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Improving Pediatric Oral-Systemic Health through Motivational Interviewing: An Interprofessional Training Intervention

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Abstract

Introduction: In response to the prevalence of early childhood carries (ECC) in the United States, recommendations were established for pediatric primary care providers to routinely incorporate oral-systemic health promotion services into clinical practice. An interprofessional education project was developed between Advanced Practice Registered Nurses (APRNs) and dentistry students in San Francisco to assist trainees in the effective delivery of oral systemic health promotion services. Improving health promotion communication skills was identified as an area of need for both sets of learners. Therefore, the IPE activity was designed to incorporate Motivational Interviewing (MI) into the training along with pediatric oral health assessment and prevention techniques.

Methods: APRN students completed the Smiles for Life online oral health modules in preparation for the IPE. Both APRN and dentistry students completed an online MI module developed by the project lead. APRN and dentistry students were paired for two-week clinical rotations in the pediatric dentistry clinic. Pre- and post- activity surveys for MI and for the IPE were administered.

Results: Outcome data demonstrated modest improvement on interprofessional practice measures in both APRN and dentistry students, but high scores on the initial responses limited the ability to determine an effect. MI survey results showed a statistically significant improvement in APRN and dentistry students' understanding of MI. Qualitative data indicated that the experience was useful for both sets of learners.

Discussion: Results from this project suggest that IPE activities can improve APRN and dentistry oral systemic health promotion and interprofessional practice.

Keywords: motivational interviewing, dentistry, nurse practitioner, nurse, APRN, patient outcomes, health literacy, communication

Introduction

Problem Description.

Early Childhood Caries (ECC) in children in the United States has been slowly rising since the 1990's (National Institute of Dental and Craniofacial Research, 2014). Although it is a preventable disease, currently more than 28% of children have carries by the age of five years, with the condition occurring most frequently in children from low socioeconomic backgrounds likely due to a diet high in sugar and potentially exacerbated by low health literacy levels of the parents (AAPD: CAC, 2016.)

As a result, in 2008 American Academy of Pediatrics [AAP] put forth a call to action for pediatric primary care providers to help reduce early childhood caries (ECC) (AAP, 2008). Therefore, as primary care providers, Advanced Practice Registered Nurses (APRNs), specifically Pediatric and Family Nurse Practitioners, are expected to learn the skills for completing a pediatric oral health exam and the application of fluoride varnish. This action was brought forth in order to bridge the gap for young pediatric patients, who have not yet established a dental home or have other barriers to early intervention, but whose teeth have already erupted and in need of care.

This recommendation has put a somewhat taxing requirement on a group of providers, who have not been previously exposed to studying oral health, nor do they have ready access to the experts to teach and mentor this practice. Teaching oral health to APRNs is greatly facilitated through collaboration with dental specialists. This training requirement provides an excellent opportunity to allow for APRN students to learn side by side with dentistry students to learn oral health skills. Their work together can also fulfill the competencies for Interprofessional Education (IPE) set forth by the Institute of Medicine and the World Health Organization (IOM, 2009; Health Professions Networks Nursing and Midwifery Office, 2010). IPE is intended to

allow healthcare students and practitioners to appreciate the capacities and boundaries of their own and each other's professions. It is also intended to teach them how to communicate effectively with other healthcare professionals in order to maximize the effectiveness of care (Sullivan, Kiovsky, Mason, Hill, & Dukes, 2015). So, in addition to learning oral health skills, both sets of healthcare professional students can learn and improve their interpersonal communication skills. While most APRN students should have already obtained interpersonal communication training and practice as part of their Registered Nursing experience, dentistry students likely have not. In a survey of dentistry schools throughout the United States (US) and Canada the findings showed that only one-third of the schools offered interpersonal communication courses, most of which were taught in a lecture format (Yoshida, Milgrom & Coldwell, 2002). These findings suggested that dentistry students may not be exposed to interpersonal communication concepts or practice during their education.

Therefore, the purpose of this project was to help dentistry and APRN students to build cohesive interprofessional relationships through their joint education on pediatric oral health skills—and most importantly—to improve interpersonal communication skills, with the notion that these improvements would help reduce ECC in the future.

Available Knowledge.

Narrative of Evidence (Appendix A).

Oral health and Early Childhood Caries. ECC can be defined as "the presence of one or more decayed, missing, or filled tooth surfaces in a primary tooth in a child under 71 months" (American Academy of Pediatric Dentistry [AAPD], 2008). The importance of ECC is that if left untreated it can lead to missed school days, reduced learning ability, reduced quality of life as a result of oral health complications, not to mention emergency room visits and hospitalizations,

and continued detrimental oral health issues as an adult (American Academy of Pediatric Dentistry: Clinical Affairs Committee—Infant Oral Health Subcommittee [AAPD: CAC], 2016; Mahat, Lyons, & Bowen, 2014). American Association of Pediatric Dentistry (AAPD) recommendations state that children should see a dentist by one year of age, which is around the time their first teeth begin erupting (AAPD: CAC, 2016). However, the AAPD also found that only 1.5 percent of children in the US have been to see a dentist by one year of age, compared to 89 percent of US children have seen a primary care provider by the same age.

The problem in ECC appears to be in the lack of understanding by their caregivers about the proper care of their children's teeth (AAPD: CAC, 2016; UCSF Center to Address Disparities in Children's Oral Health, 2011). Weinstein, Harrison, & Benton (2004) found that caregivers of children from low socioeconomic backgrounds were less knowledgeable about the importance of primary teeth health and therefore, are less likely to help take care of their children's primary teeth. Furthermore, the caregivers from low socioeconomic backgrounds are also less likely to take children to a dentist until the cavities are severe enough where the child is symptomatic due to the pain caused by ECC (Weinstein, et. al, 2004). Many of the children affected were also less likely to be brought back for follow-up care for various reasons. According to the UCSF Center to Address Disparities in Children's Oral Health (2011), the gap in improving outcomes in children lies in a lack of knowledge among the caregivers about diet, importance of supervision in tooth brushing, benefits of drinking fluorinated tap water, fluoride supplementation, what cavities look like, and the importance of seeing a dentist on a regular bi-yearly basis starting as early as at one year of age. Furthermore, UCSF has found that many dentists prefer not to see patients of low socioeconomic backgrounds due to their being insured under Medicaid, which has lower reimbursement fees, compared with those of private

insurances. Some dentists also do not feel comfortable treating children younger than six years old due to the specificity of the dental training to work with that age group, which lessens the number of dentists available for this population (AAP, 2008).

It appears that there are several factors contributing to ECC. One of the issues is that the population that is most affected is that of lower socioeconomic status and with lower levels of education, resulting in a potential knowledge gap about pediatric oral health in this population. Despite the low education levels in the population, one way to help catch and to prevent ECC, is through effective patient and parent education, and by helping change behaviors. So not only is there a need for more providers to address this issue, the providers also need to be able to effectively communicate with this population. That is where pediatric and family specialty APRNs can help bridge the gap of helping reduce ECC for those pediatric patients, whose caregivers lack the knowledge about pediatric dental care or do not yet have a pediatric dental home (Mahat, Lyons, & Bowen, 2014).

APRNs are a large healthcare workforce, who often work in the community with the underserved, low-income populations and who have had various training on methods of communication with people of various backgrounds. As RNs these APRN students have also had extensive clinical experience and practice. This is why they are excellent candidates to help tackle this issue. Through the new recommendation, APRNs can provide the necessary patient and parent teaching as to how to care for the child's teeth, apply fluoride varnish as a preventative treatment, as well as to complete a screening oral exam to find any major oral health issues and make a timely referral to see a dentist.

Schools of dentistry around the country would be excellent partners for APRN students in order to help fulfill these requirements, as well as for the school's IPE needs. Schools such as

New York University (Haber, Spielman, Wolff, & Shelley, 2014), University of California, San Francisco (Golinveaux, *et al.*, 2013), and University of San Francisco (USF) have already implemented coursework within their Nurse Practitioner programs for their APRN students to work with their local or affiliated dental schools to practice these skills alongside dentistry students. In a pairing such as this APRN students can gain oral health knowledge from dentistry students. To ensure dentistry students don't feel the learning is one-sided, one skill APRN students can help develop is interpersonal communication.

Communication in Dentistry. A professional strength that APRN students bring to the APRN-dentistry training collaboration is communication. Communication is key to successful patient engagement and improved health outcomes. Makoul & Curry (2007) summarized research showing that in a healthcare setting, effective communication between a provider and the patient is more likely to lead to higher patient satisfaction, better treatment adherence, better decision making, better patient outcomes, and less malpractice claims. The American Dental Education Association identified effective communication as one of the six key domains in 2008 (ADEA, 2008).

Dentistry students are becoming proficient in oral health examinations and can share their skills and knowledge on the topic. However, studies have shown that dentists' interpersonal communication skills with their patients can be lacking. A qualitative study in Great Britain assessed dentists' methods and beliefs about patient teaching. The findings suggest that dentists did not treat all their patients with equal attention and at times they did not provide appropriate health education, especially where they felt it would not make a difference (Threlfall, Hunt, Milsom, Ticle, & Blinkhorn, 2007). Many of the dentists felt that lower income patients and/or those with lower health literacy levels would not follow their professional advice or instructions.

As a result, dentists avoided taking the time to improve the health literacy of their patients, nor did they take the time to discuss their patients' health. Furthermore, the study identified that the majority of dentists in Great Britain almost exclusively used the "lecture" style patient teaching, in which the dentist would tell the patient what he believed the patient should do; the dentist would not use visual tools, or feedback from the patient to ensure the patient understood. A study conducted in the U.S. showed similar outcomes: patients, mainly from the low-income socioeconomic status, expressed their frustration that dentists rarely took time to provide patient teaching, explain, or take time to ask if patients had any questions (Mofidi, Rozier, & King, 2002). These studies found that some dentists have not been able to utilize proper communication skills in accordance with their patients' level of health literacy, nor did they appear to understand the needs of their patients outside the dental office. Therefore, there is an opportunity to improve dentist's communication skills. A more recent study in Australia found that despite the reason for a patient's visit to the dentist, what would increase their patient satisfaction across the board was a dentist who was caring, respectful, did not blame them and listened to their concerns (Sbaraini, Carter, Evans, & Blinkhorn, 2012). In the study patients described their fondness for a dentist, who would educate them, give the patients options, and who would respect patient autonomy, while providing positive reinforcement of their preventive behaviors.

It appears that there may be a gap in some dentists' ability to communicate information to their patients. Yoshida, Milgrom & Coldwell (2002) looked into the ways that communication was taught in dentistry schools around the US and Canada. Out of the sixty-four dentistry schools in the US and Canada that were surveyed, only forty schools that provided complete course descriptions on interpersonal communication. The study found that eight schools did not

teach interpersonal communication at all, which the authors believed to be an under-representation of how many actual schools were in the same position. Twenty-six of the forty schools taught interpersonal communication as part of another course, not as a separate topic; fifteen schools provided the course only once during the entire length of school, seventeen of the schools did not provide cultural or diversity training, and eighteen schools did not teach students how to deal with patient anxiety, fear, or pain. Although this was an older study and these schools may have changed their curriculum since then in order to maintain accreditation, this study may have been representative of how much the dentistry community have valued patient-provider relationships.

Communication in nursing. APRNs are RNs, who work as primary care providers in various specialties. Many APRNs have already worked at the bedside or in a clinic as RNs. Patient-centered communication in nursing has been a part of the curriculum throughout nursing schools for RNs and for APRNs and may be one explanation for why APRNs have been found to have better patient satisfaction when compared to MDs, and other health professions (Charlton, Dearing, Berry & Johnson, 2008; Laurant, Reeves, Hermens, Braspenning, Grol, & Sibbald, 2005; Newhouse, Stanik-Hutt, White, Johantgen, & Bass, 2011; Bentley, Stirling, Robinson, & Minstrell, 2016). However, Berry (2009) found that while APRNs have better patient satisfaction, they have not always utilized patient-centered communication techniques (such as Motivational Interviewing (MI)). The study hypothesized that this may have been due to time constraints, which many APRNs face as primary care providers, and due to the clinic's expectations for the APRNs to see a patient every fifteen to twenty minutes. Therefore, APRNs may be able to benefit from improving their communication skills as well, especially for situations where time constraints pose an issue.

Motivational Interviewing. The evidence suggests that both APRN and dentistry students need to learn and practice their interpersonal communication skills. A widely trained and frequently used method of interpersonal communication is MI. MI is a patient-centered therapeutic communication approach, utilized by a variety of healthcare professionals to help change patient behaviors and improve health outcomes. It was designed by William R. Miller and Stephen Rollnick in the 1980's and initially used to help patients battling addictions (Miller & Rollnick, 2013). The overall idea behind MI is to engage the patient in a therapeutic dialog to address the patient's behavior and help him figure out if or how he needs to change those behaviors. Some examples of MI techniques would include using open-ended questions, paraphrasing the patient's own words to assure comprehension on the part of the provider, or asking the patient's opinion to allow the patient to actively participate in the healthcare decision making.

The general techniques of MI have been utilized in various healthcare areas to help change patient behavior. By using a patient centered communication method, such as MI, studies have found higher patient satisfaction ratings, improved patient outcomes without additional monetary or time expenditures, and fewer malpractice suits, not to mention that this method is inexpensive and uncomplicated for providers to be able to utilize in routine practice (Charlton, et.al., 2008). On the other hand, when patients have negative experiences with their healthcare providers, specifically related to communication, patients were less likely to adhere to treatments, they were less satisfied, and less likely to return for care.

The difficulty in addressing issues in the social aspects of dentistry is that there is not a lot of literature published on the topic. Especially not on MI and on improving patient outcomes in dentistry. Although, the data on utilizing MI in dentistry is limited, yet several studies have

shown improved patient outcomes related to dental health when MI methods were utilized in patient care. The issue with most of the studies is that they cite the same handful of studies over and over in their analysis, not adding much new information to the more recent publications.

The results of one study in Hong Kong showed that MI-style patient teaching regarding dental habits had a statistically significant effect on teens, at six and twelve months after the intervention. The intervention consisted of training hygienists in MI skills, who then provided education regarding topics such as tooth brushing or snacking to three groups of teens. The group that had MI-style patient teaching showed the highest scores for continuing healthy habits at six and twelve months after the intervention ($p<0.01$).

Another study, although older, has shown promise in improving outcomes in pediatric dentistry (Weinstein, *et. al.,* 2004) by training dentistry counselors in MI. The counselors in the intervention group provided MI-style counseling to parents of pediatric patients, while the control group were exposed to traditional parent teaching. The results of the study showed that the group exposed to MI teaching had statistically significantly less dental caries ($P<0.01$) than that of the traditional teaching group. Although the study relied on counselors to provide MI-style teaching, the results show that this style can be effective in the field of dentistry. Another study showed similar results in that children whose mothers were a part of the MI intervention group showed lower number of decayed teeth and were more likely to clean their children's teeth twice a day after the intervention (Threlfall, Hunt, Milsom, Ticle, & Blinkhorn, 2007). In this study 480 mothers with children six-to eighteen months old were randomized into three groups: group A received MI-style education in caries prevention, group B received traditional education, while group C was control group. The results showed that group A mothers were more likely to change behaviors, such as decreasing the consumption of sweet drinks, increasing

teeth cleaning, and thereby improve their children's oral health. These studies show that even with as little intervention as by providing the MI-style counseling, patients and their parents can make significant improvements, benefiting health.

One large five-year-long study from Detroit Michigan consisted of 1021 children up to five years of age showed that MI was somewhat effective in changing behaviors (Ismail, Ondersma, Willem Jedele, Little, & Lepkowski, 2011). Each family enrolled in the study received either a 15-minute video regarding cavity prevention, yet one of the groups also received MI intervention in addition to the video. Results at six months showed that caregivers in the MI group were more likely to continue with the recommended preventive behaviors, compared to the DVD only group. At two years, the MI group was still more likely to continue with some of the behaviors, such as nighttime brushing, compared with the DVD group, but the number habits dwindled.

Data regarding the topic of MI in dentistry is lacking. There are few studies, especially recent studies, that address the two topics together, and even fewer studies where dentists engage in MI with their patients, rather than have counselors or hygienists do the MI counseling.

To help dentists achieve mastery of MI skills and techniques, one effective method would be to allow dentistry students or dentists to learn collaboratively with peers or colleagues. Peer-learning of communication techniques, such as Motivational Interviewing (MI) among dental hygienists was shown to be significantly more effective, compared to students who were allowed to continue learning communication in a traditional—or non-MI—style ($P<0.05$) (Johansson, Johannsen, Uhlin & Johannsen, 2014.)

Communication at UoP and USF. University of San Francisco School of Nursing and Health Professions (USF) has previously implemented an of IPE project in conjunction with

University of the Pacific Arthur A. Dulgoni School of Dentistry (UoP), which involved collaboration between APRN and dentistry students. The project results showed that APRN students gained valuable and measurable knowledge in oral health, and both sets of students reported enjoying the interaction. Dentistry students, however, felt that the interaction was one-sided: they felt that they helped teach oral health skills, but did not feel they gained much from the interaction. To ensure that the IPE would not be one-sided there needed to be a change in the structure of the intervention.

When the Project Manager approached USF students in their first clinical year of their APRN program, several students stated that they were not aware of various communication styles, including MI. UoP senior dentistry students stated that during their intense three-year curriculum the only communication-related course consisted of a lunch-time seminar. The students vaguely recalled having had an hour-long workshop on communication and felt that communication skills were not emphasized as part of their education. It was then proposed that USF and UoP students get further training in improving their communication skills. So, the faculty at the two schools utilized their partnership with one another to create additional curriculum in communication. USF and UoP have a unique relationship, where during the winter and spring months, APRN students from USF attended pediatric oral health sessions with dentistry students at UoP for an IPE. The IPE allowed the two universities to satisfy their Interprofessional Education goals, but also allowed students from both schools to learn skills they would not normally be able to learn through their own schools. The PICOT questions for this project include:

Question 1: In APRN students at USF and in dentistry students at UoP, (P) does MI training and peer learning improve their Motivational Interviewing techniques (O) during their pediatric dentistry rotation (T)?

Question 2: Do UoP and USF students (P) feel that the MI training (I) increases their confidence to help their patients change behavior (O) compared to before the training (C)?

Question 3: Do UoP and USF students (P) feel that the IPE (I) helps them understand their professional roles (O) better now than before the intervention (C)?

Rationale.

Prior to the IPE, APRN students at USF and dentistry students at UoP were assigned various modules to complete on their own. USF APRN students were provided with American Academy of Pediatrics-approved and endorsed oral health modules, "Smiles for Life," which reviewed topics, such as the "Relationship between Oral and Systemic Health," "Child Oral Health," and "The Oral Exam." They were expected to complete them in the Fall semester, prior to the start of the IPE. Dentistry students that participated in this intervention were required to be in their second year of the program, during which they were already familiar with the basics of an oral examination.

Both sets of students were also required to prepare for the IPE experience by viewing a short computer-based module to educate them about MI to help equip them with easily applicable concepts communication techniques. The modules on MI were designed by the project manager using the framework set forth by William R. Miller and Stephen Rollnick (Miller & Rollnick, 2013), and were reviewed by the project chair and dental faculty collaborator.

MI Framework. The method has been utilized since the 1980's to help providers communicate effectively with patients, as well as to help patients change their own behavior (Miller & Rose, 2009). Miller and Rollnick define MI as "…a collaborative conversation style for strengthening a person's own motivation and commitment to change" (Miller & Rollnick, 2013, p. 370). The main ideas behind MI are that the provider utilizes empathy to guide the patient in a collaborative, supportive, and patient-centric manner to motivate the patient to change his own behavior. Miller and Rose (2009) found that counselors trained in MI had statistically significantly higher rates of patients who were able to continue to abstain for longer periods of time than those not trained in MI.

The main concepts that make MI different from other forms of communication is that it does not consist of a list of questions or scripts for providers to choose from when interacting with their patients. In their book, Miller and Rollnick (2013) explained that MI should be thought of as a language, where the patient can talk himself into the change by motivating himself (Miller & Rollnick, 2013, p. 224).

One of the foundational concepts of MI is called "The Spirit of MI," in which Miller and Rollnick (2013) emphasized that by only using proper MI language, a provider may not win his patient over. This aspect emphasizes that proper wording is only part of what MI is about, and that the success of the treatment may depend on the partnership between the provider and the patient. By communicating in a patient-centered manner, the provider should be able to emanate a sense of partnership (rather than hierarchy between patient and provider), acceptance, compassion, and evocation from the patient (Miller & Rollnick, 2013).

To build a partnership, where the patient feels accepted, he can utilize statements of empathy, which can help bridge the gap between the patient and provider, by respecting the

patient's freedom, or "autonomy, and by using statements of affirmation, which acknowledge what the patient may be feeling at that time (Miller & Rollnick, 2013, p. 478). Compassion is different from empathy in that empathy would acknowledge the patient's hardships or feelings, whereas compassion would be a "commitment to pursue the welfare and best interests of the other" (Miller & Rollnick, 2013, p. 489). Finally, evocation focuses on the patient's innate strengths, which could be used to foster the road to change. The concepts of "The Spirit of MI" directly oppose the typical medical communication, in which a provider provides all the information for his patient and sends him on his way, expecting the patient to comply unquestioningly.

After a provider develops a relationship, he needs to know what types of things to say and not to say. As previously mentioned, the provider should not speak in a lecture format. Instead, he should ask open-ended questions, affirm the patient's efforts or strengths, briefly clarifying any points through reflective listening, and summarizing the patient's own words (Miller & Rollnick, 2013, p.746-66). The provider may advise or provide information, but to maintain patient autonomy and partnership he should ask permission to do so. This is done so as to validate the patient's thoughts and to not negate his way of thinking.

Instead of telling patients to do or not do something, MI allows the provider to develop proficient listening and communication skills. The two are equally important because without asking the right questions, the provider may not evoke the accurate information from his patient, and without listening, there may not be a relationship between the patient and provider. A simple acronym was developed to help providers navigate what to say: OARS—Open-ended questions, Affirming, Reflecting, Summarizing.

OARS	
O	Open Questions
A	Affirming
R	Reflecting
S	Summarizing

Open questions in this context are also known as "open-ended questions," which are posed so that the individual to whom they are addressed has to elaborate his answers, rather than simply answer with a "yes" or a "no." Examples of the open-ended questions could include, "Why would you want to make this change?" "What are the three best reasons for you to do it?" "How important is it for you to make this change and why?" (Miller & Rollnick, 2013, p.342). These questions invite the patient to not only share, but also to elaborate. Affirmations allow the provider to bring attention to the positive aspects that the patient may have to continue to build their relationship by demonstrating the providers' listening skills. Reflections and summarizing allow for the provider to state in his own words what the patient had just said and to allow the patient to hear his own words from a distance. Sometimes the act of hearing oneself from a distance can help the patient continue to explore the topic and eventually come to a decision (Miller & Rollnick, 2013). Although the other aspects of MI that were previously discussed were just as important, OARS is a concept that would be simple and easy to remember and apply in practice. IT would be a fairly simple and quick topic to introduce to MI novices, who are looking to improve their interpersonal communication skills.

MI is a subject that can take days, weeks, or months to understand and apply properly in practice. Yet, it is an incredibly important topic in healthcare and can provide many effective ways in which to collaborate with patients. Therefore, it was chosen as the focus of the main intervention to teach to the APRN and dentistry students during this IPE.

This was a sequential project in its third year of development as an IPE (discussed later in the manuscript), in which the topic of focus in previous years was on the actual oral health education to APRN students, as well as at the IPE attitudes of students. Last year's student feedback suggested that although students successfully learned oral health in a collaborative setting, they preferred to have a more structured activity surrounding improving interpersonal communications kills. MI was then considered as the central theme to address interpersonal communication skills and competencies for APRN and dentistry students.

Specific Aims

The purpose of this project was to help improve oral systemic health practice competencies among APRN students at USF and among dentistry students at UoP, through IPE and a collaboration built on the strengths of the individual professions and school curriculums. This activity allowed for both—the APRN and dentistry students—to meet their interprofessional education competencies, as stated by the American Association for colleges of Nursing (AACN) and the ADEA. This project built upon and expanded previous work done in establishing the IPE relationship between the USF and APRN program and the UoP dentistry program.

AIM Statement. The overarching aim of this project was to improve pediatric oral systemic outcomes by improving interpersonal communication skills in APRN and dentistry students through their collaboration. There were various smaller objectives that were assessed during the project. Most of the assessments were done via the MI and RIPLS surveys that were assigned to APRN and dentistry students prior to and immediately following their rotation at the pediatric dentistry clinic at UoP.

Objectives and Goals:

Goal 1: Improve communication skills in APRN and in dentistry students by April 15th, 2018.

- Objective: Both dentistry and APRN students completed online MI modules and pre- and post- activity surveys, prior to and immediately after the completion of the activity, which occurred between January 8th and April 15th, of 2018. The outcomes were measured by the MI surveys: the first survey was assigned online prior to the start of the APRN students' two-week rotation at UoP, while the second was provided at the assigned Friday seminar at the end of the rotation.
- Objective: During the full immersion day, APRN students should have model MI skills during patient interview and patient teaching and should have given feedback to dentistry students regarding MI in practice. This was evaluated using question number twelve in the MI survey, as well as in the Positive Identity section of the RIPLS surveys (Questions 13-16). Both surveys were completed by paired APRN and dentistry students prior to and after their full-clinic day at UoP between January 8th and April 15th, 2018.

Goal 2: Improve oral health skills in APRN students during their two-week rotations at UoP.

- Objective: Students must demonstrate knowledge of the concepts of oral health exams, signs and symptoms of early childhood caries, and prevention practices in children. This was measured by the RIPLS "Skills Competency" section (Questions 20-23), which was filled out by APRN students before and after their assigned two-week rotations at UoP in the period between January 8th and April 15th, 2018.

Goal 3: Improve interprofessional collaboration between APRN and dentistry students during their two-week rotations at UoP.

- Objective: This was achieved through the collaborative IPE experience between USF and UoP students and measured by the collaboration section of the RIPLS survey

(Questions 1-9) that students filled out prior to and after their two-week rotations at UoP, sometime between January 8th and April 15th, 2018.

- Objective: Demonstrate a better understanding or appreciation of each other's roles. This was evaluated by the "Roles" section of RIPLS (Questions 17-19).
- Objective: Present joint case studies during dentistry student seminars on the final Friday of their two-week rotations at UoP. This was a given if the APRN students were present at the seminar. Attendance was communicated verbally between UoP faculty and the project manager.

Methods

Context

Setting. The APRN students participating in this year's IPE were a part of the University of San Francisco (USF) School of Nursing and Health Profession's DNP-FNP (Doctor of Nursing Practice-Family Nurse Practitioner) program and second-year dentistry students from University of the Pacific, Arthur A. Dulgoni, School of Dentistry (UoP). Because most of the students in the program at USF were working RNs, the students may be at different points of their program. However, in order to participate in this intervention, the students must have passed Pharmacology, Physiology, and Advanced Assessment classes, and must have been enrolled in their second of five clinical semesters at the time of the activity. Majority of the students held at least a part time job in various fields during their education, since the classes were usually held every other Friday and Saturday, with the rest of the time provided for studying and clinical work.

At the time the planning for this activity commenced in the Fall of 2017, there were 22 APRN students, who were expected to participate in the intervention. Each APRN student was

assigned to a specific day at the dentistry clinic and was paired up with at least one dentistry student for the day. If time permitted, APRN students would have the opportunity to work with another dentistry student later in the day. This intervention is built upon previous years' work done by Theresa Sulit DNP-FNP, MSN, CNL and by Luke Creasman, DNP-FNP, MSN, RN, whose primary focus has been on pediatric oral health and interprofessional collaboration. In previous years the amount of USF APRN students participating was lower, thus the staff at UoP had to accommodate for the large increase in APRN students. Previous year there were only eight APRN students rotating through, so 22 students was a major change.

At the time of the activity, Dentistry students at UoP were in their second year of their three-year program and were completing their pediatric rotation. Although there were 168 dentistry students in the current cohort, only approximately 29 were assigned to work with APRN students. Most of the dentistry students were expected to go into adult care, which was one of the main reasons this project's focus is on general MI techniques, not specifically to pediatrics.

The IPE activity took place at the UoP Pediatric Dentistry Department clinic, which operated Monday-Friday, from 9 am to 5 pm. The clinic was set up so that 12-14 dentistry students rotated through the two-week periods of the pediatric clinic at a time. Faculty at the clinic, including the department chair—Dr. Jeffrey Wood—as well as the IPE leader at UoP—Dr. David Lee—were in full support of the collaboration and activity between the two schools. As previously stated, IPE has been mandated for schools of dentistry and for schools of nursing, which made this activity even more important and appealing to the two schools. It was helpful that the two schools were within approximately three miles of each other in the city of San Francisco, so a significant amount of travel was not required.

As previously stated, this year's IPE activity was based upon previous two years of IPE between the two schools, whose main focus was on oral-systemic health and the evaluation of the IPE experience itself. This year's IPE differed in that it added curriculum and goals for interpersonal communication for the two sets of students. The additional curriculum was added to the previous years' focus.

Stakeholders. The IPE directly affected multiple stakeholders at USF and UoP. The project required input from several faculty members from both schools, including program directors, teaching faculty, adjunct faculty, dentistry clinic administrative assistants. Since the project ran during the school year for both the USF and UoP students, the students of both schools were affected by the participation and were deemed the main stakeholders. The school faculty and administrators (the chair of pediatric dentistry at UoP, associate professor of pediatric dentistry at UoP, dean of USF School of Nursing and Health Professions, the program director at USF for the Family Nurse Practitioner program, and other USF faculty) were identified stake holders for the role that they played in supporting the continued collaboration, which also helped fulfill the IPE competencies for each of the schools. The USF students had to make extra time in their weekly schedules during their assigned two-week period to participate in this program. Some USF students were simultaneously employed as RNs and had to take extra time off from work to complete the mandatory curriculum. Some students traveled from as far as Central Valley in California and even from San Diego to attend this activity, which was important to keep in mind during the scheduling. Dentistry students, on the other hand, were not expected to devote the same amount of extra time since the activity took place during their already scheduled clinic. The only extra time they were expected to put in was approximately 20 to 30 minutes prior to their rotation to complete the MI training module before the start of their pediatric

rotation. Finally, the pediatric patients and their guardians, who were under the care of the dentistry and APRN students at the clinic during the project were considered stakeholders, as the intervention of this project—namely MI communication skills—were utilized to communicate with this population.

Intervention

This project was originally supported by the New York University Curricular Innovations in Oral Systemic Health grant and has been based on the framework established by previous project managers and USF students, Theresa Sulit DNP-FNP, MSN, CNL and by Luke Creasman, DNP-FNP, MSN, RN. The focus of this year's intervention was to help equip dentistry and APRN students at UoP and at USF with the knowledge, as well as the skills related to MI, so they would be able to communicate effectively with their patients and caregivers to improve their patient-provider relationships, patient outcomes, and to be able to provide equal and quality care for patients of all backgrounds.

Project Description.

Preparing for the Intervention. The preparations began in August of 2017, after the outgoing project manager, Dr. Luke Creasman, briefed the incoming project manager about the main points of the project. The new project manager set into action by setting up meetings with faculty from USF and UoP to discuss the needed improvements from previous years, goals, outcomes, and the focus of the current project. The meetings took place approximately every one-to-two weeks over a period of five months.

The previous year's suggestions from students suggested that APRN students had a more active learning experience during the intervention than did the dentistry students. The main focus for this year's intervention was to provide material and a focus to engage both sets of students.

The decision was made among the planning team to proceed with a focus on communication, specifically MI, since it would benefit both health professions.

The preparation of the MI intervention materials took place over approximately a one-month period, which included input, changes, and approvals from various faculty from both schools. The intervention material was designed to be a 17-minute PowerPoint video designed and executed by the project manager, which was delivered online, as well as a pre- and post-intervention survey.

Additionally, to help students be able to apply MI skills from the PowerPoint into practice, a Cheat Sheet (Appendix L) was created to give students an idea of how to phrase history intake questions using MI knowledge. It was digitally uploaded to the student Canvas page, along with other supplies for USF APRN students, and printed out and provided in hard copy for dentistry students in clinic.

APRN Student Preparation. This intervention was designed to be given to students in addition to the previous years' program having APRN students complete online oral health modules prior to starting their intervention. Prior to formally introducing the topic, students were presented with a pediatric oral health case study in their Fall semester in their Advanced Assessment course. The case involved a young child with carries, and APRN students had to find the correct diagnosis.

After the case study, the students were given a formal introduction about the topic, as well as about the purpose of the project, the project's timeline, expectations and outcomes, during class approximately two months prior to the start of the intervention. The information about the project and all it entailed were put up on the students' online course Canvas page. The page included links to the learning modules, pre- and post- surveys, expectations and

requirements for the students, as well as directions to the UoP School of Dentistry campus. It also included a GoogleDocs Calendar designed by the project manager (Appendix T), on which students could view the options and sign up for their preferred dates. The dates were based on the UoP school calendar, and were designed by David Lee, DDS, Associate Professor of Pediatric Dentistry at UoP.

A start date for the execution phase of the project was assigned: January 8th, 2018. Prior to that date, APRN students at USF were expected to complete various online learning modules: Smiles for Life: A National Oral Health Curriculum (SFL), 3rd Edition, as well as the MI PowerPoint module, especially designed by the Project Manager for this IPE. The following SFL modules were required of the APRN students:

Module 1: Relationship of Oral and Systemic Health

Module 2: Child Oral Health

Module 6: The Oral Health Exam

Module 7: Carries Risk Assessment and Fluoride Varnish

The modules were chosen based on their relevance and application in practice for the APRN students. This curriculum was the focus of the previous year's project and due to its well-established content, it was included in this year's curriculum. The students were required to complete the modules up to three months prior to the start of the intervention, during their Health Assessment clinical course.

The APRN students were required to complete two surveys: the RIPLS and Motivational Interviewing pre-activity surveys. The RIPLS survey (an acronym for Readiness for Interprofessional Learning Scale) is a validated tool used to evaluate interprofessional learning between various graduate healthcare students (Parsell & Bligh, 1999). It consists of 19 questions;

each question has a 5-point Likert scale grading system. The questions are grouped into four categories, which evaluate interprofessional relationship values, knowledge and skills needed to work collaboratively, individual roles and responsibilities, as well as what the individual learns from the experience and how that affects patients. In contrast, the MI survey was aimed at evaluating knowledge, skills, and attitudes about MI. All APRN students were required to fill out the pre-participation surveys for MI and RIPLS. Yet, because not all of the UoP students were able to work with APRN students, only a few of them had to fill out the pre-participation RIPLS survey. All dentistry students were expected to fill out pre-participation MI surveys. However due to issues with curriculum approval related to administrative approval, dentistry students were not required to do so.

After filling out the pre-participation surveys, both sets of students were expected to watch the MI PowerPoint prior to their day at the clinic. Again, due to a lack of administrative approval prior to the start of the project at UoP, not all dentistry students watched the video; it was an optional activity. Preparation on the UoP side was all handled by Dr. Lee.

Calendar Overview. The project was designed to run over a four-month period, from January to April of 2018, in increments of two-week periods. The design was such that four APRN students would undergo a rotation in two weeks, with a total of 22 students signed up. The students were expected to come for three pre-assigned days during their rotation. All four students from each rotation were to come on Monday morning of week 1 for their orientation from 10 am to 1 pm. Then each student was expected to come to a full clinical day on either a Wednesday or a Thursday of either week 1 or week 2, from 10 am-5 pm, with a one-hour lunch break. The students were able to choose their preferred dates ahead of time, based on availability. All four students were expected to attend the half-day dental student seminar on Friday of week

2, either from 10am to 1 pm, or from 2 pm to 5 pm. The time of the seminar assigned was dependent upon which clinical day the students attended. Dr. Lee had designed the calendar such that two APRN students attended each Friday seminar session and that the session would overlap with the dentistry student(s) they worked with in the previous weeks.

Orientation Monday. On the first Monday of the two-week period, all four assigned APRN students came to the UoP clinic to go through orientation at the clinic, led by Dr. Lee. Students received a physical tour of the pediatric clinic, as well as of other clinics at the school. Furthermore, Dr. Lee went over the oral exam with the students on a mannequin and allowed them to practice on each other. He also explained again expectations of the APRN students for the rest of their rotation.

Full Clinical Day. During the full clinical day, on either a Wednesday or a Thursday, for which the students signed up, APRN students were paired with a dentistry student by the pediatric clinic dentistry staff based on the type of case they were working on. The case would last anywhere from one-to-two hours, depending on the complexity. During that time, APRN students were expected to collaborate with dentistry students and the patient's family to take a dental and medical history of the patient. At this time, MI skills were expected to be applied in practice. Due to UoP's competency requirement for each of their student to be able to handle his or her own patients, APRN students were only allowed to observe during the procedure part of the clinic. However, if deemed appropriate by dental clinic staff, APRN students would be given a chance to apply fluoride varnish on the patient. APRN students collected information, later to be presented during the seminar, about a pre-assigned case. Students were expected to present the case in a way they would view it as APRNs, such as what information they would focus on or

address. The presentations were expected to be verbal, approximately up to ten minutes in length.

Both of the sets of students were then expected to engage the patient and family in post-op care, as well as prevention teaching, again, utilizing MI techniques. After the case, the two students were instructed to debrief about how they felt the case went and to give each other feedback based on their use of MI techniques. After participating in one or two cases during the day, APRN students would be allowed to observe various procedures and techniques, based on availability and interest.

Friday Seminar. Students came to their pre-assigned Friday seminar, during which dentistry students presented their cases from a dental student standpoint. APRN students were expected to present alongside their dental student partners about their joint pre-assigned case and were expected to focus on the nursing aspect of the case to add to the dental focus of the dentistry student. At the end of the seminar, APRN students were given their post-participation MI and RIPLS surveys.

Dental Student Preparation. Dr. Lee was in charge of preparing the dentistry students for the activity, since between all those involved in planning the project, he had access to the dentistry students' online classwork and announcements. There was a total of approximately 165 dentistry students in each cohort, with approximately 14 undergoing each two-week clinical rotation at the pediatric dentistry clinic at a time. Out of the 14 students, approximately six-to-eight were assigned to work with APRN students, depending on the time limits and on the difficulty of the cases.

At the beginning of their pediatric rotation, Dr. Lee passed out the MI pre-intervention surveys to students and verbally encouraged the students to watch the MI video. Dr. Lee had set

up a Canvas page specific to the MI intervention, where students were encouraged to watch the MI PowerPoint video. He also sent out reminder emails for students to watch the videos prior to their work with APRN students. Several dentistry students, who were assigned to work with APRN students, were also asked to fill out the pre-RIPLS surveys. All surveys were collected and returned to Dr. Lee, to be picked up and recorded by the project manager. The paper format for the surveys was chosen due to the ability to enforce the filling out of the surveys, especially in an assignment that is otherwise optional for dentistry students.

During their pairing with APRN students, dentistry students were expected to work with APRN students, to approach and explain the case from a dentistry point of view, while working on MI together, and learning about the APRN position in the community.

Relation to Framework. While developing the MI presentation the topics had to be narrowed down significantly. Unfortunately, a time limit set for the length of the MI presentation, which was fifteen minutes. It would have been impossible to describe all aspects of MI, not to mention to give examples of all of them in a fifteen-minute PowerPoint with the assumption that students have not previously been exposed to the topic. A decision was made to include only the most clinically applicable points of MI at this time, with concrete examples, which could help both sets of students to implement it into their practice.

The topics that were thought to be of most utility to APRN and dentistry students included a comparison between MI and a "traditional" communication approach, to help students see the direct differences in the communication styles. The key principles of MI, or "The Spirit of MI" were included, along with the OARS concepts. The students were presented with a case at the end of the PowerPoint to illustrate what a "typical" patient-provider encounter may look like, compared to one guided by all the MI principles discussed. Again, the presentation was

meant to not overwhelm students who were new to the topic, and also to give tools that students can easily incorporate in their daily practice.

GAP Analysis. A GAP analysis was used to determine the needs and desired outcomes of USF and UoP students for this activity (Appendix C). Since this project was sequential and was built upon the previous years' foundations, the primary focus this year was on the needs that were observed in the previous year.

Current State. During an interdisciplinary meeting between students and faculty at USF and UoP, it was brought to attention that dentistry students at UoP felt they did not receive adequate training on interpersonal communication throughout their education at the university. The Dentistry students and faculty at UoP expressed interest in having more education and practice on the topic. Therefore, it was agreed by the aforementioned parties that the focus of the project would be to help improve dentistry students' communication skills using MI, a method that has been a part of a regular nursing curriculum, as well as a frequently used approach in clinical practice. This intervention was done in addition to interprofessional education already designed for the same groups of students, where APRN students learned about pediatric oral health alongside dentistry students undergoing their pediatric rotation. UoP requested that the project would be short enough and would not add too much burden to the current rigorous and condensed curriculum of the dentistry students. The project design was requested to be easily accessible to approximately 150 dentistry students, most of whom would be undergoing their pediatric dentistry rotation at various times in their winter and spring semesters in 2018. UoP also requested that the topic be catered to a broad patient population, not just to pediatrics, since only a small portion of the dentistry students will continue on to the pediatric specialty.

Furthermore, in order to assess the effectiveness and practicality of the education and practice, no standardized tool was found to fit the needs of this project. The project included approximately 150 dentistry students, as well as 22 APRN students over a 12-week period, which made it not feasible to observe each of the students separately and grade each of their communication performance with patients.

Desired State. Through this project and the training provided, APRN students at USF and dentistry students at UoP and would gain the knowledge and skills of MI, as well as the confidence, to communicate effectively with their patients and be able to help their patients change behaviors and improve outcomes. The effectiveness of the MI training was evaluated using an evaluation survey that was designed by the project manager, to help assess the effectiveness of the MI training.

GANT Chart. The GANTT chart (Appendix D) shows the important milestones for this project. Some of the key dates included meetings between the project manager and the stakeholders, namely the faculty at USF and UoP, to agree upon project organization and execution details. The very first meeting on August 4th, 2017, was the first time all parties met to agree on the main idea behind the project, which was the focus on MI. All subsequent meetings through January 8th, 2018, were held to work out the details of the project.

USF student rotation sign-up orientation was held on Nov 18th, 2017, with the calendar and Canvas page open for sign ups by December 4th, 2017. Completion of the pre-participation MI surveys and the MI PowerPoint were completed and released to students on January 5th, 2018.

First day of rotations was held at UoP on January 8th, 2018 and continued through April 13th, 2018. Meetings between January 8th and May 8th, 2018 focused on addressing immediate

issues in the students' rotations, but also discussing topics to address during the next year's project. Surveys were collected and analyzed in the period following April 13th, 2018. Timing was the biggest threat for this project, as the project manager only had from August 4th, 2017, through January 8th, 2018 to plan and complete all tasks prior to the start of student rotations.

SWOT Analysis. Below is the analysis of the Strengths, Weaknesses, Opportunities and Threats for this project (Appendix G).

Strengths. The strengths of this project include the fulfillment of Core Competencies for Interporfessional Collaborative Practice, set forth by Interprofessional Education Collaborative, which is supported by various associations, including the American Association of Colleges of Nursing and American Dental Educational Association (Interprofessional Education Collaborative Expert Panel, 2011). This project also allows for a continued relationship between the two schools, USF and UOP.

It is a fairly low-cost project, since the relationship between the universities has been established in previous years during other ongoing projects by Dr. Creasman and Dr. Sulit, and therefore, required little introduction and rapport building. Both schools are located in San Francisco, so transportation requirements hardly differed from those for attending class.

Furthermore, students at USF can count the interprofessional experience towards their pediatric clinical hours, which are necessary to satisfy their graduation and the Board of Nursing certificate.

Weaknesses. This project put extra time constraints on those planning the project, as well as the APRN students participating. The major weakness in the project was that the allotted planning period for the execution of the project was only four months. Unfortunately, the project had to change hands due to the previous project manager—a student—graduated and had passed

on the project only four months prior to the execution date. The new project manager-student had to get on board, design, plan, get the project approved, and execute within four months.

The APRN students participating in the project are required to engage due to class requirements and may need to take extra time off from their work (depending on their schedule) or miss two weeks of other required clinical activities.

The focus of this project, Motivational Interviewing in Pediatric Dentistry, is not a well-researched area and does not had much literature pertaining specifically to pediatric dentistry, nor any evaluation or competency tools pertaining to the area.

Opportunities. The opportunities presented through this project include improving the relationship between the two universities to allow for continued interprofessional collaboration and education. It also allows for the establishment and normalization of collaborating with providers and experts in different fields and provide knowledge about pediatric oral health to APRN students, while dentistry students learned more in depth motivational interviewing skills.

Threats. One major threat to this project is that it is heavily dependent on the administrative approval from both, USF and UoP; UoP especially. If one school decides that it is no longer of in need of this collaboration, the entire project would have to be reconfigured and the other school would have to find another IPE partner. In a way, USF has somewhat more importance in this project because the school needs to provide pediatric oral health curriculum to their students, whereas UoP is not so dependent on what USF has offered in the past, except the fulfillment of IPE competencies. It is the hope, however, that this and future projects and collaborations with UoP would make the project outcomes equally important to both schools.

The other major threat to the project is time constraint. As previously stated, the project was put together in only four months, which includes designing, planning, approving, and

beginning to execute at the end of the fourth month. The project manager-student also has to design and prepare all the teaching and evaluation material for the students to assess before and after knowledge, therefore making the timeline much shorter than desirable to be able to ensure the quality of the project.

Another threat to the project includes the fact that this year the APRN cohort more than doubled than in previous years, making the accommodation of APRN students at the UoP pediatric oral health rotations much more time restricted and requiring more time from faculty from both schools. Once the students sign up for their preferred time slot, weeks-to-months in advance, they have no room for flexibility to make up any missed sessions.

Project resources. The preparation for the IPE included an online lecture series about pediatric oral health, called Smiles for Life, which was used to prepare APRNs prior to their interaction with dentistry students. This was a free and ready set of modules for students to access with built in quizzes.

Microsoft PowerPoint application was used to create the MI module. The slides with content were voiced over by the project manager, which required a microphone. Later, the slides were timed and then converted to video format and placed onto the Youtube.com website to allow for easy viewing, as well as for public access. All parties involved already had the PowerPoint application installed in their computers prior to the beginning of the project, which did not require the additional purchase.

Microsoft Word was utilized to prepare the evaluation tool to assess MI learning. This application, too, was available to all parties prior to the start of the project.

For communication between project stakeholders, Zoom video conferencing, as well as telephone, and email communication were utilized for meetings, sharing ideas, as well as

updates. Project stakeholders were also able to meet face-to-face in addition to holding conferences via the Zoom application. The Zoom application was provided to students and staff by the University of San Francisco at no cost. Telephone calls or text messages, although not as frequent as Zoom or face-to-face communications, were not included in the budget due to the rarity of its use, as well as the local nature of the communication, which should not have incurred additional fees.

The Google Docs Spreadsheet online application was utilized to allow APRN students at USF to self-schedule for their dentistry rotation. This tool was at no cost to the users.

Estimated project budget. (Appendix H*).* This project did not utilize any outside financial support. The project was completely sustained via the project manager's own time outside of class and work. Faculty and other stakeholders participated in meetings and project planning on their own time, as well. Therefore, the budget was estimated based on the salary of the project manager (approximate dollars per hour), as well as based on an estimated average salary of the faculty involved (currently unavailable).

The total amount of hours of preparation that was involved in from the project manager was estimated to be 175.5 hours. The project manager concurrently worked as an RN II nurse in the Intensive Care Unit at Marin General Hospital, whose hourly salary was $62 per hour. The total amount of time that faculty spent in meetings was estimated to be 40 hours. No salary data for either of the two schools for faculty was available at this time, therefore for the purposes of this project, an hourly rate of $100 per hour was used for faculty rate. The total budget used these figures in the calculation of the total budget.

Travel time to and from meetings was also considered an expense, as the project manager was the one primarily the one traveling to the meetings. An estimate of 10 hours of travel time at

the project manager's salary was calculated to be approximately $620. No additional travel expenses were considered, such gas cost since the project manager traveled almost exclusively by foot to all in-person meetings.

Based on the estimated number of hours of all parties, transportation, the total cost of the project to date is $13,205.

Communication matrix. (Appendix F) The project team included Oksana Prodan, RN, who is also an APRN student and DNP candidate, as well as the project manager for this IPE. Dr. Alexa Curtis was the DNP Chair, a professor at USF, and a practicing APRN. Dr. JoAnn Loomis, also a faculty member at USF and a practicing APRN, was on the project's DNP committee. Dr. David Lee, an associate professor at UoP Department of Pediatrics, was the project coordinator at UoP.

Communication was executed via face-to-face, email, telephone, and via Zoom online conference technologies. The communication matrix, as seen in Appendix F, describes the specific methods of communication that was performed for the project.

Cost/Benefit Analysis. Financial benefits calculations of this project can be viewed in Appendix I. According to the Stookey, Chung, Gansky, Fisher-Owens, Elam, Miller, Patel & Hilton (2017), the prevalence of dental caries in children aged two to five years in San Francisco was 29% in 2005. There is no recent data available at this time and all national data has been quoted in recent studies from the National Institute of Craniofacial Surgery from 2004. According to the US Census Bureau from 2010, there were 35,203 children living in San Francisco. This puts an estimate of 9,857 children under five years living in San Francisco with dental carries. Each child between two and eleven years old with dental caries, has an average

range between 1.6 and 3.6 caries per individual. With a total of 9,857 children with carries, the estimated range of the total number of carries is between 15,771 and 35,485.

The cost of carries repair in the US varies widely around the country. The United States Government Accountability Office estimated the costs in various areas around the country. Because this project took place in San Francisco, CA, the closest estimate for cost was provided for the city of Los Angeles. No national average was provided but considering that relative living expenses are generally higher in California, these would be the higher end estimates of the treatment. The range of caries treatment provided was between $237 and $365. The range of cost for the treatment for the estimated number of caries in children under five years in San Francisco throughout a five-year period was $18,688,635 and $64,760,125.

On the other hand, if considering the preventive treatments, fluoride application cost ranges from $40 to $90. According to the American Academy of Pediatrics, the total required number of well-visits per child between the ages of one and five years is eight times. If each child attended all his well-visits and if primary care providers applied fluoride treatment at every well-visit, the total cost for all children over a five-year period would be between $11,264,960 and $25,346,160. The total savings from not having or fixing caries would range from $7,423,675 and $39,413,965. Additionally, if the cost of this project were projected over five years ($66,025), the savings would remain high: between $7,357,650 and $39,347,940.

The calculations are idealistic, and children would still have dental caries, some children would not make all their well-visits, and some primary care providers would not apply the varnish at every well-visit. But for the purposes of this calculation the assumption was made that pediatric dental caries would be eliminated in children under five years old. This would allow an estimated healthcare savings between $7.3 and $39.3 million in the city of San Francisco.

Further financial benefits of this project would be associated with patient access to care. Since previous studies about dentists' communication showed that patients frequently did not feel as though they were treated with dignity as a result of poor dentist communication, by improving communication among dentists and other providers, it may make more patients likely to seek care earlier and to establish a medical home. Improvement in communication is even more likely to have patients return to clinic for checkups and adhere to preventive therapies. Improved quality of life for the children, as well as their parents, as a result of prevention of caries, as well as from access to care, should be further explored in future studies.

Study of the Intervention

The intervention required a tool that would evaluate the students' mastery of MI skills, as well as one that would fit the needs of this project. Different forms of MI evaluations exist in various forms, such as the Motivational Interviewing Assessment: Supervisory Tools for Enhancing Proficiency (MIA: STEP) or the Manual for the Motivational Interviewing Skill Code (MISC). However, these evaluations either required an individual to objectively evaluate each student immersed in patient care, or to do a rigorous self-evaluation and in-depth analysis of their personal use of MI techniques. The MISC would have required the involvement of many more individuals and time to help evaluate each of the students in their clinical practice, which was not feasible for this project. The MIA: STEP would have required a much more detailed and thorough exposure to MI than the time allowed. Unfortunately for this project, per dentistry faculty request, the MI intervention outside of clinic was not to exceed fifteen minutes, as most students would choose not to participate in the optional MI training. Therefore, the decision was made to create an MI evaluation based on the training module provided.

APRN students, too, were at risk for not completing the intervention due to their rigorous class, clinical, homework, and work schedules. To remedy the issue, the project manager designed both, the MI informational PowerPoint lecture, as well as the evaluation tool. The information presented in the MI PowerPoint was based on William R. Miller's concepts. Both the PowerPoint and the evaluation (pre- and post-) were given to all dentistry and APRN students, who participated in the intervention.

Furthermore, APRN students had oral health knowledge evaluations, which were built in to the Smiles for Life oral health modules. Each student also received 4 Continuing Education Units (CEU) upon completing all four modules, as well as a satisfactory grade in the class in which they were assigned. Students had to present the documentation of completion in order to receive credit.

Measures

To evaluate this intervention, two sets of surveys were utilized: RIPLS (Appendix L), a validated survey was utilized to evaluate the students' experiences and perceptions of the IPE itself, whereas for the MI portion, a separate and specific survey was created to evaluate the students' knowledge of MI (Appendix J and K).

The RIPLS survey was used to evaluate specific areas of each individual's IPE experience. As stated earlier, it is a validated tool with 19 questions, each question has a 5-point Likert scale grading system (Parsell & Bligh, 1999). The original validated survey contained 19 questions, which included the following subcategories: Teamwork and Collaboration (questions 1 through 9), Negative Professional Identity (questions 10 through12), Positive Professional Identity (questions13 through 16), and Professional Roles (questions 17 through 19). Additionally, the previous project manager, Dr. Creasman, added two questions pertaining to

each of the groups of students with regards to their self-evaluation of their expertise level in oral health and communication skills (questions 20 and 21 for APRN students, and questions 22 and 23 for dentistry students). Feedback from students, especially dentistry students, who completed the IPE in the previous years, showed that they wished for a more structured course on communication. Therefore, this year's IPE focused on adding a communication intervention for all students.

The MI Survey was designed to assess the various parts highlighted in the 17-minute MI PowerPoint presentation. The pre-participation survey had a total of nine questions. The questions were designed by the project manager to evaluate general aspects of MI. Question one asked whether the individual has heard of MI. Question two asked if the student the student to identify any three components of MI, as well as his confidence to do so. Question three presented a statement to the student to address whether or not he presently gives his patient autonomy. Question four was a statement about the individual's current use of MI techniques in practice. Question five assessed the students' confidence level of being able to change their patients' behavior. Question six looked to address students' opinion of the use one of the most prominent aspects of MI, which was to express empathy to patients. Question seven sought to evaluate the students' listening ability during a patient interaction, which is another important aspect of MI. Question eight sought to evaluate students' opinion on whether they should be the ones doing most of the talking during their patient interaction. Finally, question nine provided the students with three options of a comment to address the patient's smoking history in the most appropriate MI fashion. All nine questions were evaluated using a five-point Likert scale, with "Strongly Agree," "Agree," "Neutral," "Disagree," and "Strongly Disagree" as the options. Only the ninth question was multiple choice question with three options.

The post-participation questionnaire had the same nine questions, with an additional seven questions for feedback about the students' experience, the PowerPoint presentation, as well as about the Cheat Sheet. On one of the questions, students were able to evaluate the utility of the Cheat Sheet by writing in a percentage of how much of it they were able to use during their clinical application of MI at the pediatric dentistry clinic.

Both surveys were electronically available to APRN students anywhere from one month to five days prior to their assigned rotations. Dentistry students received paper versions of the surveys from their faculty on the morning of their first rotation day. The second set of both surveys (post-intervention) was handed out at the Friday Seminar, at the end of their two-week rotations. To help students feel they can express themselves honestly, the surveys were coded to allow for an anonymous submission.

Analysis

The analysis for the results of this project were analyzed using Microsoft Excel application. Basic metrics, such as mean, were used to evaluate each question's response within each group of students—APRN and dentistry. Each group's pre- and post- results were compared to see if there was a statistical significance, utilizing the T-test at the 0.05 significance level. Each group was compared to one another to see if their responses significantly differed.

The T-test was chosen to be able to test if there was a difference between the pre- and post- results within each group, as well as between the two groups, and most importantly, to see if the difference or change was statistically significant

When analyzing the APRN pre- and post- activity scores for MI and RIPLS, the single tail, type one (paired) analysis was utilized because the two types of results were from the same group of individuals. However, when analyzing the scores for dentistry students for the same

surveys, the one-tailed T-test was utilized. There were unequal number of students who participated in the pre- versus post- evaluations. It was also unclear as to how many of the students who filled out the pre- evaluations were able to participate in the post-evaluations, and vice versa.

Ethical Considerations.

USF is a Jesuit Catholic University, founded on the basis of St. Ignatious' vision of caring for the whole person and of giving voice to the underserved. The university's school of nursing boldly continues this tradition by training their APRN students in the community, with focus on primary care and prevention.

This project is in alignment of the university's Core Values, specifically through "the freedom and the responsibility to pursue truth and follow evidence to its conclusion," "social responsibility in fulfilling the University's mission to create, communicate and apply knowledge to a world shared by all people and held in trust for future generations," as well as "Care of the Whole Person," (Vision, Mission and Values Statement, 2017). The project addressed these values in that the intervention was supported by evidence-based research, it addressed social responsibility by helping improve clinician communication with their patient, as well as to help each professional learn about the scope of the other, and as such, it helped the students learn to care for the whole person through learning how to communicate with their patients and their families.

Furthermore, the Core Competencies for Interprofessional Collaborative Practice holds healthcare professionals accountable by stating that they are responsible for addressing, maintaining, and promoting health through behavioral change, which will lead to improvements in public health outcomes (Interprofessional Education Collaborative Expert Panel, 2011). The

report also emphasized that it is the ethical responsibility of healthcare professionals to work together to look out for the best interests of the patient, rather than for their individual interest, or of that of their profession or institution. This portion was addressed through the IPE.

Since this project was a continuation of projects from previous two years, it had already been approved by the DNP committee as a project improvement, rather than research. For that reason, an IRB approval was not required. The project did require approval from the DNP committee to ensure that it met all the DNP project requirements (Appendix N).

Patient information was not collected or used in any way for this project. However, when APRN students presented cases at their Friday Seminar, they were required to maintain Health and Insurance Portability and Accountability Act (HIPPA) policy confidentiality. All documents regarding patients and patient information was turned in at the pediatric oral health clinic at UoP.

Participation of APRN students for the entire project was required but was not graded. Students were given "Complete" or "Incomplete" for attendance to their rotations, as well as for turning in their pre- and post- participation surveys. This was done in order to ensure that students received pediatric oral health and MI training but did not feel that their grade depended on their feedback or performance in clinic. Students were notified of this prior to signing up for their rotations, as well as via emails immediately prior to their rotations. Prior to the activity, students were educated about the anonymity of the collection of surveys for the pre- and post-evaluation surveys to allow students to provide honest feedback without worry. APRN students also received a certificate for the successful completion of the Smiles for Life online modules, as well as clinical pediatric hours necessary for their APRN certification.

At the time of their pediatric rotation, all dentistry students were expected to participate in filling out the pre- and post- activity surveys and completing the MI modules. UoP faculty

stated that this activity was not graded. The dentistry students who worked directly one-on-one with APRN students were specifically provided a RIPLS survey immediately prior to working with the APRN students, as well as one at the Friday seminar at the end of their two-week rotation.

No conflicts of interest have been noted throughout the planning of this activity. In fact, the faculty and administrators at both universities appeared invested in this project. The results (below) showed that students enjoyed the activity as well.

Results

Prior to the start of the clinical rotations, all students were verified to have completed their online Smiles for Life Modules during the previous semester's Health Assessment class. Instructors for that class collected and graded the assignment's certificates of completion. Once the clinical rotations began, there was a rigorous pre-set schedule, as seen in Appendix T. All NP students were able to complete the pre-activity MI and RIPLS surveys prior to their orientation Monday at UoP.

Demographics:

A total of 21 APRN students began their clinical rotations at UoP, while 20 completed it. One student was unable to make it to the seminar (the final day of the rotation), unexpectedly. As previously stated, all students completed all their pre-participation surveys. Unfortunately, only 18 of each type of the surveys (RIPLS and MI) were found on file after the rotations ended (86%). APRN students consisted of students ranging in age from 26 to 62 years old. Eleven of the students had previously completed RIPLS surveys, and 18 students had indicated to have participated in an IPE before, mostly with the UoP Pharmacy school one semester prior.

A total of 96 dentistry students, were able to complete the pre-activity MI survey and 27, who were assigned to NP students by faculty, completed the pre-activity RIPLS surveys. A total of 80 dentistry students completed the post-activity MI surveys and 29 completed post-activity RIPLS. Age ranges for dentistry students were 22-30 years old. It is currently unclear as to why there was a discrepancy in the number of students completing the pre- and post- RIPLS, but it was likely that more dentistry students were able to work with NP students than the dentistry faculty initially anticipated. Unfortunately, it was unclear if the same dentistry students completed the pre- and post- activity MI surveys. Of the dentistry students, 11 indicated that they had done IPE prior to this interaction with students from the Physicians Assistant school.

MI Survey Results:

Quantitative Results.

APRN Students: The surveys for each set of students was analyzed independently, comparing the pre- and post- survey analysis. For the purpose of data analysis, the survey Likert scale was coded numerically, where "Strongly Agree" was replaced by 1, and "Strongly Disagree" was replaced by 5.

The results of this survey can be seen in Appendix O. The MI Survey results for APRNs showed that approximately half of the questions had a statistically significant difference when comparing the pre- and post- results. In question 1, results showed a statistically significant increase in students who said that they have encountered MI, going from an average of 1.62 (s.d. 0.74) to 1.22 (s.d. 0.43), with a range of answers from 1 to 2 ($p=0.021$).

In question 2 APRN students were able to name three components of MI after the intervention compared to before with a pre-activity average of 3.19 (s.d. 1.12) and post- 2.53 (s.d. 1.23). The question asked about students' level of confidence to be able to name any three

components of MI and the difference in confidence level was found not to be significant (p=0.053), However, while several students circled "Neutral" or "Disagree" to the question, they still named at least one of three components correctly. This question called for students to write out their response by hand. Before the intervention, 11 of the 21 students were unable to name any points of MI (52%), one student named one point (5%), four students named 2 points (19%), and five students named all three points (24%). All points written were deemed correct. However, after the intervention only four out of 18 students, who filled out the post-activity surveys, did not name any points (22%), one student only named one point (6%), and 13 students named all three points (72%).

Question 3 showed that APRN students did not significantly change their practice habits after the MI training to ask their patients permission to discuss sensitive topics, with pre-activity average of 1.57 (s.d. 0.60) and post-activity average 1.44 (s.d. 0.248; p=0.248), suggesting that the students were already in the habit of doing so. Question 4 showed that APRN students were significantly increasing their use of MI techniques in their practice after the training, with averages changing from 2.19 (s.d. 0.81) to 1.56 (s.d. 0.51; p<0.001). Question 5 showed that there was a significant difference in confidence level of APRN students in their ability to help change their patient behaviors using MI techniques, with averages range from 2.33 (s.d. 0.80) to 1.72 (s.d. 0.75; p<0.001). Question 6 showed that the results for this question did not vary significantly before (average=1.24; s.d. 0.44) and after the intervention (average=1.33; s.d. 0.49; p=0.166). Students thought it was important to express empathy during their patient encounters, both before and after the intervention.

Question 7 also showed no significant difference (p=0.358) before and after the training in students, as they believed that they as providers did most of the talking during their patient

encounter. The averages showed almost no change from before the training to after: 3.62 (s.d. 0.67) and 3.78 (s.d. 0.65), respectively. Question 8 was not significant (p=0.358), with averages almost identical from before to after: 2.43 (s.d. 1.03) and 2.44 (s.d 1.04). Finally, Question 9 showed no difference at all since all students (100%) marked "c" as their correct answer.

Questions 10 through 15 were about student experience. Students were able to write the percentage of the Cheat Sheet that they were able to utilize during their patient encounter. The answers ranged from 0% to 100%, with an average of 58% and a standard deviation of 31%. Student responses were between "neutral" and "agree" in that the Cheat Sheet was helpful (average=2.29; s.d. 0.85). When asked if students felt there were opportunities to utilize the MI techniques as a team (with dentistry students) during their patient encounter, their responses were similar, with an average of 2.12 (s.d. 0.93). Finally, students mostly found the PowerPoint presentation module to be helpful, with an average of 1.65 (s.d. 1.06), although the responses ranged widely. The last two questions were free response (qualitative results) and can be viewed in Appendices Q and R.

MI Scores: NP Students Pre-Activity Survey

	Total Avg	Answer Range	s.d
1	1.62	1 to 2	0.74
2	3.19	1 to 5	1.12
3	1.57	1 to 3	0.60
4	2.19	1 to 4	0.81
5	2.33	1 to 4	0.80
6	1.24	1 to 2	0.44
7	3.62	2 to 5	0.67
8	2.43	1 to 4	1.03
9	3.00	3	0.00

MI Scores: NP Students Post-Activity Survey

	Total Avg	Answer Range	s.d	p value
1	1.22	1 to 2	0.43	0.021
2	2.53	1 to 5	1.23	0.053
3	1.44	1 to 2	0.51	0.248
4	1.56	1 to 2	0.51	0.001
5	1.72	1 to 3	0.75	0.000
6	1.33	1 to 2	0.49	0.166
7	3.78	3 to 5	0.65	0.358
8	2.44	1 to 4	1.04	0.358
9	3.00	3	0.00	--
10	58%	0 to 100%	31%	
11	2.29	1 to 4	0.85	
12	2.12	1 to 4	0.93	
13	1.65	1 to 5	1.06	

Dentistry Students: The results table for this section can be viewed in Appendix O. A one-tailed T-test with unequal variances was chosen for this analysis. Additionally, it was unclear if the students who completed the pre-activity surveys were also able to complete the post-activity surveys.

Question 1 showed significant increase in students being familiar with the MI technique ($p<0.001$), with averages dropping from 3.28 (s.d. 1.15) to 2.0 (s.d. 1.20). Dentistry students showed confidence in their ability to name components of MI in Question 2, ($p<0.001$), with averages changing from 4.12 (s.d. 0.81) to 3.0 (s.d. 1.05) after the activity. Furthermore, before the activity four out of 96 students were able to name only one MI point (4%), two students named two points (2%) and only six students named three points (6%), and 84 students were unable to name any points (88%). Compared with post-activity results, 43 students were unable to name any points (53%), four out of eighty students were able to name one point (5%), ten students were able to name two points (13%), and 23 students named three points (29%). All points were analyzed and deemed correct parts of MI.

After the activity, dentistry students were significantly more likely to ask their patients permission to discuss a sensitive topic (Question 3) with averages being 2.38 (s.d. 0.79) initially and 2.10 (s.d. 0.74) after the activity ($p=0.007$). Question 4 showed a statistically significant change in students using MI during patient interaction ($p<0.001$), with average responses going from 3.14 (s.d. 0.80) to 2.51 (s.d. 0.78). Question 5 also showed as significant change in students' perception to being able to help their patients change their behavior using MI techniques ($p<0.001$), with averages 2.85 (s.d. 0,79) and 2.26 (s.d. 0.79) pre- and post- activity, respectively.

Question 6 showed no significant difference in students' belief in the need to express empathy (p=0.422). Most students believed it important to express empathy before (average=1.48; s.d. 0.56) and after (average=1.46; s.d. 0.55) the intervention. Question 7, too, showed not significant change before and after the intervention in whether students agree or not that they should be doing most of the talking during their patient encounter (p=0.185), with averages of 2.51 (s.d. 0.77) and 2.41 (s.d. 0.71) pre- and post- activity. Question 8 did not show significant change in perceptions in dentistry students before (average=2.04; s.d. 0.77) and after (average=1.99; s.d. 0.64) to provide "a lot" of education or information to their patients p=0.300). Finally, question 9 also showed no significant difference in students picking the correct MI technique response before and after (average: 2.92; s.d. 0.27, before; average:2.94; s.d. 0.27 after). There were five students in each group, who picked the non-MI technique answers (p=0.357).

On average, students stated that they were able to use 33% of the Cheat Sheet, with answers ranging from 0 to 100%, with a standard deviation of 25%. As a whole, they stated that they did not find it very helpful, with an average of 2.32 (s.d. 0.66). This result was conflicting when looking at it in context with the qualitative results (discussed below), where several dentistry students asked for the Cheat Sheet to be laminated and available at all times in clinic. The students also felt there was some opportunity to apply MI techniques jointly with APRN students (average=2.41; s.d. 0.84). Similarly, students rated the utility of the PowerPoint at 2.12 (s.d. 0.90), which put the answers between Neutral and Agree. The free responses to the final two questions (Questions 14 and 15) can be found in Appendices Q and R and are also discussed

below in "Qualitative Data."

MI Scores: Dentistry Students Pre-Activity Survey

	Total Avg	Answer Range	s.d.
1	3.28	1 to 5	1.15
2	4.12	1 to 5	0.81
3	2.38	1 to 4	0.79
4	3.14	1 to 5	0.80
5	2.85	1 to 5	0.79
6	1.48	1 to 3	0.56
7	2.51	1 to 4	0.77
8	2.04	1 to 4	0.77
9	2.92	2 o 3	0.27

MI Scores: Dentistry Students Post- Activity Survey

	Total Avg	Answer Range	s.d.	p-value
1	2.00	1 to 4	1.20	0.000
2	3.00	1 to 5	1.05	0.000
3	2.10	1 to 4	0.74	0.007
4	2.51	1 to 4	0.78	0.000
5	2.26	1to 4	0.79	0.000
6	1.46	1 to 3	0.55	0.422
7	2.41	1 to 4	0.71	0.185
8	1.99	1 to 4	0.64	0.300
9	2.94	2 to 3	0.27	0.357
10	33%	0 to 100%	25%	
11	2.32	1 to 5	0.66	
12	2.41	1 to 5	0.84	
13	2.12	1 to 4	0.90	

A statistical power analysis was used to estimate the power of the study. An online calculator was used for that purpose at Clincalc.com and it was found that the two groups had a statistical power of 0.296. The power statistic was also calculated to see the appropriate sample size in order to make the results applicable to the general population. An appropriate sample size was found to be 79 APRN students and 316 dentistry students. So, the study may be under-powered to detect effect which is to be expected in small text of change. Future projects will need to take into consideration the number of students involved in order to maintain enough statistical power.

Qualitative MI Survey Data

Almost all students completing the post-activity MI survey filled out all the free-response spaces, even though it was not mandatory. The two questions asked students to explain what went well in the activity and what improvements can be made in the future. Dentistry and APRN students interpreted the questions slightly differently, which is why their answers were categorized in different ways.

Post MI Feedback—APRN students: (Appendix R) APRN students appeared to enjoy the experience, especially when interacting with dentistry students and when students were able to practice applying fluoride varnish on patients. They stated that they were able to utilize MI in practice and felt patients responded well. Students stated that the PowerPoint presentation was a helpful tool. A handful of students thought they would have been able to utilize MI better during their patient interaction if the dentistry students they were with were able to watch the PowerPoint ahead of time. Because the PowerPoint was not mandatory for dentistry students for this project, it was difficult to enforce this aspect at the time.

The main critique regarding the IPE experience was that there was not enough time to have hands-on experience in the clinic and APRN students wished for more time. Several students recommended discarding the seminar portion for APRN students. Several students also found that it would be easier for them if dentistry students were informed of their upcoming interaction with APRN students, as well as better preparation regarding MI. Some students recommended that the pediatric dentistry clinic staff should improve time management in clinic so that APRN students would not have a lot of downtime.

APRN Students Summary (From Appendix R)	
What went well	**What we can improve**
IPE Experience • *Great overall experience for most NP students.* • *NP students felt when they interacted with DDS students, they were able to make a difference.* • *NP students who had a chance to apply fluoride varnish found it to be a great experience.* • *Interaction with staff and students at UOP was positive for most NP students.*	IPE Experience • *Have more IPE events and/or increase the length of time in clinic for this activity.* • *NP students expressed desire to have more opportunities regarding hands on fluoride varnish application.* • *Decrease time in seminar or take it away altogether.*
Motivational Interviewing: • *NP students felt that they were able to utilize MI techniques and had positive responses from patients.*	Motivational Interviewing: • *Focus on work on MI techniques with DDS students.*
PowerPoint feedback: • *NP students found the information in the PPT helpful and useful in practice.* • *It was helpful when DDS students watched the PPT prior to the clinical experience as well.*	*NP Student preparations* • *More organization for NPs once at UOP clinic, i.e. what to do during down time, allow for more hands-on activities, rather than just observation, make seminar easier for NP to follow.* • *Condense paperwork for NP students.*
	UOP Preparations • *Have DDS students be more prepared for the interaction regarding MI.* • *Prepare DDS students for IPE experience regarding notification of their work with NP students and educate them on NP role in community prior to IPE.* • *Prepare UOP staff and students for NP arrival and re: case presentations.* • *Some NP students felt staff were not welcoming.*

Post MI Feedback—Dentistry students: (Appendix S) Dentistry students seemed to have interpreted the question about what went well more individually: they interpreted it as what went well for each of them when utilizing MI with patients, rather than what went well with the program. The following are the most common themed categories:

Students stated that they thought the IPE experience itself went well, that they learned from it, and appreciated observing NPs (APRNs) using MI skills in practice, as well as hearing

feedback from NPs. In their personal experience students reported having more confidence in conducting patient interviews and teaching, allowing them to make their patient interaction into a positive experience. Some students described the particular skills they learned and how their interviews with patients were now different as a result of learning MI through this activity. Overall, students felt the PowerPoint and the Cheat Sheet were helpful tools.

Despite the MI PowerPoint and the entire IPE experience being fairly short in duration, dentistry students stated that they would like to have more experiences like this. They enjoyed working with NPs, and many students want more activities involving the use of MI in practice and suggested that it should possibly be in the form of a seminar or lecture with clear expectations. Unfortunately, some students were not aware of the PowerPoint module, as it was not a requirement for dentistry students this year. They suggested making students more aware and to remind students to view the PowerPoint prior to coming to clinic. Overall, students did not critique the Cheat Sheet, and even suggested that it be laminated for reference in clinic. Students also wrote down their own personal critique about their use of MI, which can be seen in Appendix S.

Dentistry Student Feedback Summary (From Appendix S)	
What Went Well	**What we can improve**
IPE Experience • DDS students felt they learned from NP during the experience. • DDS students appreciated the feedback given by NPs. • DDS students enjoyed observing NPs demonstrating the use MI in practice.	Improvements within the IPE Experience: • DDS students would like to work more with NPs. • Do practice runs and have more feedback regarding DDS students' use of MI in practice. • DDS students want more of an organized activity, such as lecture or seminar. • Some students weren't aware of this activity.
DDS Students' Personal Experience w/ MI • Interview for DDS students went better than usual/expected while using MI tools. • DDS students felt more comfortable, competent after being given the MI tools to work with patients. • DDS students more open to listening to the patient, parent and their concerns. • DDS students were able to make the interview into a positive experience. • DDS students gained confidence in conducting interviews.	Improvements for MI: • Students would like to learn more about MI and be able to apply MI skills in practice. • Make it a live lecture or seminar or in main clinic with more organization, rather than an optional activity. • Make activity and all expectations clear. • Give more examples and activities to practice.
PowerPoint feedback: • Easy to follow, applicable, helpful, useful. • Clear concepts and tools within PPT.	PowerPoint feedback: • Ask students to do PPT prior to clinic activity where they can apply the skills. • Do a live lecture instead of PPT.
Cheatsheet feedback: • Very useful tool	Cheatsheet feedback: • Have a laminated cheat sheet for in clinic use.

RIPLS Survey Results:

The RIPLS survey also had a five-point Likert scale, with the same values assigned to it ("Strongly Agree" was identified as 1, and "Strongly Disagree" was identified as 5). The survey had five sub-categories: Teamwork/Collaboration, Negative Identity, Positive Identity, and Skills. The results were consolidated into the subcategories, by averaging the scores within each subcategory. The T-test was used to compare the various pre- and post- activity results, using a significance level of 0.05. Results can be viewed in Appendix Q.

APRN Students: The results showed that in the "Teamwork/Collaboration" sub-category, there was no significant change in attitudes before (average: 1.117, s.d. 0.05) and after (average: 1.111, s.d. 0.07) the activity (p=0.876). Students were more likely to "Agree," or "Strongly Agree" that teamwork/collaboration are an important aspect in healthcare.

"Negative Identity" category also showed no significant difference among APRN students before and after the activity (p=0.148). Most students "Disagreed" or "Strongly Disagreed" that IPE was a waste of time. The averages were 4.694 (s.d. 0.11) and 4.463 (s.d. (0.06) before and after the activity.

"Positive Identity" subcategory had almost identical averages of 1.345 (s.d. 0.11) and 1.375 (s.d. 0.20), which showed no statistical significance (p=0.810), and also showed that students were willing to work with other health professionals.

The "Roles" subcategory showed more ambivalence among APRN students after the activity, with averages starting at 2.857 (s.d. 1.46) and ending at 3.226 (s.d.1.72), although the change was not statistically significant (p=0.194). Finally, APRN students felt more confident with the skills they learned during the activity compared with prior to the activity. Averages were 3.095 (s.d. 0.18) and 1.917 (s.d. 0.04), respectively (p<0.001).

RIPLS: APRN Students

	Avg Pre-	s.d. (Pre-)	Avg Post-	s.d. (Post)	p-value
Teamwork/Collaboration	1.117	0.05	1.111	0.07	0.876
Negative Identity	4.694	0.11	4.463	0.06	0.148
Positive Identity	1.345	0.11	1.375	0.20	0.810
Roles	2.857	1.46	3.226	1.72	0.194
Skills	3.095	0.18	1.917	0.04	0.000

Dentistry Students: Similar to APRN students, dentistry students felt similarly within each category. "Teamwork/Collaboration" category showed no significant difference before and

after the activity (p=0.573), with averages being almost identical, 1.473 (s.d. 0.10) and 1.444 (s.d. 0.10).

The "Negative Identity" category suggested that students were leaning more toward disagreeing that IPE was a waste of time, but again, there was no significant difference before and after the activity (p=0.873), with averages: 3.741 (s.d. 1.73) and 3.770 (s.d. 0.19).

"Positive Identity" category showed that dentistry students were as equally willing to work with other healthcare professionals before and after (p=0.281) and averages showing 1.694 (s.d. 0.13) and 1.595 (s.d. 0.05).

"Roles" category had no significant difference before and after the activity (p=0.604), with averages at 2.716 (s.d. 1.04) and 2.828 (s.d. 0.00). Finally,

"Skills" did show a significant difference before and after, where students scored higher confidence in their skills (p=0.011), with averages 2.048 (s.d. 1.04) and 1.560 (s.d. 0.23). The tables with all the listed values can be viewed in Appendix S.

RIPLS: Dentistry Students

	Avg Pre-	s.d. (Pre-)	Avg Post-	s.d. (Post)	p-value
Teamwork/Collaboration	1.473	0.10	1.444	0.10	0.573
Negative Identity	3.741	1.73	3.770	0.19	0.873
Positive Identity	1.694	0.13	1.595	0.05	0.281
Roles	2.716	1.04	2.828	0.00	0.604
Skills	2.048	0.54	1.560	0.23	0.011

Discussion

Summary

In MI evaluations, APRNs generally showed higher agreement (lower averages) in pre- and post- MI evaluation than did dentistry students. One hypothesis is that APRNs have

previously been exposed to MI through schooling for their Registered Nurse degree or through their work.

Question 1 showed lower averages (higher agreement), for APRNs compared with dentistry students in pre- and post-evaluations. Questions 2 through 6 showed similar trends, all with statistically significant differences. Questions 7 and 8 were intended to have higher averages, since initially the correct answer was "Disagree" or "Strongly Disagree." APRN students were able to pick this up slightly better than dentistry students. However, it became clear after looking at the results that Questions 7 and 8 could have been construed in different ways, depending on the context in which they were read. The purpose of question 7 was to see if students understood one of the main components of MI: listening to the patient and hearing his opinion. This question was possibly interpreted differently by various students since on one hand healthcare students were taught to provide information to the patient to improve his health literacy. Students were also taught time management, in which the healthcare provider would take the lead during the appointment in order to keep the appointment on track. For this reason, students may have wanted to agree with the statement in Question 7. However, solely in the context of MI, the reader may tend to disagree with the statement. Question 8 had a similar dilemma, where in the context of MI it would be wrong for the provider to give out "a lot" of education and information. However, as an APRN or an RN, the same act would be thought of as appropriate since the professions center around patient teaching. For this reason, it would help to restate these questions using different wording in the future or to take them out altogether. It may be even more beneficial to find resources and to be able to utilize standardized MI grading systems, or to find a way to incorporate it into the current MI assessment tool.

Both sets of students reported having worked well together, and some reported enjoying the experience. Although all but one of the RIPLS assessments did not show statistically significant change in either of the student groups, the results could be due to the fact that APRNs have already worked collaboratively in their professional and academic careers, and therefore, initially ranked all categories highly. Almost all APRNs did indicate that they have participated in IPE prior to this experience. However, the same cannot be said for dentistry students since most of them indicated that they have not participated in an IPE in the past. One hypothesis on that topic could be that due to an increase in IPE education nationwide, students were more receptive to Interprofessional collaboration, as well as to education, therefore scoring highly in pre- and post- RIPLS evaluations. The only category that showed statistical significance was the "Skills" subcategory, which showed that both APRN and dentistry students felt they improved their skills at the end of the activity.

The qualitative feedback from both sets of students appeared to be favorable for the activity. Even the feedback about improvements for next year was about either more similar opportunities or altering the MI teaching to make it into a more interactive experience.

A detailed explanation of the objectives and goals that were set for this project can be found in Appendix U. The main objectives of this project regarding learning and utilization of MI skills were fulfilled, also shown by the post-activity feedback and by the statistically significant differences in pre- and post- activity assessments. The three (PICOT) questions (in the subsection "*Communication at UoP and USF"*) that were posed at the beginning of the project can also be answered at this time. The answer to Question 1 is "yes," the MI training and peer learning appeared to improve the students' MI techniques as evidenced by the statistically significant difference in Question 4 of the MI survey. The students reported actually utilizing MI

in their practice more after the intervention. The answer to PICOT Question 2 is "yes" as well, in that the MI training did increase the confidence of both APRN and dentistry students after the training compared to before. This was evidenced by the results of Question 5 in the MI survey, as well as extensively in the free-response section of the MI survey. And finally, the answer to PICOT Question 3 is "unclear," as the RIPLS scores were not all statistically significant in all areas, although student responses suggested that they valued aspects of IPE highly in the pre-activity surveys, which nullified any significant difference in the post- activity scores.

Interpretation

The main goal of the IPE was to educate about and teach how to use MI in practice to APRN and dentistry students at USF and UoP. Based on the results and feedback it appears that students were able to fulfill the main objective.

Overall, the activity was well received by students and faculty. Although numerical results, such as for RIPLS, did not all support that this experience had an effect on students' perceptions of working with other health professionals. The qualitative responses, however, did suggest that students supported this activity and indicated that they would like to have more. Many of the students wrote down what they learned from the experience, especially about MI. They stated that as a result of the activity they were able to improve their patient interaction experience. It can be said with certainty that this interaction did fulfill the learning objectives. It can also be said that not only did students find the short MI presentation helpful, but they asked for similar, more interactive activities in the future.

This project had a strong foundation, as it was built on years of fostering relationships between the students, faculty, and administrators between the two schools. As stated previously, this project was previously led by two other project managers (Dr. Sulit and Dr. Creasman) two

years prior and it is a great example of a DNP project that was developed as a result of succession planning. In other words, this project was completed by one APRN student in the first year, and then passed on to the next student to continue the work, but also to fix or add new material to improve what has already been done. This type of project provides a unique set-up, as well as an excellent learning opportunity for the students to fulfill their professional competencies, and a wonderful way for the schools to fulfill their IPE requirements. The current plan is that this project will continue to grow and to find new and interesting ways for students to learn.

Suggestions for this project in the upcoming year would be to expand on the MI techniques. Many students, especially dentistry students, indicated their desire for practical application and more in-person practice. It would be helpful to students to be able to do role playing with each other. One such activity is a simulated patient visit, in which the patient is an actor, a student, or faculty member. APRN students at USF have an entire class, Advanced Physical Assessment, where students act as providers in a simulated case, with patient-actors. At the end of the visit, the patient-actor gives feedback to the student about how he or she did. It may be beneficial for the two sets of students to participate in joint case simulations, which can also allow dentistry students to see what APRN students do.

Also, based on student feedback it may be valuable to improve the Cheat Sheet next year. Although majority of students either did not utilize it or utilized less than half of the time, dentistry students indicated that they would like to have it around as a permanent staple in their clinic. The students did not, however, describe how to improve it beyond simply laminating it. The cheatsheet may be of use to individuals who have had limited exposure to MI and who may need examples to learn how to put MI into action. The Cheat Sheet provided students with

examples of how to phrase their common interviewing questions in MI style. Further literature search may be required to make the Cheat Sheet user friendly.

It was also quite difficult to ensure which students were supposed to fill out which assessment forms, which is why in the future, it would be great to find a way to post them to students online and find a way to allow them to turn them in anonymously.

Limitations

One of the major limitations in this project was time constraint. The current project manager was assigned the project only four months prior to the start of the project's execution date. Responsibilities of the project manager included researching, designing, coordinating and getting the project approved by USF and UoP faculty. In the future it would be beneficial to get the new project manager involved at an earlier time to allow for a smooth handover between project managers and stake holders, especially since the project is expected to continue in a similar timeframe. The overlap between project managers would allow for the new project manager to familiarize with the workings of the project and to get to know faculty involved, as well as to what needs to be done to set up the project.

Another major limitation within the project occurred during the data-collecting portion, which occurred at the start of each rotation and during the Friday seminars. At the school of dentistry, one staff or faculty member would pass out the pre-participation surveys at the start of the rotation, while a different faculty or staff member would pass them out and collect them at the Friday seminar. This was considered as a loss to follow up. The pre-participation surveys that were affected pertained only to the dentistry students, while both the dentistry and APRN students' post-participation surveys revealed issues. One of the issues was that during several rotations, only a handful of dentistry students filled out their surveys for the pre-participation

survey, while almost all students undergoing the pediatric rotation filled out the post-participation surveys. The project manager was not notified in a timely manner about the option not to take the pre-participation survey and therefore the project manager did not design the survey to show if the dentistry students had previously completed the survey or the MI training. Although the project manager wrote out instructions for each seminar, it was also difficult to enforce that the instructions be followed since the project manager could not be present at each of the 12 seminars. However, the project manager did have frequent meetings with UoP faculty coordinator to go over any information that needed to be passed on to other staff or faculty regarding the project.

Additionally, it is unknown how many surveys were lost or misplaced. At the end of the rotations, there were fewer surveys returned that were filled out by APRN students than there were students. During debriefing, all students stated they filled out the surveys at the seminar and turned them in. Unfortunately, it was difficult to find out which surveys got lost and how. In the future these issues can be mitigated by making this curriculum mandatory for both schools and to post the surveys online in a way that would maintain confidentiality, but also accountability.

There were several limitations with RIPLS surveys. One limitation suggests the possibility that students may not have read the questions properly prior to answering, thereby skewing the average. Several students mentioned in the qualitative feedback that they felt they had too much paperwork, which suggests that students may not feel inclined to pay as much attention to the wording in the evaluation. Also, one of the parts within RIPLS has to be negatively scored, which can be easily missed as well. Another point that would also explain why initial scores especially among APRN students were high could be that all the APRN students have previously had worked as RNs. Working as RNs exposes the individual to

multidisciplinary, interprofessional work, while managing patients, thereby allowing them to understand the value of IPE. All APRN students and some of the dentistry students have also indicated that they have previously participated in IPE activities.

As previously mentioned in the SWOT analysis, the project time requirements may have interfered with the APRN's work schedule due to the inflexibility of this required session. However, the students were given adequate notice of this possibility and they were given the ability to schedule out as far as five months in advance in case they needed extra time to sort out their work schedules.

Due to the lack of requirements on the part of UoP this year, it was difficult to enforce compliance with the curriculum of this project. Namely, dentistry students were not required to do the MI module training or the pre-activity surveys. However, changes in curriculum are already underway to make this activity a requirement in future years.

Per faculty, the students at UoP have an extremely rigorous three-year-schedule. Normally dental education takes four years, but UoP has been able to condense it to three years, therefore there was less opportunity to make changes to dentistry student schedules, or to impose additional off campus requirements on them. One example was to extend the IPE to allow dentistry students to visit APRN students at USF to participate in nursing educational activities and be exposed to the MI patient interaction. At USF, students participate in biweekly case simulation activities, and in the future, it may be beneficial to provide dentistry simulation cases pertaining to APRNs and further collaboration between the two schools at USF.

Another limitation that pertains specifically to pediatric dentistry is that there has been very limited amount of research of MI in pediatric dentistry. During a search in CINAHL Complete, as well as the UCLA Online Library Database through ProQuest, only two studies

were found that were related to MI in pediatric dentistry and one in adolescent dentistry. The studies found were published over ten years ago.

Conclusions

Improved communication skills among healthcare providers may help curb the rise of ECC in the US. After all, dentistry students reported having been given tools to interact with patients in situations they previously deemed difficult. The students found that they had a better handle on the situation regarding their patient, but also, they felt they learned more when they interacted with APRNs. Similarly, when working with dentistry students APRNs felt that they learned oral health techniques very well from dentistry students. After the activity, students wrote what they enjoyed about the experience, as well as what else they would like to see in the future. It appears that this activity had major benefits for each of the sets of students and may be a great new symbiotic relationship between healthcare professionals and students.

There have been many studies addressing IPE between various health professionals, but few looked at dentists and APRNs in particular. None of them sought to teach interpersonal communication, such as MI, which could be just as important to a clinician, as learning how to fix a cavity. A clinician can use MI to prevent cavities, thereby improving the patient's quality of life and saving cost. Future projects may want to look into not only improving the current project, but also to look to begin similar projects in other schools to help patients in areas with less access to pediatric dental care.

Next steps for this project may include an expansion to current MI curriculum that was built during this project. It may be beneficial to work with the curriculum committee at UoP to build a more substantial course or series of seminars to address interpersonal communication and to allow students to practice with each other or with faculty members as their patients. USF

could have a similar class, possibly during or before students take Advanced Health Assessment or even join the dentistry students in their interpersonal communication seminars. Furthermore, the IPE should be re-evaluated based on the RIPLS scores from the surveys, specifically in the "Roles" questions. The results indicated that students did not gain a better understanding of each other's roles, which may be worth investigating further.

Other Information

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Appendices
Appendix A: Evidence Guide

Johns Hopkins Nursing Evidence-Based Practice
Appendix D: Evidence Level and Quality Guide

<table>
<tr><th>Evidence Levels</th><th>Quality Ratings</th></tr>
<tr><td>Level I
Experimental study, randomized controlled trial (RCT)
Explanatory mixed method design that includes only a level I quaNtitative study
Systematic review of RCTs, with or without meta-analysis</td><td>QuaNtitative Studies
A <u>High quality:</u> Consistent, generalizable results; sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence.
B <u>Good quality:</u> Reasonably consistent results; sufficient sample size for the study design; some control, fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence.
C <u>Low quality or major flaws:</u> Little evidence with inconsistent results; insufficient sample size for the study design; conclusions cannot be drawn.</td></tr>
<tr><td>Level II
Quasi-experimental study
Explanatory mixed method design that includes only a level II quaNtitative study
Systematic review of a combination of RCTs and quasi-experimental studies, or quasi-experimental studies only, with or without meta-analysis</td><td rowspan="2"></td></tr>
<tr><td>Level III
Nonexperimental study
Systematic review of a combination of RCTs, quasi-experimental and nonexperimental studies, or nonexperimental studies only, with or without meta-analysis
Exploratory, convergent, or multiphasic mixed methods studies
Explanatory mixed method design that includes only a level III quaNtitative study
QuaLitative study
Meta-synthesis</td></tr>
</table>

Appendix B:
Evidence Synthesis

Study	Study Design	Sample	Outcome	Strength/ Quality
American Academy of Pediatric Dentistry (2008)	Systematic Review	Evidence was collected about significance of childhood cavities and why pediatric primary health providers should be involved in providing basic oral health exams and recommendations.	Recommendations were made based on evidence to support the new guidelines regarding nutrition, fluoride, anticipatory and preventive recommedations, establishing a dental home.	IIIA
American Academy of Pediatric Dentistry: Clinical Affairs Committee—Infant Oral Health Subcommittee (2016)	Systematic Review	Evidence was collected about significance of childhood cavities and why pediatric primary health providers should be involved in providing basic oral health exams and recommendations.	Recommendations were made based on evidence to support the new guidelines regarding nutrition, fluoride, anticipatory and preventive recommedations, establishing a dental home.	IIIA
Bentley, M., Stirling, C., Robinson, A. & Minstrell M. (2016)	Systematic Review	10 studies with >900 NPs	Statistically significant ($p<0.05$) NPs have higher patient satisfaction	IIIA
Berry (2009)	Quasi-experimental	Verbal transcripts of 53 NPs were transcribed and analyzed during their patient interaction to analyze the type of communication NPs utilize with patients	All NPs used information givint and seeking 16 NPs used patient-centerered communication; 37 used provider-centered communication; 37 NPs used partnership building, but infrequently; Majority of NPs did not use patient-centered communication style	IIB

Charlton, C.R., Dearing, K.S., Berry, J.A., & Johnson, M.J. (2008)	Systematic Review	7 articles were evaluated for NP communication styles: biomedical vs. biopsychosocial; evaluation criteia used: approval rating scale, adherance scale, improved health scale	Results of five of the articles showed a positive association between using biopsychosocial (BPS) style and increased patient satisfaction; two studies did not show this. Two articles showed positive association between adherance and BPS style. Four articles showed positive associtionbetween improved health and BPS. No articles evaluated negative outcomes.	IIB
Golinveaux, J., Gerbert, B., Cheng, J., Duderstadt, K., Alkon, A., Mullen, S., Lin, B., Miller, A., & Zhan, L. (May 2013)	Experimental Study	31 APRN students	Significant improvement of oral health knowledge ($p<0.001$). 85% of students answered eight post-activity questions correctly. 100% of students answered questions regarding reimbursement, non-dental health care correctly, compared with 63% pre-activity. Between 33 and 57% of participants answered questions regarding systemic effect of fluoride, its use in children under 3 yrs, age of child's first dental visit and remineralization of early carious lesions correctly.	IB

Ismail, A.I., Ondersma, S., Willem Jedele, J.M., Little, R.J., & Lepkowski, J.M. (2011).	Experimental Study	N=1021 randomly selected children, 0-5 yrs. Over five years and three sets of waves, children and caregiveres were divided into two groups: one watched a DVD about carries prevention, while the other watched the DVD and had MI style counseling.	At 6 mo f/u, the MI group were more likely continuing with learned behaviors. A 2 years, the MI group was still more likely to continue with preventive behaviors, but less than in the past, compared to the DVD only group.	IB
Johansson, A. Johannsen, G., Uhlin, L., & Johannsen, A. (2014)	Randomized trial	10 students total, 5 in each group	Statistically significant ($p<0.05$) Hygenist students learned and retained Motivational interviewing skills better in a peer-learning environment	IC
Laurant, M., Reeves, D., Hermens, R., Braspenning, J., Grol, R, & Sibbald, B. (2005)	Systematic Review	16 studies were reviewed to see if outcome differences exist between APRNs and MDs	No significant differences were found in patient outcomes, cost, or process of care.	IIIA
Mahat, G., Lyons, R., & Bowen, F. (2014)	Meta-Synthesis	Recommendations for addressing Early Childhood Carries, especially in low income population	Pediatric Nurse Practitioners would be perfect candidates to fill the gap in providing early child oral exams and recommendations.	IIIC

Makoul, G. & Curry, R.H. (2007)	Meta-Synthesis	A synthesis of evidence of various studies about how various communication scores affect the practitioner's number of complaints against them by patients.	In Canada, 2 SD decrease in communication score associated with approximately 1 additional retained complaint per 100 practice-years. Low communication scores were associated wth higher patient complaints to medical regulatory boards.	IIIB
Miller, W. R., & Rose, G. S. (2009)	Systematic Review of mixed methodology studies	Synthesis of evidence and history of Motivational Interviewing.	In one study, therapist empathy helped predict 2/3 of variance in patient's drinking at 6 mo ($p<0.001$). At 12 and 24 mo, therapist empathy accounted for 1/2 of patient behavior variance. In another study, MI showed two times amount of abstinence in alocholics than when MI was not used. Multiple other studies around the world also showed MI's positive effect in substance abuse. Several studies found that MI did not show improvement in all populations, including some studies with smoking, eating disorders.	IIB

Mofidi, M., Rozier, R. G., & King, R. S. (2002)	Qualitative Study	Study participants included parents of pediatric dentistry patients in North Carolina, belonging to one of four major ethnic groups, insured under Medicaid, who lived in an ethnically diverse area, who sought dental care in the past year (N=77). Surveys were open ended questions about their experience.	Several themes were identified that explored difficulties for getting dental care. The difficulties were as follows: Difficulty in finding a provider and in scheduling an appointment, inconvenient and unreliable transportation, excessive wait times, demeaning interactions with front-office staff, negativ einteractions with dentists, racial/ethnic barriers, consequences associated with the appointments, such as missing school or work or finding a caregiver for the child.	IIIA
National Institute of Dental and Craniofacial Research (2014)	Descriptive Analysis	National Report regarding prevalence of Dental Caries by age and severity. Most data collected between 1999-2004	42% prevalance of childhood caries in children 2-11 years old. 23% of children of the same age have untreated caries in primary teeth.	IIIB
Newhouse, R.P., Stanik-Hutt, J., White, K.M., Johantgen, M., Bass, E.B. (2011)	Systematic Review	Systematic Review of US RTCs (N=69), observational studies (N=49) between 1990 and 2008, which report patient outcomes in working with APRNs and MDs. 28 different areas were compared.	The evidence from the studies suggest quality of care by APRNs was at least equally as good as that provided by MDs, if not better in some cases.	IA

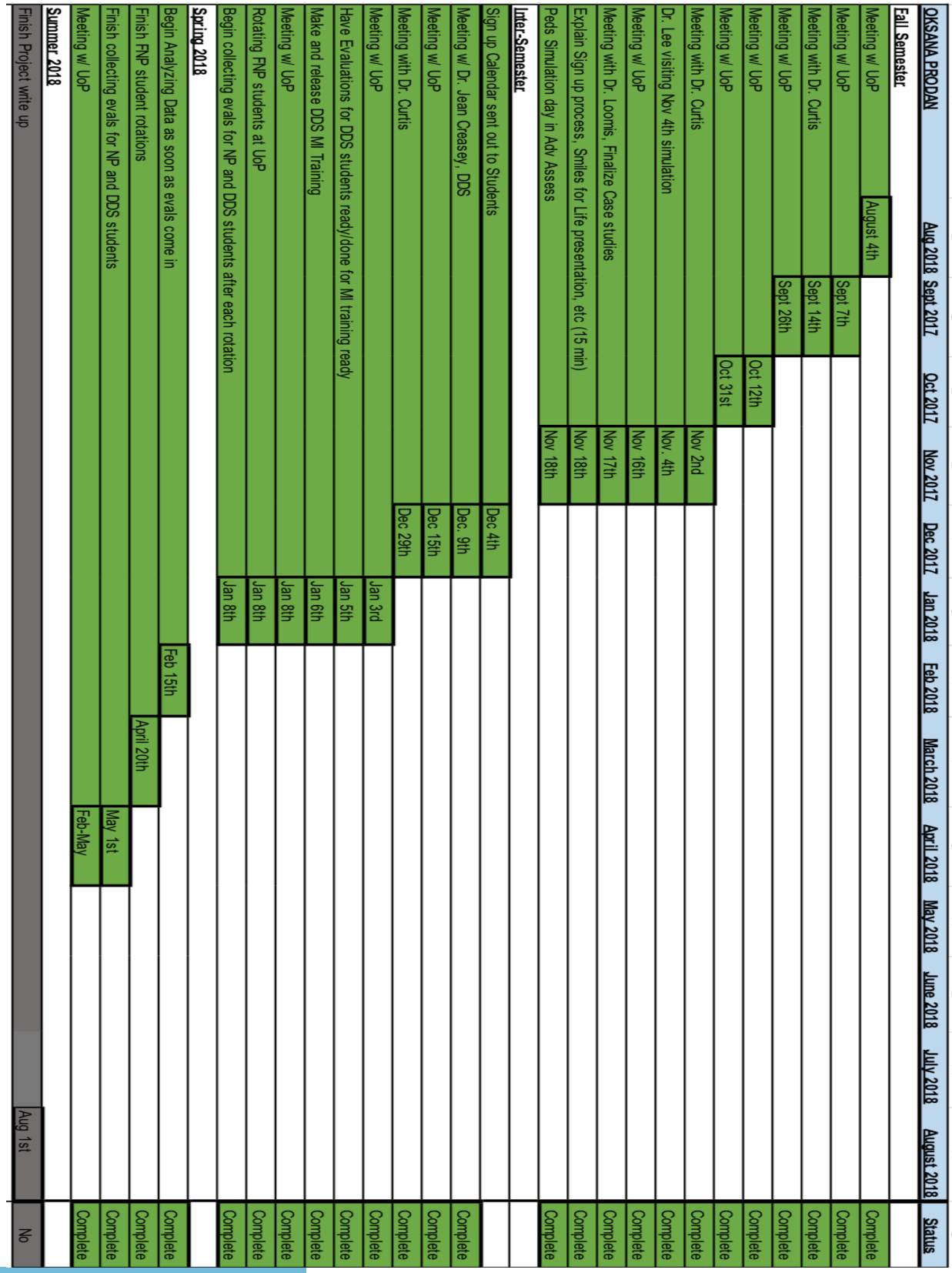
Rubak, S., Sandbæk, A., Lauritzen, T., & Christensen, B. (April 1, 2005).	Meta Analysis	72 randomized controlled trials	Motivational interviewing outperforms traditional style of patient teaching	IB
Sbaraini, A., Carter, S.M., Evans, R.W., & Blinkhorn, A. (2012)	Qualitative Study	N=17 patients interviewed about their experience and values when visiting a dentist in Australia	All patients valued having a supportive, dedicated, caring, dentists, who does not "blame" and who utilizes preventive treatments when possible.	IIIA
Threlfall, A.G., Hunt, C.M., Milsom, K.M., Ticle, M., & Blinkhorn, A.S. (2007)	Qualitative	93 dentsits were interviewed to assess what in their practice may influence them providing peventive teaching to their patients	Most dentists were found to povide most of preventive teaching to patients who already have caries; most dentists were more likely to spend more time with patients from middle class, rather than lower class. Time was a limiting factor in dentsists' ability to provide adequate teaching to low income patiens.	IIIA
UCSF Center to Address Disparities in Children's Oral Health (2011)	Exploratry	Report by UCSF about how and why cavities occur in children, especially with disparities, and explains what the university is doing to combat that.	Finding reports point to a lack of knowledge in the community, especially in people with disparities, as the main cause for cavities. Some of those causes include not understanding that giving a bottle with milk or juice to a child at bedtime or drinking bottled vs. tap water can contribute to dental caries.	IIIC
Weinstein, P., Harrison, R., & Benton, T. (2004)	Randomized clinical trial	240 healthy infants 6-18 mo	MI counseling in pediatric dentistry has better caries outcomes than traditional effect (P<.01)	IB

Wu, L., Gao, X., Lo, E.C.M., Ho, S.M.Y., McGrath, C., Wong, M.C.M. (2017).	Randomized clinical trial	N=512 adolescents with poor dental health, split into three intervention groups. All three were exposed to patient teaching about dental halth. Group I had traditional style counseling, Group II had MI style counseling, Group III had MI and an interactive dental caries risk assessment.	Groups II and III had statistically significantly higher reduction of snacking frequency (CI: 7.12[1.80-28.16] and 11.17[2.90-42.98] compared with Group I. Groups II and III also had significantly increased their tooth brushing habits at 12 months after the intervention 5.26[2.28-12.6] and 11.45[4.99-26.26].	IA
Yoshida, T., Milgrom, P.L., & Coldwell, S.E. (2002)	Non-experimental Study	Dentistry schools across US and Canada were surveyed regarding their interpersonal communication education. N=40 schools responded.	1/3 of schools offered interpersonal communication courses; more than 1/2 of schools offered communication courses in the first two years; most common topics in communication courses were communicaton skills, patient interviewing, patient education and consultation; most frequent teaching method was lectures, with written exam as the primary form of evaluation; 1/2 communication instructors were not dentsits, but psychologists.	IIIB

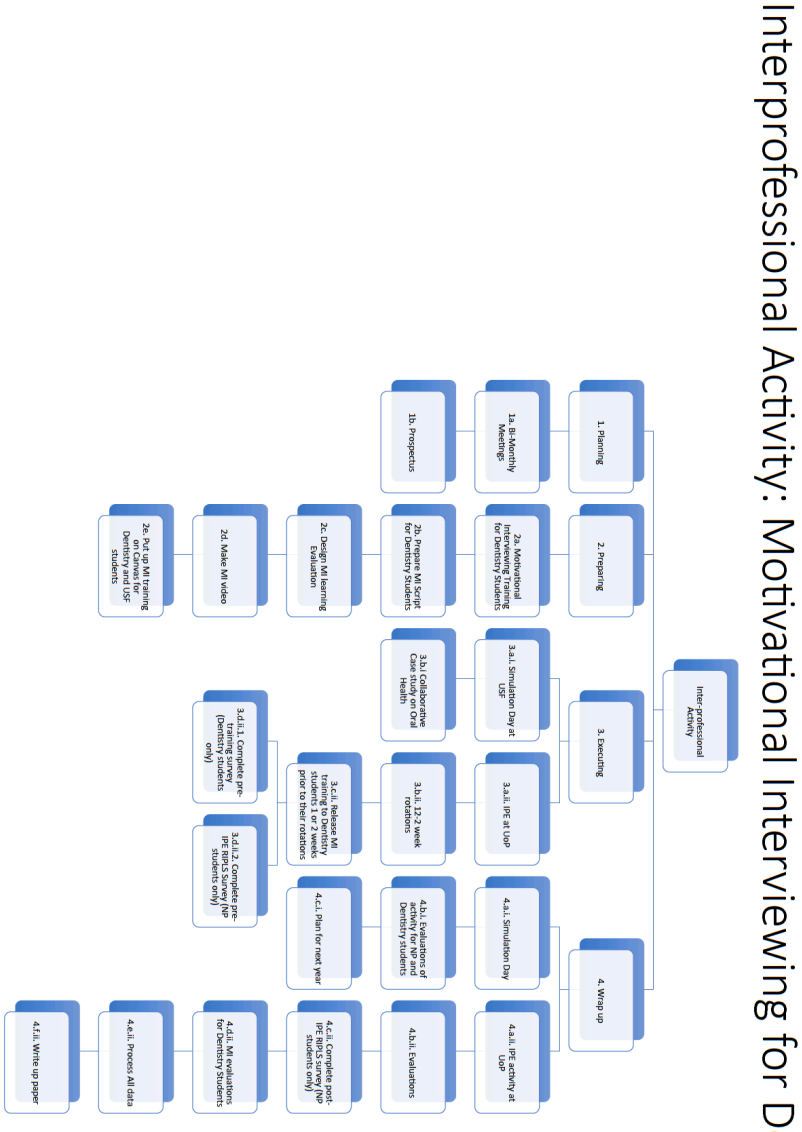
Appendix C:
GAP Analysis

Learning Outcome	Describe Current State	Describe Desired States	Educational Plan to Address Gap
Educate Dentistry and APRN students on techniques of Motivational Interviewing (MI) and help them utilize it in practice.	Currently, dentistry students do not get trained in MI beyond a lunchtime seminar, yet dentistry students and faculty not familiar with the application of the concept in practice. APRN students have online assignment to learn about MI-related communication.	Provide training and tools for dentistry and APRN students to be able to know and apply the skills of MI.	Design the appropriate module for APRN and dentistry students that meets their educational needs.
Use an MI assessment tool to evaluate effectiveness and usefulness of MI training.	No subjective MI evaluation tool exists. The current available tools, such as the Motivational Interviewing Treatment Integrity tool requires a continuous observation of the individual for a certain period of time. There are approximately 150 dentistry students and 22 APRN students undergoing the pediatric rotation over a 12 week period.	Have an assessmnet tool to be able to assess MI training on a large scale.	Design a tool to evaluate MI training and students' likelihood to utilize the training in their practice.

Appendix D:
GANTT Chart



Appendix E:
Work Breakdown Structure



Appendix F:
Communication Matrix

COMMUNICATIONS MATRIX	
IPE Project Name:	Interprofessional Activity: Motivational Interviewing in Pediatric Dentistry
Institutions:	University of San Francisco, University of the Pacific School of Dentistry
Project Manager:	Oksana Prodan
Project Team:	Dr. Alexa Curtis (chair), Dr. Jo Loomis (Committee), Dr. David Lee (UoP Faculty)
Project Description:	Designing and implementing Motivational Interviewing modules and evaluation to dentistry students

Communication Vehicle	Target Audience	Description/Purpose	Frequency	Owner	Distribution Vehicle	Internal/Extnernal?
USF-UoP Meetings	UoP	Brainstorming project ideas and organization	Every 2-3 weeks	Oksana Prodan	Face-to-face	External
Meeting Minutes	Project Team	Communicates information from meetings	Within 3-5 days of meeting	Oksana Prodan	Email	Internal/External
Project Development Updates	Dr. Alexa Curtis	Communicates updates and seeks consultation	Monthly	Oksana Prodan	Email, Phone	Internal/External
Sign up Organization, Process	Project Team, NP students, UoP	Communicates timeline, as well as what is expected of students	Once and as needed	Oksana Prodan	Email, Face-to-Face	Internal/External

Appendix G:
SWOT Analysis

Strengths	**Weaknesses**
•Fulfills Core Competencies for Interprofessional Collaborative Practice **• Fairly Low-Cost** **•Continues relationship between USF and UoP** **•Pediatric Clinical Hours for NP Students**	**•Short time to plan** **•Students may have to miss work to do** **•Little flexibility in scheduling** **•Limited research on MI in Pediatric dentistry**
Opportunities	**Threats**
•Improving relationship between universities •Normalizing collaboration between providers •NP students gain knowledge about pediatric dentistry •Dentistry students gain knowledge on MI •Develop evaluation tool for MI training	•Dependent on administrator approval •Time constraint •No MI evaluation tool available •No condensed MI training for students •Large NP cohort with limited spots at the School of Dentistry

Appendix H:
Project Budget

Project Budget Form

Project Name:	Interprofessional Activity: Motivational Interviewing in Pediatric Dentistry
Projecte Manager:	Oksana Prodan

1. Proejct Design	Labor Hours	Labor Cost per hour	Material	Other Cost	Total Cost per Task
1 Manager's Project Planning Hours	135	$62	$0	$0	$8,370
1.2 Travel Time	10	$750	$0	$0	$760
1.3 Materials	0	$0	$75	$0	$75
1.4 Faculty Meetings	40	$100	$0	$0	$4,000
Subtotal:					**$13,205**

*Project Manager Salary: 62/hr

Appendix I:
Return on Investment

Average Rate of Carries in Children in San Francisco in 2008 *	29%	
Children under 5 yrs in San Francisco (Bay Area Census 2010)	35,203	
Number of Children in the SF with cavities=	0.29 x 35,203=	**9,857**
Average decayed primary teeth per child 2-11	1.6 (low range)**	3.6 (high range)**
Total Number of cavities in children in SF (range)	9,857 x 1.6 = **15,771**	9,857 x 3.6 = **35,485**

Item	Midpoint Value	High Value
Fluoride application	$40***	$90***
Restorative Treatment per filling	237***	$365***
Total Recommended Well visits 1-5 yrs (per AAP)	**8**	
Total annual cost of Fluoride application at all the Well Child Visits for children 1-5 years, PER CHILD	8 x $40 = **$320**	8 x $90 = **$720**
Total annual cost of Fluorde application in ALL SF children over 5 years	$320 x 35,203 = **$11,264,960**	$720x 35,203 = **$25,346,160**

Cavity repair cost range (without anesthesia):	total # cavities (midpoint range) x cost of repair (midpoint range):	total # cavities (high range) x cost of repair (high range):
Yearly cost	$237 x 15,771= **$3,737,727**	$365 x 35,485 = **$12,952,025**
Cost over 5 years	**$18,688,635**	**$64,760,125**

Cost of this project per year:	$13,205
Cost over 5 years	**$66,025**

Summary:

Range of total annual cost of repair for all cavities in children 1-5 years over 5 years	$18,688,635.00	$64,760,125
Total annual cost of fluoride application at every well visit in children 1- 5 yrs over 5 years	$11,264,960	$25,346,160
Difference:	**$7,423,675.00**	**$39,413,965**

Savings if this project is implemented over 5 years	**$7,357,650.00**	**$39,347,940**

S.A., Elam, D., Miller, C.E., Sit, C., Patel, P., Hilton, I.V. (2017). Case Study: School-Based Oral Health Screening in San Francisco as an Essential Public Health Service. *California Dental Association Journal.* 45(8); 405-417 https://www.cda.org/Portals/0/journal/journal_082017.pdf

**Tinanoff, N., & Sullivan, D. M. (1997). Early childhood caries: Overview and recent findings. Retrieved July, 2018, from http://www.aapd.org/assets/1/25/Tinanoff-19-01.pdf

***Available info based on 2012 (the latest currently available) fees in Los Angeles, CA (which is the closest largemetropolis city to San Francisco in the state of California, for which data is available)

**** Calculations do not inculde the cost of anesthesia, whih was estimated to in the range of $1,000-$6,000 per pediatric case; not all cases require anesthesia.

Appendix J:
Motivational Interviewing Pre-Activity Evaluation Questionnaire

PRE-EVALUATION
University of San Francisco and University of the Pacific
Motivational Interviewing Evaluation

IPHC
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and the
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First 3 letters from your first name: __ __ __
Last 3 letters from your last name: __ __ __
Year of birth: 19 __ __
Gender: □M □ F
School: _____

MI Evaluation

Please be honest in your answers. It will not be graded.

1. I have heard or know of Motivational Interviewing.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

2. I can identify three essential components of Motivational Interviewing without using my electronic resources.
   Strongly Agree Agree Neutral Disagree Strongly Disagree
   If so, please identify.
   1.
   2.
   3.

3. It is my practice habit to ask my patient's permission to discuss sensitive topics.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

4. I consistently use Motivational Interviewing when I interact with my patients.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

5. I feel confident that I can help my patients change their habits/behavior using Motivational Interviewing techniques.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

6. In my interaction with patients I think it's important to express statements of empathy.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

7. During my interaction with my patient, I do most of the talking, educating, explaining.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

8. During patient interaction, it is important for me as a healthcare provider to provide a lot of education/information for my patients, since I am the professional.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

9. Your patient who smokes on a daily basis comes to your office for his annual visit. Using Motivational Interviewing techniques, what is the best way to bring up smoking cessation?
   a. "Mr. Smith, you need to quit smoking."
   b. "Mr. Smith, smoking is bad for your oral health and for the rest of your body. It's important that you quit smoking as soon as possible. I'll give you a prescription for nicotine patches and gum."
   c. "Mr. Smith, it seems from our discussion that smoking is affecting your oral health, on a scale of 0 to 10, how likely are you to quit smoking right now?"

Appendix K:
Motivational Interviewing Post-Activity Evaluation Questionnaire

POST-EVALUATION
University of San Francisco and University of the Pacific
Motivational Interviewing Evaluation

IPHC
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and the
UNIVERSITY OF SAN FRANCISCO

First 3 letters from your first name: __ __ __
Last 3 letters from your last name: __ __ __
Year of birth: 19 __ __
Gender: □M □ F
School: _____

MI Evaluation

Please be honest in your answers. It will not be graded.

1. I have heard or know of Motivational Interviewing.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

2. I can identify three essential components of Motivational Interviewing without using my electronic resources.
   Strongly Agree Agree Neutral Disagree Strongly Disagree
   If so, please identify.
   1.
   2.
   3.

3. It is my practice habit to ask my patient's permission to discuss sensitive topics.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

4. I consistently use Motivational Interviewing when I interact with my patients.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

5. I feel confident that I can help my patients change their habits/behavior using Motivational Interviewing techniques.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

6. In my interaction with patients I think it's important to express statements of empathy.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

7. During my interaction with my patient, I do most of the talking, educating, explaining.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

8. During patient interaction, it is important for me as a healthcare provider to provide a lot of education/information for my patients, since I am the professional.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

9. Your patient who smokes on a daily basis comes to your office for his annual visit. Using Motivational Interviewing techniques, what is the best way to bring up smoking cessation?
   a. "Mr. Smith, you need to quit smoking."
   b. "Mr. Smith, smoking is bad for your oral health and for the rest of your body. It's important that you quit smoking as soon as possible. I'll give you a prescription for nicotine patches and gum."
   c. "Mr. Smith, it seems from our discussion that smoking is affecting your oral health, on a scale of 0 to 10, how likely are you to quit smoking right now?"

10. I have been able to incorporate _____ % of phrases/questions from the provided cheat sheet.

11. I found the cheat sheet helpful.
Strongly Agree Agree Neutral Disagree Strongly Disagree

12. As a team (dentistry student and NP student), there were opportunities to apply MI techniques during this exercise.
Strongly Agree Agree Neutral Disagree Strongly Disagree

13. I found that the Motivational Interviewing Powerpoint was helpful in learning about MI.
Strongly Agree Agree Neutral Disagree Strongly Disagree
What was helpful, not helpful:

14. What went well:
   1.
   2.
   3.

15. Ideas improvements for next year:
   1.
   2.
   3.

Appendix L:
Readiness for Interprofessional Learning Scale (RIPLS) Questionnaire

Readiness for Interprofessional Learning Scale (RIPLS) Questionnaire*

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The purpose of this questionnaire is to examine the attitude of health and social care students and professionals towards interprofessional learning.

Your name: (develop your own 'personal code' by using the following formula):

First 3 letters from your first name: ☐ ☐ ☐

Last 3 letters from your last name: ☐ ☐ ☐

Year of birth: 19 ☐☐ **Your discipline**: _____ **Gender**: ☐M ☐F

Have you completed the RIPLS questionnaire before? ☐ Yes ☐ No

If you answered yes to the previous question please indicate how long ago you last completed the questionnaire:

☐ 1 – 3 months ☐ 3 – 6 months ☐ 6 – 12 months

☐ 1 – 2 years ☐ 2-3 years ☐ 3+ years

Have you had previous experience of interprofessional teaching? ☐ Yes ☐ No

If you answered yes to the previous question please give a very brief statement of what this IPE teaching was and any impact it may have had.

_____
_____
_____

Please complete the following questionnaire.

		Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1.	Learning with other students / professionals will make me a more effective member of the healthcare team					
2.	Patients would ultimately benefit if health and dental care students / professionals worked together					
3.	Shared learning with other health and dental care students / professionals will increase my ability to understand clinical problems					
4.	Communications skills should be learned with other health and dental care students / professionals					
5.	Team-working skills are vital for all health and dental care students/professionals to learn					
6.	Shared learning will help me to understand my own professional limitations					
7.	Learning between health and dental care students before qualification and for professionals after qualification would improve working relationships after qualification / collaborative practice.					
		Strongly agree	**Agree**	**Undecided**	**Disagree**	**Strongly disagree**

8.	Shared learning will help me think positively about other health and dental care professionals					
9.	For small-group learning to work, students / professionals need to respect and trust each other					
10.	I don't want to waste time learning with other health and dental care students / professionals					
11.	It is not necessary for undergraduate / postgraduate health and dental care students / professionals to learn together					
12.	Clinical problem solving can only be learnt effectively with students / professionals from my own school / organisation					
13.	Shared learning with other health and dental care professionals will help me to communicate better with patients and other professionals					
14.	I would welcome the opportunity to work on small group projects with other health and dental care students / professionals					
15.	I would welcome the opportunity to share some generic lectures, tutorials or workshops with other health and dental care students / professionals					
16.	Shared learning and practice will help me clarify the nature of patients' or clients' problems					
17.	Shared learning before and after qualification will help me become a better team worker					
18.	I am not sure what my professional role will be / is					
19.	I have to acquire much more knowledge and skill than other students / professionals in my own faculty / organisation					
20.	**I am comfortable assessing the oral health of paediatric clients (NP students only).***					
21.	**I am aware of the options available to prevent/treat periodontal disease. I am comfortable applying these treatments within the scope of NP practice (NP students only)***					
22.	**I am aware of the key components of therapeutic clinical communication (DDS students only)***					
23	**I am comfortable communicating effectively with my patients (DDS students only)***					

If you have any further comments regarding interprofessional education please enter them in the box below

Appendix M:
Cheat Sheet

"Cheat Sheet" Dental History-taking Form

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Before you start asking questions:

1. **Normalize dentist visit and question asking**

Ex: "First I'm going to ask some questions that I'm going to ask all my patients"

2. **Make history-taking and teaching non-punitive**

Make sure to acknowledge that parents are doing a great job:

- *Thank you for bringing (child) to the dentist. We all know that may not be the most fun thing to do."*
- *"You're teaching your child the importance of oral health, starting by bringing him/her here."*

3. **Goal setting:**

"These are YOUR teeth; YOUR goals. I'm here to help you with YOUR goals."

Questions for parent:

- *"What's most important to you about your child's oral health?"*
- *"Is there anything that worries you about your kids' oral health?"*
- *"Can you imagine any ways that you can help your child achieve those goals?"*

Questions for kids:

- *"What do you really like about your teeth?"*
- *"What do you want your teeth to be like when you're your mommy or daddy's age?"*

Ex teaching for cavities:

- *"So you have these issues here: 'bugs.' Let's talk about what we can do.*
  Here is what I recommend. Is this feasible for this family? What are barriers?"
  a. Identify patient's/guardian's goals
  b. Identify activity to meet goal
     i. Changes to make
  c. Use the readiness ruler
     i. Where do you think you are?
     ii. Why there and not here?

Questions from the History Questionnaire (Provided in clinic)

Original questions:	**Examples of MI focus for Caretaker**	**Examples of MI focus for Child** **Start process depending on developmental level**
Health history *Patient accompanied by:* *Legal guardian?*	What's your relationship to (patient's name)?	***Do you know why you're here?*** Ex answer: ***There are bugs on your teeth, they made a hole in your tooth. I'm here to help make your teeth healthy again.*** ***What do your teeth do?*** ***What makes your teeth happy/not happy?***
Chief complaint:	What brings you here today?	
Changes to Medical History?	What's new in (patient's name) health since we last saw him/her?	
How is the patient feeling today? *Health Status* *Any recent illness?*	How is (patient) feeling today? Any new issues, hospitalizations, medications? Has the he/she been sick recently?	
Current Meds:	What medications is the patient taking?	
Last MD visit:	When was the last time (patient) went to see a healthcare provider/doctor?	
Reason for MD visit?	What was the reason for that visit?	

2

Hygiene History *Brushing Frequency:* *Flossing Frequency:*	How many times a week does (patient) brush? Floss teeth?	***What do you do to keep your teeth clean?*** ***Who helps you brush your teeth?***
Who brushes and flosses for the patient? *Is brushing/flossing supervised?* *When is brushing done?*	Who helps/observes (patient) when s/he's brushing teeth? Flossing? What time of day does (patient) brush his teeth? How many times?	***Tell me what happens when you brush your teeth? Anything good/bad?*** ***What happens if you don't brush your teeth?***
How much toothpaste do you use?	Can you show me on your finger, approximately how much toothpaste does (patient) use?	***[Bring out puppet/model] Mr. Alligator doesn't know how to brush his teeth. Can you teach him to brush his?*** ***Tell me what you do first when you're brushing your teeth? Show me what you do when you brush your teeth? Let's do it together.*** ***What do you do after you brush your teeth? (Do you rinse with water? Floss? Use special rinse? Eat before bed?)*** ***Did you use floss today?***
Fluoride history: *Live in Fluorinated Community?* *Drink tap water?* *What kind of toothpaste?* *What kind of rinse?* *Supplement indicated?*	Does (patient) usually drink bottled or tap water? What kind of toothpaste/rinse does the child use? Do you know if it has fluoride?	

3

Social History *Other dental office in the past?* *Reason for change?* *Family health/dental issues?*	 Have you seen any other dentists/teeth doctors other than the ones this office? What brings you to this office? Does anyone in your family have dental/teeth health problems? Cavities? crowns? Etc?	
Care taker other than parents? Both parents working? *Parents living in same household?* *Mode of Transport to Clinic: Distance to dental clinic:* *Number of siblings:* *Care taker Dental IQ: High/Low* *Snack Keeper: Who's home when the child gets home from school?*	Who else takes care of (patient)? Do (parents/guardians) both work? Who does (patient) live with? How long does it take for you to get to the clinic? Do you have to drive, bus, walk/etc? How many brothers and sisters does (patient) have?	***Who is home after school? Who picks you up from school?*** Snack questions: ***Where do you go after school? (home, after school program, friend's or relative's house?)*** ***What do you do when you get home? What are your favorite things to do?*** ***What do you eat after school? Which are your favorite? What do you usually eat at home?***

4

		What do you like to drink? [Milk? Water? Juice? Soda?] ***What is the drink you drink the most? How many times do you drink it in a day (or week)?***

Patient teaching examples:

- ***We all enjoy junk food, even though we know it's not always good for us, but we still eat it sometimes. It's OK to eat it once in a while. My favorite food is ____. But I know it's not great for me, so I try to eat it only __ per week.***

- ***What's your favorite junk food?***
- ***Why do you think it's called "junk food?"***
- ***What do you think happens to your teeth or your bones when you eat it?***
    - It sounds to me that you know this food isn't good for you. If you know it's bad for you, what do you think we can do to help you feel better? i.e. eat/drink half portion, brush teeth right after, dilute juice with water, etc.
    - If I give you the food/drink right now, how likely do you think you'll eat/drink the entire thing?

Patient teaching re: Cavities:

- ***When you brush at night you help get the bad bugs out of your teeth so that your teeth don't hurt.***
- ***Do you know how you got this hole in your teeth? The bugs made a hole. To keep your teeth strong, I need to brush out the bugs with Mr. Whistle. (clinic euphemism) brush won't help as much.***

Age Range	**Accomplishments**	**Examples**
0-3 yrs	**1.5-2 yrs** - simple commands - Can use "I," "me," "you" pronouns - 150-300 word vocabulary **2 – 3 yrs** - 2-3 word sentences - Asks a lot of how/why questions - knows major body parts - 900-1000 word vocabulary - understands simple questions related to activities, environment	Use a lot of distraction techniques to do exam Demonstrate on doll, self, or parent what you will do to show it's OK to do. Have parent in room Ex: "What do you need to do when you're sleepy/hungry/ cold/thirsty?" "What do you do when your teeth are dirty?" "Good job for keeping your mouth open! That's hard to do!"

5

	- Knows how to state own name, age - may understand what is told but may be unable to verbalize answers to questions; be patient - Use a lot of positive reinforcements (i.e. affirmations) - Likes to be independent - Use the "Tell-show-do" method	
Preschool 3-5 yrs	**4 yrs** - can name animals, common objects, colors - Enjoys make-belief world - Follows simple commands - Frequently repeats words, phrases, syllables - receptive language is well developed, so you can give the child instructions - still strong parent attachment, so may benefit from having parent around - if unable to keep appointment short, give breaks **5 yrs** - 4+ word sentences - 1000+ word vocabulary - Often joins sentences (run-on) - answers how/who/when questions - can follow 4 step directions - often can be reasoned with	"When you brush your teeth, make sure you brush all three sides" Good time to use puppets or toys in patient teaching Good time to start asking the patient more questions about dental hygiene/history. Start to focus more patient teaching on patient.
6-8 yrs	6 yrs - Can tell time to quarter of an hour - Has simple reading, writing skills 7-8 yrs - simple and compound sentences - can give precise directions and instructions for complex activities - effective listening skills	First age range where you can use specific time or time increments to explain how much longer for a procedure. I.e. "We have 15 more minutes of getting the bugs out of your teeth. We're almost done!" Prior to this age group, use references to other things to show passage of time, i.e. "We will be done when the movie will end."

6

References:

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Appendix N:
Non-Research Approval Documents

UNIVERSITY OF SAN FRANCISCO | School of Nursing and Health Professions

DNP Statement of Non-Research Determination Form

Student Name: Oksana Prodan

Title of Project: Interprofessional Activity: Motivational Interviewing in Pediatric Dentistry

Brief Description of Project: Improving pediatric oral systemic health through preventative practices via Interprofessional Activity (IPA) of collaborative Motivational Interviewing (MI) training between APRN and dental students.

A) Aim Statement:

By June 1st, 2018, I will design, implement, and evaluate motivational interviewing (MI) skills for dentistry students in collaboration with APRN students to improve pediatric oral health outcomes.

B) Description of Intervention:

In this intervention APRNs and dentistry students will engage in an IPA where they will learn and utilize MI skills during their pediatric oral health rotation.

C) How will this intervention change practice?

MI is a communication method used to help change patient behavior, which allows for a provider to care for patients holistically. By equipping APRNs and dentistry students with MI skills they will should be able to improve their patients' outcomes by changing behaviors, such as brushing teeth and flossing regularly, as well as smoking cessation.

D) Outcome measurements:

A pre- and post- survey will be designed to assess the MI learning outcomes of University of the Pacific School of Dentistry Students.

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: (http://answers.hhs.gov/ohrp/categories/1569)

■ This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Student may proceed with implementation.

☐ This project involves research with human subjects and must be submitted for IRB approval before project activity can commence.

UNIVERSITY OF SAN FRANCISCO | School of Nursing and Health Professions

Comments:

EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST *

Instructions: Answer YES or NO to each of the following statements:

Project Title:	**YES**	**NO**
The aim of the project is to improve the process or delivery of care with established/ accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.	**Yes**	
The specific aim is to improve performance on a specific service or program and **is a part of usual care**. ALL participants will receive standard of care.	**Yes**	
The project is **NOT** designed to follow a research design, e.g., hypothesis testing or group comparison, randomization, control groups, prospective comparison groups, cross-sectional, case control). The project does **NOT** follow a protocol that overrides clinical decision-making.	**Yes**	
The project involves implementation of established and tested quality standards and/or systematic monitoring, assessment or evaluation of the organization to ensure that existing quality standards are being met. The project does **NOT** develop paradigms or untested methods or new untested standards.	**Yes**	
The project involves implementation of care practices and interventions that are consensus-based or evidence-based. The project does **NOT** seek to test an intervention that is beyond current science and experience.	**Yes**	
The project is conducted by staff where the project will take place and involves staff who are working at an agency that has an agreement with USF SONHP.	**Yes**	
The project has **NO** funding from federal agencies or research-focused organizations and is not receiving funding for implementation research.	**Yes**	
The agency or clinical practice unit agrees that this is a project that will be implemented to improve the process or delivery of care, i.e., **not** a personal research project that is dependent upon the voluntary participation of colleagues, students and/ or patients.	**Yes**	
If there is an intent to, or possibility of publishing your work, you and supervising faculty and the agency oversight committee are comfortable with the following statement in your methods section: *"This project was undertaken as an Evidence-based change of practice project at X hospital or agency and as such was not formally supervised by the Institutional Review Board."*	**Yes**	

ANSWER KEY: If the answer to **ALL** of these items is yes, the project can be considered an Evidence-based activity that does NOT meet the definition of research. **IRB review is not required. Keep a copy of this checklist in your files.** If the answer to ANY of these questions is **NO**, you must submit for IRB approval.

*Adapted with permission of Elizabeth L. Hohmann, MD, Director and Chair, Partners Human Research Committee, Partners Health System, Boston, MA.

Appendix O:
Data Analysis Table: MI Survey

MI Scores: NP Students Pre-Activity Survey

	Total Avg	Answer Range	s.d
1	1.62	1 to 2	0.74
2	3.19	1 to 5	1.12
3	1.57	1 to 3	0.60
4	2.19	1 to 4	0.81
5	2.33	1 to 4	0.80
6	1.24	1 to 2	0.44
7	3.62	2 to 5	0.67
8	2.43	1 to 4	1.03
9	3.00	3	0.00

MI Scores: NP Students Post- Activity Survey

	Total Avg	Answer Range	s.d	p value
1	1.22	1 to 2	0.43	0.021
2	2.53	1 to 5	1.23	0.053
3	1.44	1 to 2	0.51	0.248
4	1.56	1 to 2	0.51	0.001
5	1.72	1 to 3	0.75	0.000
6	1.33	1 to 2	0.49	0.166
7	3.78	3 to 5	0.65	0.358
8	2.44	1 to 4	1.04	0.358
9	3.00	3	0.00	--
10	58%	0 to 100%	31%	
11	2.29	1 to 4	0.85	
12	2.12	1 to 4	0.93	
13	1.65	1 to 5	1.06	

MI Scores: Dentistry Students Pre-Activity Survey

	Total Avg	Answer Range	s.d.
1	3.28	1 to 5	1.15
2	4.12	1 to 5	0.81
3	2.38	1 to 4	0.79
4	3.14	1 to 5	0.80
5	2.85	1 to 5	0.79
6	1.48	1 to 3	0.56
7	2.51	1 to 4	0.77
8	2.04	1 to 4	0.77
9	2.92	2 o 3	0.27

MI Scores: Dentistry Students Post- Activity Survey

	Total Avg	Answer Range	s.d.	p-value
1	2.00	1 to 4	1.20	0.000
2	3.00	1 to 5	1.05	0.000
3	2.10	1 to 4	0.74	0.007
4	2.51	1 to 4	0.78	0.000
5	2.26	1to 4	0.79	0.000
6	1.46	1 to 3	0.55	0.422
7	2.41	1 to 4	0.71	0.185
8	1.99	1 to 4	0.64	0.300
9	2.94	2 to 3	0.27	0.357
10	33%	0 to 100%	25%	
11	2.32	1 to 5	0.66	
12	2.41	1 to 5	0.84	
13	2.12	1 to 4	0.90	

Appendix P:
MI Survey Question 2 Responses

APRN Students Pre-Activity

Total 21 students	
10 students at least 1 point	
	% total
11 students 0 points	52
1 student 1 point	5
4 students 2 points	19
5 students 3 points	24

APRN Students Post- Activity

18 students out of 21 filled out post-MI survey	
85.7142857 86% response rate	
13 students named 3 points	72%
1 student named 2 points	6%
4 students who responded did not name any	22%

Dentistry Students Pre-Activity

Total: 96 students responded	%
4 students = 1 point	4
2 students = 2 points	2
6 students= 3 points	6

Dentistry Students Post-Activity

Total students: 80	%
4 students only 1 point	5
10 students 2 points	13
23 students 3 points	29

Appendix Q:
RIPLS Statistical Analysis

RIPLS: APRN Students

	Avg Pre-	s.d. (Pre-)	Avg Post-	s.d. (Post)	p-value
Teamwork/Collaboration	1.117	0.05	1.111	0.07	0.876
Negative Identity	4.694	0.11	4.463	0.06	0.148
Positive Identity	1.345	0.11	1.375	0.20	0.810
Roles	2.857	1.46	3.226	1.72	0.194
Skills	3.095	0.18	1.917	0.04	0.000

RIPLS: Dentistry Students

	Avg Pre-	s.d. (Pre-)	Avg Post-	s.d. (Post)	p-value
Teamwork/Collaboration	1.473	0.10	1.444	0.10	0.573
Negative Identity	3.741	1.73	3.770	0.19	0.873
Positive Identity	1.694	0.13	1.595	0.05	0.281
Roles	2.716	1.04	2.828	0.00	0.604
Skills	2.048	0.54	1.560	0.23	0.011

Appendix R:
Post MI Feedback: APRN Students
Summary Page

What went well:

IPE Experience

Themes:

a. *Great overall experience for most NP students.*
b. *NP students felt when they interacted with DDS students, they were able to make a difference.*
c. *NP students who had a chance to apply fluoride varnish found it to be a great experience.*
d. *Interaction with staff and students at UOP was positive for most NP students.*

Motivational Interviewing:

Themes:

a. *NP students felt that they were able to utilize MI techniques and had positive responses from patients.*

PowerPoint feedback:

Themes:

a. *NP students found the information in the PPT helpful and useful in practice.*
b. *It was helpful when DDS students watched the PPT prior to the clinical experience as well.*

What we can improve

IPE Experience:

Themes:

a. *Have more IPE events and/or increase the length of time in clinic for this activity.*
b. *NP students expressed desire to have more opportunities regarding hands on fluoride varnish application.*
c. *Decrease time in seminar or take it away altogether.*

UOP preparation:

Themes:

a. *Have DDS students be more prepared for the interaction regarding MI.*
b. *Prepare DDS students for IPE experience regarding notification of their work with NP students and educate them on NP role in community prior to IPE.*
c. *Prepare UOP staff and students for NP arrival and re: case presentations.*
d. *Some NP students felt staff were not welcoming.*

NP student preparation:

Themes:

a. *More organization for NPs once at UOP clinic, i.e. what to do during down time, allow for more hands-on activities, rather than just observation, make seminar easier for NP to follow.*
b. *Condense paperwork for NP students.*

Experience w/ MI:

Themes:

a. Focus on work on MI techniques with DDS students.

What went well

IPE Experience

Themes:

a. Great overall experience for most NP students.

b. NP students felt when they interacted with DDS students, they were able to make a difference.

c. NP students who had a chance to apply fluoride varnish found it to be a great experience.

d. ***Interaction with staff and students at UOP was positive****.*

1. Learning about fluoride varnish was practical and helpful.
2. Communicating with dental students and learning from them about oral health care.
3. Dental assistants were amazing teachers! I learned so much from them (not only knowledge but how to work with peds patients and prioritization of care in order to manage patient's behaviors.
4. The experience with UOP was very engaging and fun! I had a great time collaborating with the dentistry students. I think it is a valuable experience that shows NP's the need to incorporate oral health checks into their practice.
5. Working with parents of child, applying fluoride to teeth.
6. Ability to learn from dental students on how they interact with patients.
7. I was able to give my own feedback on what works best for me.
8. Good learning experiences.
9. I was able to provide support to the dental student during the interview and fill in gaps about nutrition and safety.
10. Being able to look at radiographs along with clinical exam to help learn what caries look like.
11. Loved the experience altogether! Students and faculty were VERY welcoming!
12. NP students were well-prepared for the experience. (Oksana and Dr. Lee @ USF, then Dr. Lee for orientation, then summary seminar.)
13. Shared learning between both professionals would be an effective and beneficial collaboration. For example, we should've been able to educate the dental students on our roles/assessments. Although both NP and dental students educate, it should be more of a collaboration. Health care in which both disciplines work side by side would be most effective.
14. This NP/Dental rotation was my favorite IPE experience! Thanks!
15. Very comfortable and safe environment to learn, ask questions and grow.
16. Dental students open to NP.
17. Easy to access school and public transportation.
18. Hands on practice in applying fluoride varnish, although not on a real patient
19. Great seminar! Had a lot of interesting cases.
20. Overall it was a great experience with lots of learning. Thank you!
21. It was a wonderful experience. Although it was far for me, as I live close to Stockton, it was worth the experience.
22. Opportunity to see dentistry students apply their skills and training.
23. Learning about oral health.

24. Dr. Lee spending time during orientation to teach us about oral health.
25. Learning about fluoride varnish.
26. Collaborating with other health care professionals.
27. Collaboration between NP and dental students
28. Interactions and MI use of patients and families

Motivational Interviewing:

Themes:

a. NP students felt that they were able to utilize MI techniques and had positive responses from patients.

1. Being able to interview the patient using MI.
2. Patient felt important and responded well, patient was more open and forthcoming, patient feelings were considered, and she was pleased.
3. Actual application of MI with patients.
4. It was helpful Practicing MI.

PowerPoint feedback:

Themes:

a. NP students found the information in the PPT helpful and useful in practice.

b. It was helpful when DDS students watched the PPT prior to the clinical experience as well.

1. Good Examples. Thorough, yet concise.
2. Having dental student who actually reviewed the MI PowerPoint.
3. Awesome PowerPoint. Traditional pt interaction vs. MI interaction written out and demonstrated. Made it very easy to wrap your head around idea of MI.
4. Having actual conversational examples on the PowerPoint slides vs. just words/pictures enhances reflection.
5. It was a good review in what is taught in nursing school and brings it back into light.

What we can improve

IPE Experience:

Themes:

a. Have DDS students be more prepared for the interaction regarding MI.

b. Prepare DDS students for IPE experience regarding notification of their work with NP students and educate them on NP role in community prior to IPE.

c. Prepare UOP staff and students for NP arrival and re: case presentations.

d. Some NP students felt staff were not welcoming.

1. More IPE Events.
2. I am unable to think of any at this moment, but I will let you know if I come up with any!
3. Allow for more opportunity for the NP student to participate in the interview process.

4. On Canvas, split up instructions on different pages i.e. per day. Too much info on one page.
5. Not sure "seminar day" was necessary. UoP students presenting dental case so most things said sound like foreign language to me.
6. Decrease time spent in seminar for NP students.
7. I wish we had more days (maybe just one more clinic day).
8. Would love to be able to do some patient care (i.e. fluoride varnish).
9. That we can try fluoride varnish on ourselves to see how patients will be feeling.
10. More days for clinical experience and interaction with more dental students is really good for both professions.
11. Of note, some staff were not very welcoming.
12. Longer time.
13. This was not helpful at all--I don't think we achieved motivational interviewing between two disciplines. We achieved teaching NP students about dental health, which was helpful, but during my experience, no motivational interviewing was done. The dental students didn't know about it. They were more focused on their examinations and we were just shadows.
14. Please be more organized in collecting your data.

UOP preparation:

Themes:

a. ***Have DDS students be more prepared for the interaction regarding MI.***

b. ***Prepare DDS students for IPE experience and educate them on NP role in community prior to IPE.***

c. ***Prepare UOP staff and students for NP arrival and re: case presentations****.*

1. The Dental student I worked with did not know that she was working with an NP student on the clinical day and she already did her presentation prep for another case she saw earlier in the rotation. I felt bad that she had to help me with the presentation form and especially with the clinical findings. I ended up presenting most of the case alone, which was unexpected. So, in the future, perhaps better coordination and planning for dental students.
2. Provide Dental Students with more information about the NP role and profession.
3. Have dental students access the MI information early so that they can apply it during the activity.
4. Have list of names of students for the day given to the front desk security.
5. Please explain to the dental students what the NP role is at their school. Over half of them had no idea and we had to reintroduce our purpose being there on our last day when we did presentations.
6. It seemed like the dental students were focused on their dental exam/procedures and less focused on practicing MI.
7. Communicate to Dental students the reason for why the NP students are present.

NP student preparation:

Themes:

a. ***More organization for NPs once at UOP clinic, i.e. what to do during down time, allow for more hands-on activities, rather than just observation, make seminar easier for NP to follow.***
b. ***Condense paperwork for NP students.***

1. Having the case presentation form in advance for NP students will be helpful as I had to ask the dental student to email me the form, so I could prep the presentation for the next day. Perhaps you can post in on Canvas for NP students to access?
2. More direction on what to do when we come to clinic, especially during down time.
3. More involvement from NP students, so we have a bigger role in this activity.
4. Give access to NP students to oral health PPT (during seminar?).
5. Have students fill out pre-eval surveys in class like we fill out post-eval surveys.
6. NP didn't have a clear role, maybe have a designated rotation role for NP students.

Experience w/ MI:

Themes:

a. ***Focus on work on MI techniques with DDS students.***

1. Discuss with faculty the importance of engaging with parents at their level. Try not to make a parent feel bad.
2. If hours permit, have at least one day that students watch an MI interview together in class and contrast it to traditional interactions. Have discussion and/or impromptu demo with students.
3. Ability and opportunity to actually apply MI during the NP/Dentistry rotation.
4. The PowerPoint MI was too wordy to follow in addition to the tip sheet.
5. There was not a lot of time to practice MI with patients and other providers.

Appendix S: Post MI Feedback: Dentistry Students

Summary Page:

What went well:

IPE Experience

a. *DDS students felt they learned from NP during the experience.*
b. *DDS students appreciated the feedback given by NPs.*
c. *DDS students enjoyed observing NPs demonstrating the use MI in practice.*

DDS Students' Personal Experience w/ MI: What went well?

a. *Interview for DDS students went better than usual/expected while using MI tools.*
b. *DDS students felt more comfortable, competent after being given the MI tools to work with patients.*
c. *DDS students more open to listening to the patient, parent and their concerns.*
d. *DDS students were able to make the interview into a positive experience.*
e. *DDS students gained confidence in conducting interviews.*

PowerPoint feedback:

a. *Easy to follow, applicable, helpful, useful.*
b. *Clear concepts and tools within PPT.*

Cheatsheet feedback:

a. *Very useful tool*

What we can improve

Improvements within the IPE Experience:

a. *DDS students would like to work more with NPs.*
b. *Do practice runs and have more feedback regarding DDS students' use of MI in practice.*
c. *DDS students want more of an organized activity, such as lecture or seminar.*
d. *Some students weren't aware of this activity.*

Improvements for MI:

a. *Students would like to learn more about MI and be able to apply MI skills in practice.*
b. *Make it a live lecture or seminar or in main clinic with more organization, rather than an optional activity.*
c. *Make activity and all expectations clear.*
d. *Give more examples and activities to practice.*

DDS Students' Personal Critiques Regarding Their Own MI Experience:

See individual feedback in this section

PowerPoint feedback:

a. *Ask students to do PPT prior to clinic activity where they can apply the skills.*
b. *Do a live lecture instead of PPT.*

Cheatsheet feedback:

a. *Have a laminated cheat sheet for in clinic use.*

What went well:

IPE Experience

Themes:

a. DDS students felt they learned from NP during the experience.
b. DDS students appreciated the feedback given by NPs.
c. DDS students enjoyed observing NPs demonstrating the use MI in practice.

1. It was interesting to learn from the NP, Alyssa. Although she let me do most of the talking, she was able to gain info from the patient through normal conversation.
2. It was nice getting feedback on my interview with the parent, and I could learn from working with the NP.
3. Learned from NP, Interacted with NP, Patients receptive to change.
4. NP input was interesting.
5. Reflection at the end helped me recall what I did well and didn't.
6. Collaboration with the nurse practitioner.
7. learning from NP.
8. I think that collaborating with an NP was helpful and they bring another perspective to what we think about as a dentist.
9. Observing the NP and the ability to motivationally interview was helpful.

Personal Experience w/ MI: What went well?

Themes:

a. Interview for DDS students went better than usual/expected while using MI tools.
b. DDS students felt more comfortable, competent after being given the (MI) tools to work with patients.
c. DDS students more open to listening to the patient, parent and their concerns.
d. DDS students were able to make the interview into a positive experience.
e. DDS students gained confidence in conducting interviews.

1. Learned Interprofessional learning, learning how to speak to patients in a more personal way, learned about allowing the patient to take ownership of their treatment.
2. Very interesting, good resources, important for several of my own patients .
3. Related to my own experiences to empathize with patient.
4. Tried to be open and approachable.
5. We did learn a lot about the boundaries for the dad and were able to work around that to benefit the child's dental health.
6. Open ended questions.
7. Overall conversation about MI w/ NP.
8. Patient responded well to motivational interview and spoke more.
9. Trying to empathize with the patient.
10. Trying positive, negative reinforcements when necessary.
11. Conversation, Active listening, positive environment.
12. Open ended questions; finding patient's motivations.
13. Being able to que positive feedback and to ask patient to demonstrate.
14. Prevention discussion; interesting patient/parent.

15. I find asking why patients are rejecting a treatment plan yields to answers outside of financials.
16. OHI*.
17. Pt interview, OHI*, using motivational interviewing techniques.
18. I was able to have the patient more engaged and willing to keep up with the oral hygiene at home.
19. I thought it was helpful to learn about MI since I never heard about it before.
20. Parent/patient interview.
21. Patient cooperation, patient interview, anesthesia.
22. Feeling motivated.
23. Talking to the patient (went well).
24. Repeating back what the patient said.
25. Talking about positive points first.
26. Asking patient about their motivations.
27. I thought that the MI was helpful for the appointments I had in pedo rotation.
28. Patient was accepting of talking about sensitive topics.
29. Using the techniques let me feel more comfortable introducing sensitive topics.
30. Oral hygiene instructions with patient very successful.
31. Conversation between pt, me, and NP went well and were able to understand the mother's concerns.
32. Open ended questions utilized during pt-parent interview.
33. Empathized with child and mother as the patient was crying before the treatment.
34. Open-ended questions, reflective listening, asking the right questions.
35. Open-ended questions; Getting patient to open up more and talk rather than listen; Positive framing.
36. I reminded the parent that time is an issue for brushing, to focus brushing and flossing at night before bedtime instead of in the morning before school.
37. I asked how the changes from the last appointment were going and that helped the parent open up more about OHI* at home.
38. Open-ended questions about their chief concerns helped parent open up about her concerns.
39. Display empathy to patient, Make suggestions.
40. Displaying empathy towards the mother; Mother seemed motivated to brush daughter's teeth after giving om and patient lots of positive reinforcement.
41. Asking more open-ended questions and having the patient talk more.
42. I think that when discussing diet habits w/ students it was easier to get information from them.
43. Talking with patients, Communicating with Assistant, Managing time.
44. Making the patient accountable, Asking open-ended questions.
45. Patient was happy about himself; more compliance from the patient and parent; we aren't fighting against the patient's habits but guiding them to a better view of their habits.
46. The talk was more comfortable than expected.
47. The flow of the conversation went a lot smoother.
48. Didn't struggle with words as much when using this.
49. Asking questions to gauge their motivations; Asking open-ended questions; Supporting the patient.

*OHI: Oral Health Instruction

PowerPoint feedback:

Themes:

a. Easy to follow, applicable, helpful, useful.

b. Clear concepts and tools within PPT.

1. Having a concise presentation that we can reference if we need to is good.
2. Easy to understand the practical use of MI.
3. References that were useful and readily accessible.
4. Learning different techniques for MI.
5. Breakdown of each component.
6. Explanation on benefits of approach.
7. It was a good introduction to the concept, Patient acceptance trust, positivity.
8. PPT is clear.
9. Overall MI presentation was very helpful, especially the techniques.
10. I liked the independence of choosing when, how fast I go through the PowerPoint.
11. Tools were very applicable.
12. Easily accessible resources.
13. Somewhat helpful/insightful information.
14. Informative, good examples, detailed.
15. Easy to follow, good examples.
16. The examples of what to say and not to say in presentation were helpful.
17. PPT was good.
18. It was thorough and had good and specific pointers.
19. Understanding different ways to ask questions for better, more insightful answers; some parents don't know the answers.
20. Learning what phrases what tend to be more effective.
21. I think the PowerPoint formally introduced me to the concept of MI which I think we all have been exposed to in our day to day life.
22. MI PPT concisely outlined the components of MI.
23. Laid out the key parts that were important.
24. Helpful: List of MI principles, good examples.

Cheatsheet feedback:

Themes:

a. Very useful tool.

1. Simple, very easy to follow and learn from.
2. Using more phrases/questions from cheat sheet, using cheatsheet went well.
3. Cheat sheet is helpful .
4. I liked the cheat sheet because it helps me set a foundation for my patient/parent interview and learned how to approach sensitive questions.
5. Cheat Sheet was helpful.

What we can improve

Improvements within the IPE Experience:

Themes:

a. DDS students would like to work more with NPs.
b. Do practice runs and have more feedback regarding DDS students' use of MI in practice.
c. DDS students want more of an organized activity, such as lecture or seminar.
d. Some students weren't aware of this activity.

1. Didn't learn anything--my NP didn't talk or demonstrate anything to me. I wish I could have learned more.
2. Assign NP to recalls (hard to do MI w/ restorative).
3. Assign more NPs.
4. Nothing (no improvement suggestions).
5. More integrated approaches with PA's (NPs?).
6. Work more with NPs in clinic.
7. For the NP & dental student pair to review MI before the appointment; otherwise, most likely won't be able to apply in practice.
8. I did not get the opportunity to see the MI PowerPoint or work with NP.
9. More NP involvement.
10. Pre-huddle w/ NP.
11. Practicing MI with NP.
12. Make sure we all get to work with an NP.
13. What improvements in MI were looked out for?
14. Demonstration of techniques in person.
15. Not sure how pre-/post- surveys can be effective. Maybe have us turn in pre-surveys .during week 1 and post- much later. So that we have time to really incorporate MI into our practice skills!
16. More organization.
17. Figure out how to ask quicker questions or questions that also get more specific answers
18. Videos, data for patients that benefit from MI.
19. NPs working on prevention appointment.
20. Actual plan to work on w/ NP together.
21. Presentation collaboration w/ NP.
22. I wish I had gone through the PowerPoint before my appointment with the NP instead of after.
23. Explain this project/assignment. I took 2 pre and post surveys and don't remember ever really reviewing instructions or being given expectations. Sounds like it could have been a good project.
24. There wasn't sufficient time for Dr. Lee to explain this project and what we were supposed to do for it.
25. I did not work with an NP.
26. Discussion w/ NP before appt, instead of assigning at 1st week apt of the clinic session => give use time to talk.
27. Instead of introducing idea of NP partner program on the week of peds, more time to prepare and get a heads up about the program would have been helpful.
28. Telling us ahead of time we will be working w/ NP.

29. Giving us time before the appointment to talk w/ NP and discuss MI.
30. Giving us time after the appointment to talk w/ NP and discuss what we can improve on.
31. More opportunity to work with NP.
32. Possible seminar w/ NP.
33. Have NP go over MI/demonstrate.
34. Provide more opportunities to work with the NP and apply MI.
35. More work with NP.
36. I wasn't aware beforehand that I was going to be working with an NP.
37. Actual activity with personal feedback.
38. Practice session with a partner for MI before we start the rotation.

Improvements for MI:

Themes:

a. Students would like to learn more about MI and be able to apply MI skills in practice.
b. Make it a live lecture or seminar or in main clinic with more organization, rather than an optional activity.
c. Make activity and all expectations clear.
d. Give more examples and activities to practice.

1. We had a language barrier between us and which made MI tricky
2. It would be nice if we received a better explanation of what this program is, like a brief introduction.
3. Go over more phrases before rotation.
4. Demo, less paperwork, more structure.
5. Have a separate session for MI.
6. More experience with MI.
7. There is so much stress during the rotation that I kind of forget about this.
8. Make it a lecture/seminar for ICS.
9. Discussing more about MI.
10. Maybe a quick intro lecture.
11. Advice for conducting motivational interviewing with language barriers.
12. Presentation in person in addition to documents.
13. This survey post-evaluation questions do not make as much sense because some of us just learned about MI when we first got the survey.
14. In person presentation on MI.
15. Have presentation/seminar.
16. Presenting it to us.
17. Practice with each other.
18. In pre-evaluation: It's somewhat unclear what expectations I have. Will there be a training and post-evaluation?
19. More interactions, one-on-one basis.
20. Incorporate into main clinic.
21. Practice with each other.
22. More examples.
23. I think there are no improvements for next year.
24. Mandatory quiz (credit based on completion)?

25. Going over MI during rotation.
26. Using these techniques would be helpful to practice in main clinic.
27. I wasn't aware that I was supposed to do this.
28. Use more props to teach patients.
29. Did not have an opportunity to apply MI so all my patients did not need adjustments to the oral hygiene routine.

DDS Students' Personal Critiques Regarding Their Own MI Experience:

1. Work more efficiently.
2. Ask more questions to extract more information.
3. Utilize more of the phrases provided to us.
4. Don't be anxious to talk about sensitive topics b/c pts can tell when you are nervous.
5. Next time I should ask the parents what their goals are for their child.
6. Talking more with patients, being prepared.
7. Talk slower and take control of the operatory.
8. Be more confident and prepared.
9. Be prepared with a script to some possible topics that are more personal.
10. Practice MI with patients more frequently.
11. I think using more MI when talking to parents would be helpful for making home care changes.
12. Let patients do more talking, express more empathy, be more conscious of my interviewing style.
13. Spend more time asking questions.

PowerPoint feedback:

Themes

a. Ask students to do PPT prior to clinic activity where they can apply the skills.
b. Do a live lecture instead of PPT.

1. I wasn't able to look at it (cheatsheet/ppt).
2. I don't remember the PPT.
3. Reviewing this presentation and cheat sheet before the appointment will help me remember good questions to ask.
4. In person seminar instead of PowerPoint.
5. I wish I was told via email to read the PowerPoint 1 week before the rotation so that I would have time to study it more. The PowerPoint helped me remember to ask the parent their reasons for what they feed kids, how they supervise brushing, etc.
6. Be introduced via email 1 week before rotation that the PPT is available for us to study.

Cheatsheet feedback:

Themes:

a. Have a laminated cheat sheet for in clinic use.

1. Have a laminated copy of cheat sheet questions so we can practice and use it in clinic in case we forget them.

2. It would be good to have the students print the cheat sheet and have it with them during the interview.
3. Give us cheat sheet in clinic so we can use it.
4. Laminate cheat sheet.
5. Memorize all the cheatsheet stuff.

Appendix T:
IPE Calendar

Student A	Orientation	Allyssa Marie Montemayo				Morning 10am-1pm
Student B	Orientation		John Jaramillo			Afternoon 2pm-5pm
Student C	Orientation			ANNIE PEDLAR		Morning 10am-1pm
Student D	Orientation				Iyo Kubota	Afternoon 2pm-5pm
		10am-5pm	10am-5pm	10am-5pm	10am-5pm	
Cohort 2:	Monday, Jan 22nd, 9:30 am-1pm	Wed, Jan 24th, 2018	Thurs, Jan 25th, 2018	Wed, Jan 31st, 2018	Thurs, Feb 1st, 2018	Seminar, Friday, Feb 2nd, 2018
Student A	Orientation	Tram Nguyen				Morning 10am-1pm
Student B	Orientation		Ulyses Reamico			Afternoon 2pm-5pm
Student C	Orientation			Stephanie Calabrese		Morning 10am-1pm
Student D	Orientation				Fanny Powell	Afternoon 2pm-5pm
		10am-5pm	10am-5pm	10am-5pm	10am-5pm	
Cohort 3:	Monday, Feb 5th, 9:30-1pm	Wed, Feb 7th, 2018	Thurs, Feb 8th, 2018	Wed, Feb 14th, 2018	Thurs, Feb 15th, 2018	Seminar: Friday, Feb 16th, 2018
Student A	Orientation	Jessamyn Phillips				Morning 10am-1pm
Student B	Orientation		Lacrisha Go			Afternoon 2pm-5pm
Student C	Orientation			Lauren McPhee		Morning 10am-1pm
Student D	Orientation				Daniel Vu	Afternoon 2pm-5pm
*Please note that this week, the orientation is on a TUESDAY morning, and the days you can come in are, Thursday of WEEK 1, and Monday, Wed, Thurs of WEEK 2						
		10am-5pm	10am-5pm	10am-5pm	10am-5pm	
Cohort 4*	Tuesday, Feb 20th, 9:30-1pm*	Monday, Feb 26th, 2018	Thurs, Feb 22nd, 2018	Wed, Feb 28th, 2018	Thurs, Mar 1st, 2018	Seminar: Friday, March 2nd, 2018
Student A	Orientation:Tuesday, Feb 20th*	Livneet Takhar				Morning 10am-1pm
Student B	Orientation: Tuesday, Feb 20th*		Yao Luo			Afternoon 2pm-5pm
Student C	Orientation: Tuesday, Feb 20th*			Alex Bustos		Morning 10am-1pm
Student D	Orientation: Tuesday, Feb 20th*				Elena Higley	Afternoon 2pm-5pm
		10am-5pm	10am-5pm	10am-5pm	10am-5pm	
Cohort 5	Monday, March 5th, 9:30-1pm	Wed, Mar 7th, 2018	Thurs, Mar 8th, 2018	Wed, Mar 14th, 2018	Thurs, Mar 15th, 2018	Seminar: Friday, Mar 16th, 2018
Student A	Orientation	Jessica Jaw				Morning 10am-1pm
Student B	Orientation		Sandeep Kaur			Afternoon 2pm-5pm
Student C	Orientation			Laureen Mesa		Morning 10am-1pm
Student D	Orientation				Bina Solanky	Afternoon 2pm-5pm
		10am-5pm	10am-5pm	10am-5pm	10am-5pm	
Cohort 6	Monday, April 2nd, 9:30-1pm	Wed, April 4th, 2018	Thurs, April 5th, 2018	Wed, April 11th, 2018	Thurs, April 12th, 2018	Seminar: Friday, April 13th, 2018
Student A	Orientation	Shireen Stinson				Morning 10am-1pm
Student B	Orientation					Afternoon 2pm-5pm
Student C	Orientation					Morning 10am-1pm
Student D	Orientation				Chituru Uwaoma	Afternoon 2pm-5pm

Appendix U:
Satisfaction of Project Goals

Objectives and Goals for APRN students:	Met/Not Met	Metric
Goal 1: Improve communication skills in APRN and in dentistry students	Met	The number of students who were able to name any MI concenpts went from 48% to 78%. There was a statistically significant increase in the number of students utilizing MI techniques in their practice after the intervention, as well as those who gained confidence in their use of the technique (P<0.001). Verbal feedback from dentistry students stated that they appreciated seeing working and observing APRNS utilizing MI.
Goal 2: Improve oral health skills in APRN students.	Met	Completion of Smiles for Life modules and subsequent certificates. RIPLS: "Skills Competency" showed a change from 3.095 to 1.917 (p<0.001), which showed confidence gained.
Goal 3: Improve interprofessional collaboration	Unclear	RIPLS: "Collaboration" category hardly changed (from 1.117 to 1.111; p=0.876), yet the initial scores showed high ratings for collaboration, as did post-activity scores. "Roles" category showed a change from 2.857 to 3.226, suggesting less understanding of the dentistry role. "Positive identity subcategory avereges remained high, and therefore the difference was insigificant (p=0.810), with averages 1.345 and 1.375. "Negative Identity" category also showed no significant difference because students highly disagreed that IPE was "a waste of time" from the beginning (p=0.148), with averages 4.69 and 4.463.
Objectives and Goals for dentistry students:	**Met/Not Met**	**Metric**
Goal 1: Improve communication skills in APRN and in dentistry students	Met	A significant number of students expressed confidence and familiarity with the topic after the intervention (p<0.001). 88% of the students were unable to name any aspects of MI prior to, compared to 53% after the activity. Verbal response regarding MI in practice showed students were able to ustilize MI in practice; they also stated that they appreciated having APRN feedback regarding their performance. Also, APRN students discussed in their feedback that dentistry students were receptive to their feedback about patient interaction.
Goal 2: Improve oral health skills in APRN students.	Met	Per APRN verbal feedback, dentistry students demonstrated oral health exam skills to APRN students. Several APRN students were able to apply fluoride varnish on patients. It was unclear if dentistry students were able to give feedback to APRN students regarding their performance in the oral health exam. The "Skills" category in RIPLS showed significant increase in their confidence level (p=0.011) with averages of 2.048 and 1.560.
Goal 3: Improve interprofessional collaboration	Unclear	RIPLS: "Collaboration" category showed no significant difference before and after the activity (0.573), although the averages were high to begin with (1.473 and 1.444). "Roles" category showed a change from 2.716 to 2.828, suggesting less understanding of the APRN role (p=0.604). "Positive Identity" category showed no change (p=0.281), while averages were high to begin with, and "Negative Identty" showed no change as well, although averages were in between "neutral" and "disagree "(this was a reverse scoring category).

Appendix V:
Competencies as They Relate to Communication and IPE
(Interprofessional Education Collaborative Expert Panel)

Work with individuals of other professions to maintain a climate of mutual respect and shared values:

- VE1. Place the interests of patients and populations at the center of interprofessional health care delivery.
- VE2. Respect the dignity and privacy of patients while maintaining confidentiality in the delivery of team-based care.
- VE3. Embrace the cultural diversity and individual differences that characterize patients, populations, and the health care team.
- VE4. Respect the unique cultures, values, roles/responsibilities, and expertise of other health professions.
- VE5. Work in cooperation with those who receive care, those who provide care, and others who contribute to or support the delivery of prevention and health services.
- VE6. Develop a trusting relationship with patients, families, and other team members (CIHC, 2010).
- VE7. Demonstrate high standards of ethical conduct and quality of care in one's contributions to team-based care
- VE8. Manage ethical dilemmas specific to interprofessional patient/ population centered care situations.
- VE9. Act with honesty and integrity in relationships with patients, families, and other team members.
- VE10. Maintain competence in one's own profession appropriate to scope of practice.

Use the knowledge of one's own role and those of other professions to appropriately assess and address the healthcare needs of the patients and populations served:

- RR1. Communicate one's roles and responsibilities clearly to patients, families, and other professionals.
- RR2. Recognize one's limitations in skills, knowledge, and abilities.

- RR3. Engage diverse healthcare professionals who complement one's own professional expertise, as well as associated resources, to develop strategies to meet specific patient care needs.
- RR4. Explain the roles and responsibilities of other care providers and how the team works together to provide care.
- RR5. Use the full scope of knowledge, skills, and abilities of available health professionals and healthcare workers to provide care that is safe, timely, efficient, effective, and equitable.
- RR6. Communicate with team members to clarify each member's responsibility in executing components of a treatment plan or public health intervention.
- RR6. Communicate with team members to clarify each member's responsibility in executing components of a treatment plan or public health intervention.
- RR8. Engage in continuous professional and interprofessional development to enhance team performance.
- RR9. Use unique and complementary abilities of all members of the team to optimize patient care.

Communicate with patients, families, communities, and other health professionals in a responsive and responsible manner that supports a team approach to the maintenance of health and the treatment of disease:

- CC1. Choose effective communication tools and techniques, including information systems and communication technologies, to facilitate discussions and interactions that enhance team function.
- CC2. Organize and communicate information with patients, families, and healthcare team members in a form that is understandable, avoiding discipline-specific terminology when possible.
- CC3. Express one's knowledge and opinions to team members involved in patient care with confidence, clarity, and respect, working to ensure common understanding of information and treatment and care decisions.
- CC4. Listen actively and encourage ideas and opinions of other team members.

- CC5. Give timely, sensitive, instructive feedback to others about their performance on the team, responding respectfully as a team member to feedback from others.
- CC6. Use respectful language appropriate for a given difficult situation, crucial conversation, or interprofessional conflict.
- CC7. Recognize how one's own uniqueness, including experience level, expertise, culture, power, and hierarchy within the healthcare team, contributes to effective communication, conflict resolution, and positive interprofessional working relationships (University of Toronto, 2008).
- CC8. Communicate consistently the importance of teamwork in patient-centered and community-focused care.