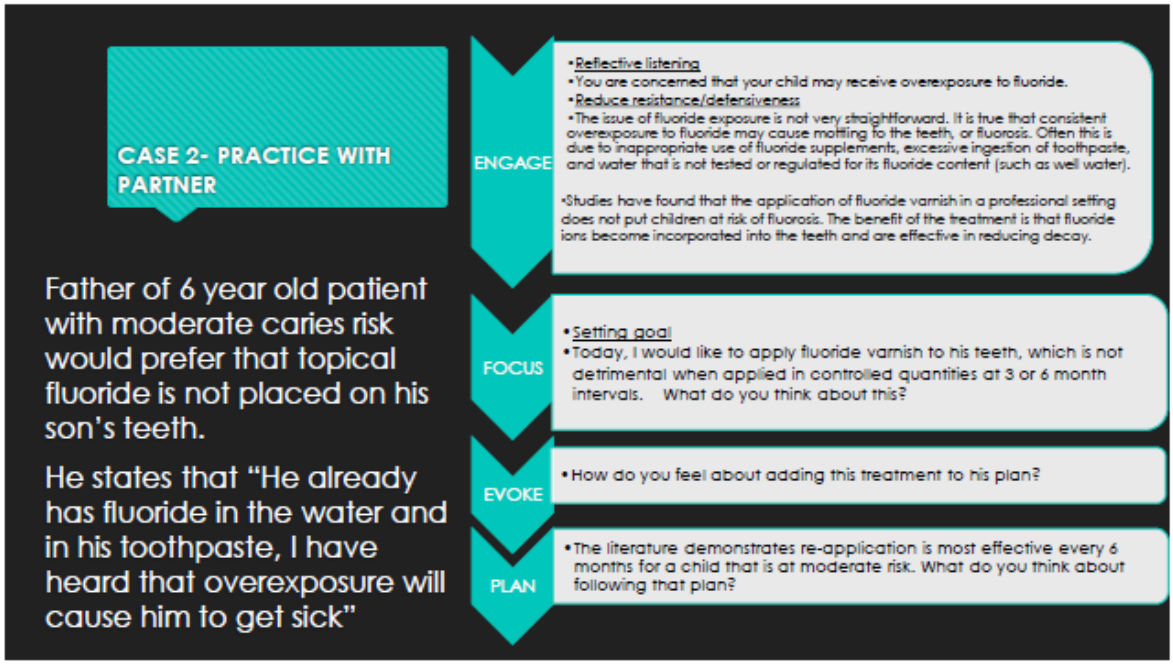

CASE 2
A healthy 13 year old male patient with poor oral hygiene presents with 8 interproximal incipient lesions, and 4 occlusal caries.
His mother reports he does not brush his teeth and only drinks soda.
ENGAGE
•Reflective listening/ reducing resistance:
•You have been busy and it's been hard to get in the habit of brushing every day.
FOCUS
• Setting goal:
• What would be the benefit of reducing your weekly soda? What would be the advantages of starting to brush?
EVOKE
• Since decreasing your soda would help stop the progression of your cavities, how do you think you could change the amount of soda you drink?
PLAN
• Let's try to decrease the sodas from 6/ week to 3/week. Does that seem achievable?
• What specific days would you like to plan to have those 3 sodas ?

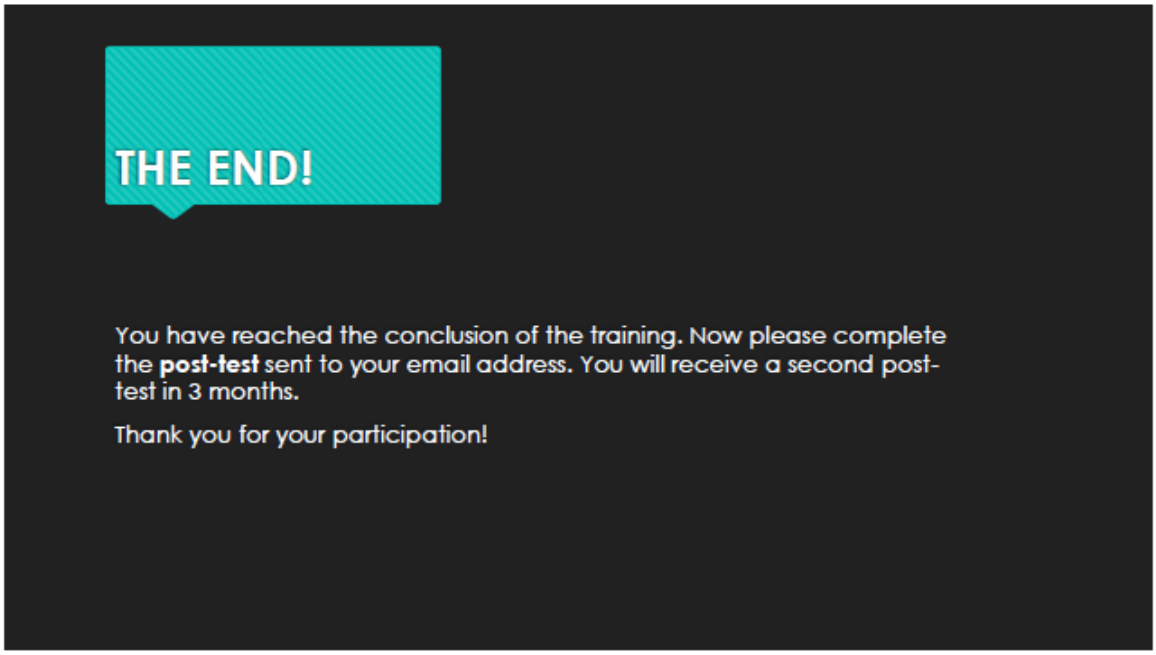

Now, practice using BMI with a partner
1. Use the engage, focus, evoke, plan framework (feel free to look at the PowerPoint slide for guidance as you practice)
2. In one case you should play the role of the dentist, in the other case you should play the role of the patient or parent.
3. After going through the framework with your partner, take a look at the example responses for the case.


CASE 1- PRACTICE WITH PARTNER
16 month old patient presents with caries on teeth #D,E,F,G.
The parent has agreed to application of Silver Diamine Fluoride.
ENGAGE
• Reflective listening :
• Reduce resistance/defensiveness
FOCUS
• Setting goal:
EVOKE
• Elicit change talk:
PLAN
• Help develop a feasible change plan:


CASE 1- PRACTICE WITH PARTNER
16 month old patient presents with caries on teeth #D,E,F,G.
The parent has agreed to application of Silver Diamine Fluoride.
ENGAGE
• Reflective listening
• You have noticed some brown spots on your child's front teeth which are worrying you.
• Reduce resistance/defensiveness
• It can be difficult to brush a child's teeth, and it is not unusual at this age for a child to have limited cooperation.
FOCUS
• Setting goal
• As we discussed, we will be applying the Silver Diamine Fluoride which should help stop the cavities from growing. However, this won't prevent new cavities on other parts of the teeth from forming.
• What do you think would help you start consistently brushing in the morning and at nighttime?
EVOKE
• Is there anything else you should be doing to try to prevent new cavities from forming in the future?
PLAN
• Before you leave, let's practice some techniques for brushing your child's teeth.
• Now, how confident do you feel to use these techniques at home? Let's plan to start brushing twice per day until the next appointment in 3 months.


CASE 2- PRACTICE WITH PARTNER
Father of 6 year old patient with moderate caries risk would prefer that topical fluoride is not placed on his son's teeth.
He states that "He already has fluoride in the water and in his toothpaste, I have heard that overexposure will cause him to get sick"
ENGAGE
• Reflective listening :
• Reduce resistance/defensiveness:
FOCUS
• Setting goal:
EVOKE
• Elicit change talk:
PLAN
• Help develop a feasible change plan:


CASE 2- PRACTICE WITH PARTNER
Father of 6 year old patient with moderate caries risk would prefer that topical fluoride is not placed on his son's teeth.
He states that "He already has fluoride in the water and in his toothpaste, I have heard that overexposure will cause him to get sick"
ENGAGE
•Reflective listening
•You are concerned that your child may receive overexposure to fluoride.
•Reduce resistance/defensiveness
•The issue of fluoride exposure is not very straightforward. It is true that consistent overexposure to fluoride may cause mottling to the teeth, or fluorosis. Often this is due to inappropriate use of fluoride supplements, excessive ingestion of toothpaste, and water that is not tested or regulated for its fluoride content (such as well water).
•Studies have found that the application of fluoride varnish in a professional setting does not put children at risk of fluorosis. The benefit of the treatment is that fluoride ions become incorporated into the teeth and are effective in reducing decay.
FOCUS
•Setting goal
•Today, I would like to apply fluoride varnish to his teeth, which is not detrimental when applied in controlled quantities at 3 or 6 month intervals. What do you think about this?
EVOKE
•How do you feel about adding this treatment to his plan?
PLAN
•The literature demonstrates re-application is most effective every 6 months for a child that is at moderate risk. What do you think about following that plan?


THE END!
You have reached the conclusion of the training. Now please complete the post-test sent to your email address. You will receive a second post-test in 3 months.
Thank you for your participation!

Appendix 3

Post Test 1

Please complete the survey below.

Thank you!

In the literature, it has been found that MI is

◯ effective for improving children's Frankl score
◯ effective for lowering children's fear levels
◯ effective for improving children's flossing technique
◯ effective for lowering children's plaque score

In the pediatric population it has been found that motivational interviewing is effective in reducing DMFs rates in comparison with control groups, but there has been no difference in severity of caries (ICDAS level) in children whose families have received MI vs. those who have not.

◯ True
◯ False

In the literature, it was found that children of families that received MI had a(n) _____ DMFs rate in comparison with the control group?

◯ 24% lower
◯ 46% lower
◯ 60 % lower
◯ 78% lower

MI has proven to be useful in motivating change in adolescents engaging in high risk behaviors. MI is less effective when conducted with both the parent and child together.

◯ True
◯ False

When motivational interviewing is used in pediatric settings:

◯ It may promote sustainable health behaviors for the whole family
◯ It is often ineffective as parents are very busy due to other demands
◯ The child should be the only participant in the intervention
◯ A child's behaviors are as ingrained as they are in an adult

After receiving initial pediatric BMI training, do you have any interest in receiving further training in MI?

◯ Strongly interested
◯ Somewhat interested
◯ Neutral
◯ Somewhat disinterested
◯ Strongly disinterested

How would you rate your current confidence in using MI with pediatric patients?

◯ Extremely confident
◯ Slightly confident
◯ Neither confident nor unconfident
◯ Slightly unconfident
◯ Extremely unconfident

Do you believe you would use MI in your daily practice with your pediatric patients and their parents?

◯ Definitely yes
◯ Probably yes
◯ Might or might not
◯ Probably not
◯ Definitely not

Do you believe parents of the pediatric patients you see in the clinic would benefit from the use of this approach?

◯ Definitely yes
◯ Probably yes
◯ Might or might not
◯ Probably not
◯ Definitely not

Are you satisfied with the pediatric-focused BMI training module?

◯ Extremely satisfied
◯ Slightly satisfied
◯ Neither satisfied nor dissatisfied
◯ Slightly unsatisfied
◯ Extremely unsatisfied

Do you believe this would be a beneficial addition to the pediatric dental rotation curriculum?

◯ Definitely yes
◯ Probably yes
◯ Might or might not
◯ Probably not
◯ Definitely not

Appendix 4

Post Test 2

Please complete the survey below.

Thank you!

In the literature, it has been found that MI is

◯ effective for improving children's Frankl score
◯ effective for lowering children's fear levels
◯ effective for improving children's flossing technique
◯ effective for lowering children's plaque score

In the pediatric population it has been found that motivational interviewing is effective in reducing DMFs rates in comparison with control groups, but there has been no difference in severity of caries (ICDAS level) in children whose families have received MI vs. those who have not.

◯ True
◯ False

In the literature, it was found that children of families that received MI had a(n) _____ DMFs rate in comparison with the control group?

◯ 24% lower
◯ 46% lower
◯ 60 % lower
◯ 78% lower

MI has proven to be useful in motivating change in adolescents engaging in high risk behaviors. MI is less effective when conducted with both the parent and child together.

◯ True
◯ False

When motivational interviewing is used in pediatric settings:

◯ It may promote sustainable health behaviors for the whole family
◯ It is often ineffective as parents are very busy due to other demands
◯ The child should be the only participant in the intervention
◯ A child's behaviors are as ingrained as they are in an adult

After completing the Brief Motivational Interviewing training in the Pediatric Dentistry Department, do you think differently about the interactions you have with your patients or their parents?

◯ Very Often
◯ Often
◯ Sometimes
◯ Rarely
◯ Never

Completion of the training module has assisted with improvement of my:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Knowledge of the use of brief motivational interviewing with pediatric patients	◯	◯	◯	◯	◯
Competence in performing brief motivational interviewing with a patient or their parents	◯	◯	◯	◯	◯