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# Increasing Utilization of Motivational Interviewing to Promote Pediatric Oral Health

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Abstract

Prevalence of early childhood caries (ECC) remains high even in developed countries such as the United States. An interprofessional education (IPE) project between University of San Francisco (USF) School of Nursing and Health Professions and the University of the Pacific (UoP), Arthur A. Dugoni School of Dentistry was initiated four years ago to enhance nurse practitioner (NP) and dental students' pediatric oral-systemic health assessment and health promotion communication skills. Since then, USF NP students received pediatric oral health assessment training and spent clinical rotations at UoP to provide pediatric oral care alongside dental students. This doctor of nursing (DNP) project extends the established IPE by further developing the motivational interviewing (MI) training module incorporated in the IPE the previous year. The new MI module focuses in pediatric patients and parents/guardians scenarios. Laminated reference sheets listing key aspects of MI as well as the FRAMES (feedback, responsibility, advice, menu of options, empathy, and self-efficacy) model of brief intervention were part of this project. The Readiness for Interprofessional Learning Scale (RIPLS) was used as outcomes measure for the IPE activity, while surveys with both quantitative and qualitative questions were used for the MI portion. The RIPLS result is inconclusive and may improve with a bigger sample size. On the other hand, at least 65% of the dental student cohorts (n=55 and n=87) reported increased utilization and confidence in using MI techniques. The results reaffirm that either a single or repeat MI training among students result in improved patient and interprofessional communications, therefore, MI remains to be an important competency to include in future IPEs.

*Keywords*: motivational interviewing, MI, FRAMES, dental student, nurse practitioner student, interprofessional education, IPE, communication, pediatric oral health

# Increasing Utilization of Motivational Interviewing to Promote Pediatric Oral Health

## Introduction

### Problem Description

According to the National Institute of Dental and Craniofacial Research (NIDCR) (2018), prevalence of dental caries in primary (baby) teeth among children two to eleven years of age has increased since the mid 1990s. The National Health and Nutrition Examination Survey conducted from 2015 to 2016 revealed that 43.1 percent of children aged two to nineteen had carries (Fleming & Afful, 2018). By race/ethnicity, prevalence of caries was highest among Hispanic youth (52.0%) followed by non-Hispanic black (44.4%), Asian (42.6%), and least with the non-Hispanic white (39.0%) (Fleming & Afful, 2018). Youth from families with income below the federal poverty level had prevalence of 51.8 percent compared to 34.2 percent prevalence in youths from families that had income greater that 300 percent of the poverty level (Fleming & Afful, 2018). Only 40 percent of children from low-income families receive preventive dental care while 54 percent of children from higher income families receive preventive care (Kierce, Boyd, Rainchuso, Palmer, & Rothman, 2016).

An interprofessional education (IPE) between University of San Francisco (USF) family nurse practitioner (FNP) students and University of the Pacific (UoP) dental students was initiated to help address this health issue. The FNP students learn additional dental/oral assessment skills that can be used at primary care settings during a clinical rotation at the UoP, School of Dentistry in San Francisco. In January 2018, a cohort of dental students received an introductory module on motivational interviewing (MI) from an FNP student. This module was offered as an elective/volunteer class for the cohort. Compared to the FNP students that have

experience interacting with patients as registered nurses (RN), the majority of the dental students have had limited patient interactions outside of their clinical rotations. The MI module was designed to help the dental students enhance their patient communication or patient education skills.

During this DNP project manager's meeting with the University of the Pacific faculty involved with the introductory MI module, an interest in expanding the MI module was raised. After interviews were conducted with a small focus group consisting of the faculty member and two dental students, an agreement was reached to develop an additional MI module to help the dental students transition from "theory" to "practice." This additional module will serve as "booster session" or review for this cohort and future cohorts doing their pediatric rotation. Booster sessions were found to improve MI proficiency (Fu et al., 2015). Also, this new module can stand-alone as an introductory module for those students who did not get to view the MI module offered during the previous semester.

**Available Knowledge**

Initially developed as a counseling approach for substance abuse (Miller & Rollnick, 2013), MI is a counseling style that improves healthcare outcomes by encouraging people to make behavioral changes and is now being applied in different health care practices including dental care (Lundahl et al., 2013; Naidu, Nunn, & Irwin, 2015; Östlund, Wadensten, Kristofferzon, & Häggström, 2015). The author conducted a review of literature to examine the effectiveness of MI in the dental setting, particularly, in the school/training rotation setting. Also of interest was the value of longer or additional MI training. To recognize relevant studies, the project manager utilized the following PICO(T) (Patient/Population, Intervention, Comparison, Outcome, Time) questions:

- For dental students (*P*), how does having some training in motivational interviewing (MI) (*I*), compared to not receiving any training (*C*), affect their patients' oral health outcomes (O) during their education/training (*T*)?
- In dental students who had introductory module on motivational interviewing (MI) (*P*), how does receiving additional MI module (*I*), compared to no additional training (*C*), affect utilization of MI during patient interactions (*O*) within six months (*T*)?
- Among pediatric patients (*P*), how does application of motivational interviewing (MI) to parents or caregivers (*I*) affect oral health (*O*) compared to traditional parent or guardian communication model (*C*)?

The databases CINAHL, PubMed, Cochrane Database of Systematic Reviews, and Google Scholar were utilized for the literature search using the following keywords: *motivational interviewing, dentistry, dental school, dental students, dental caries, oral health, pediatric, patient outcome, communication skills, parent, guardian.* Inclusion criteria include peer-reviewed articles, in English language, and pediatric participants/subjects. The search was initially also limited to articles published between 2013 and 2018, but was adjusted to 2010 and 2018 to capture additional pertinent studies. Articles relevant to the topic were appraised using the Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Research Evidence Appraisal Tool (Johns Hopkins Hospital, 2012) and organized in an evaluation table (see Appendices A and B). A search adding the keywords: *interprofessional education, IPE, collaborative learning, nursing* was also conducted using the same limitations as above to assess available knowledge regarding the effectiveness of IPEs.

The search resulted in more than a hundred articles about MI and prevention of caries or

improved oral health outcomes but only two articles are specific to MI, improved oral health, and dental students. These articles are by Hinz (2010) and Woelber and colleagues (2016). The other studies selected for this review of evidence include the effectiveness of MI in preventing childhood caries and improvement of oral health when MI is applied to individuals, family, and community. Also discussed are studies supporting positive outcomes when IPE between healthcare professions were conducted.

**MI and Oral Health.** Albino and Tiwari (2016) conducted a review of literature to assess current evidence about behavioral intervention in pediatric oral health. At the time of their study, the authors limited their search to studies published in 2011. Out of 18 published studies, four studies specifically had MI as intervention applied to the patients or parents/caregivers of neonate to 7-year-old patients. Three out of the four studies show that application of MI to young children and/or their parent or caregiver resulted to decreased incidence of childhood caries. In another literature review, Cuevas and Chi (2016) identified studies that applied SBIRT (Screening, Brief Intervention, and Referral to Treatment) or it's components. They found two studies utilizing MI as brief intervention (BI) applied to mothers/caregivers of children from birth to five years old. In these two studies, no other aspects of SBIRT were used. MI resulted in significant increase in fluoride varnish application and lower caries rate in one of the studies while the other showed no statistically significant change in oral health behavior or dental caries. Cuevas and Chi (2016) wrote that the MI component used in the study which yielded no significant change was not clearly explained and consequently recommended detailed intervention descriptions be included in future SBIRT publications. In addition, Cuevas and Chi (2016) recommends adding the screening component to BI in future SBIRT-based interventions.

Wu and colleagues (2017) conducted a single blind RCT to compare the effectiveness of

prevailing health education (PE), MI, and MI in conjunction with risk assessment (RA). The study was conducted in Hong Kong with a sample size of 512 adolescents with unfavorable oral behaviors such as infrequent brushing and frequent snacking. After a 12-month period, the authors found the MI and MI+RA groups had less incidence of new caries, reduction of snacking, and increase in tooth brushing. MI+RA group had the best outcomes of the three study groups.

Naidu, Nunn, and Irwin (2015) conducted a randomized controlled trial (RCT) that included 79 parents and caregivers of preschool children in Trinidad. The authors compared the effectiveness of traditional dental health education (DHE) compared to MI in addition to DHE. After four months, the authors found the DHE+MI group to have better improvement in brushing frequency and less oral health fatalism but had no significant difference compared to the DHE group in regards to knowledge of fluoride use, tooth brushing, and dietary practice. A longer duration and another follow-up may have yielded more data on the effects of MI. Nonetheless, the studies presented above show that application of MI in the dental field results in improvement of oral health that ranges from little to significant.

**Training Matters.** Hinz (2010) conducted a study to assess the effectiveness of brief training in MI. This study included 94 third-year dental students who received three hours of MI training over a two-week period. Interventions applied by the students include brief advice (BA) and behavior change counseling (BCC) which Hinz labeled as basic MI techniques. Fifty-one percent of the students successfully applied BCC while 46% reported behaviors consistent with BA. While in a study conducted by Woelber and colleagues (2016), patients of dental students trained in MI showed significant improvement in interdental cleaning compared to patients of dental students that did not receive MI training. Although, there was no difference between the

group in regard to other outcome measures such as plaque index, gingival index, and bleeding on probing. These two studies show that at the very least, there was an improvement with the communication skills of the dental students who received MI training.

**The IPE Effect.** Rutherford-Hemming and Lioce (2018) conducted a systematic review on IPE in nursing that included 49 studies published from 2011 to 2016 from different countries. They found none of the studies tested the direct effects of IPE on patient outcomes and called for future studies to include comparison of outcomes post-IPE interventions. While the direct effect of IPE on patient outcomes is inconclusive due to lack of studies showing results post-IPE (Illingworth & Chelvanayagam, 2017; Rutherford-Hemming & Lioce, 2018), IPEs are shown to improve healthcare students' interprofessional communication skills. Olson and Bialocerkowski (2014), in an earlier systematic review of 17 studies published between 1998 and 2013, found university-based IPE to improve interprofessional communication, interaction, and teamwork. Four of the studies included both nursing and dentistry practices and resulted in better understanding of each discipline's role, decreased negative attitude towards other health professions, improved knowledge of pain management, and improved attitudes about teamwork. Consequently, improved interdisciplinary communication, collaboration, and teamwork leads to better health outcomes in any healthcare setting (Bosch & Mansell, 2015; Verhaegh et al., 2017).

## Rationale: Theoretical and Conceptual Frameworks

This project was framed using the Theory of Planned Behavior (Ajzen, 1991) and the Promoting Action on Research Implementation in Health Services (PARIHS) frameworks (Kitson, Harvey, & McCormack, 1998). The Theory of Planned Behavior applies to the utilization of MI to help patient change their behaviors while the PARIHS framework pertains to the successful implementation of a research or evidence-based practice.

**Theory of planned behavior.** The Theory of Planned Behavior was first presented by Ajzen in 1985 (Ajzen, 1991). Intention is the central concept of this theory (Appendix C) and Ajzen (1991) argued that the stronger the intent, the more likely a person is to perform a behavior. According to the theory, intention has three determinants: *attitude towards the behavior*, *subjective norms,* and *perceived behavioral control* (Ajzen, 1991). *Attitude towards the behavior* is a person's self-evaluation of a behavior; either favorable or unfavorable. *Subjective norm* is the person's perceived social acceptance of the behavior. *Perceived behavioral control* is the perceived ease or difficulty of performing the behavior (Ajzen, 1991). The more positive the "values" are on these three determinants, the stronger the intention is to perform a behavior, which in turn increases the likelihood to actually perform the behavior (Appendix C). The communication skills utilized in MI assess an individual's readiness for change and address the three determinants of intention. For example, a key communication skill in MI is asking open-ended questions. An open-ended question such as, "What do you think are the advantages/disadvantages of flossing daily?" could measure a patient's attitude towards flossing and his/her subjective norm. Additionally, readiness and confidence rulers are utilized in MI to identify the stage of change and perceived behavioral control. Alternatively, perceived behavioral control can also be solicited using open-ended questions. For example, pertaining to flossing, a provider could ask, "What barriers or difficulties do you anticipate that will keep you (or your child) from flossing every day?"

**PARIHS framework.** The PARIHS framework, which was first published in 1998, was developed by Kitson, Harvey, and McCormack (1998) as a "checklist" of what needs to be done to be successful in implementing research into practice. The PARIHS conceptual framework has three core elements that Kitson, Harvey, and McCormack (1998) concluded to be of equal

importance for a research to be successfully implemented – *evidence, context, and facilitation*. *Evidence* is comprised of research, clinical experience, and patient preferences; *context* was defined as the setting/environment culture, leadership, and measurement; while *facilitation* was described as the characteristics, role, and style of support needed to implement the change (Kitson et al., 1998). In this project, the *evidence* are from available literature and the positive outcomes when MI is utilized in interacting with patients. *Context* includes the setting (UoP), the stakeholders, and the project outcomes measures discussed later in this paper. *Facilitation* is also discussed below and includes aspects of the project such as human and material resources.

**Specific Aims**

The overarching aim of this project is to improve pediatric oral health through improved behavior regarding oral hygiene. One of the goals of this project is to integrate motivational interviewing (MI) into dental health practice by training dental students in utilizing MI. To reach this goal, the project will be directed by the following SMART (specific, measurable, achievable, realistic, time-phased) objectives:

1) By April 2019, two cohorts of dental students at the University of the Pacific (UoP) will receive MI/FRAMES (feedback, responsibility, advice, menu of options, empathy, and self-efficacy) training module.

2) The dental students will have access to MI/FRAMES reference sheet during their clinical rotation at the UoP San Francisco Campus until April 2019.

3) By the end of the project in April 2019, at least 50 percent of each cohort of dental students at UoP will report using MI during their patient encounter at a “higher” or “much higher” frequency compared to their baseline using the scale: much lower, lower, about the same, higher, or much higher.

4) By the end of the project in April 2019, at least 50 percent of each cohort of dental students will rate their confidence level in utilizing MI/FRAMES at “higher” or “much higher” rating compared to their baseline.

Another aim of this project is the continued development of the IPE between USF FNP program and the UoP dental program. While the focus on the dental students’ side will be the utilization of MI, the goal for FNP students will be to improve oral health assessment and intervention skills, particularly pediatric oral health assessment and application of fluoride varnish. Dr. Lee prepared the information and instructions (see Appendix D for 2018 cohort and Appendices E and F for 2019 cohort) regarding the IPE and were provided to the dental students during their pediatric rotation. On the NP side, this project manager first introduced the IPE activity in person to the NP cohort in November 2, 2018. The IPE instructions and expectations in Canvas from the previous IPE were edited with permission from Dr. Oksana Prodan, DNP, the former IPE project manager. The updated IPE module was uploaded on the NP students’ Canvas page in December 2018 and follow-up emails were sent until the NP students’ scheduled UoP rotations.

## Methods

### Context

**Setting and Stakeholders.** The University of San Francisco (USF) and the University of the Pacific (UoP) have a well-established interprofessional education (IPE) partnership. Family nurse practitioner (FNP) students from USF have worked alongside UoP pharmacy students for health promotion community outreach during Medicare enrollment seasons, and for the past four years, have worked with UoP dental students to observe and learn oral health screening and fluoride varnish application. This project will be a continuation of the IPE between USF FNP

students and UoP dental students. The setting was the pediatric section of UoP's Arthur A. Dugoni School of Dentistry in San Francisco. Consequently, the stakeholders for this project include both institutions' administration, faculty, the FNP and dental students, as well as the patients and their parents or guardians.

**Gap Analysis.** As previously mentioned, the previous MI introductory module was offered as elective class (Appendix G). While the volunteer turnout was good then, there was an interest in expanding the module for future cohorts. The desire state is for the MI class to be mandatory and eventually become a part of UoP's dental curriculum. After viewing the module, the students were expected to practice MI during their patient interactions to continue to develop their MI communication skills.

**Interventions**

To help increase the utilization of MI among dental students, two interventions were used for this projected. First was to increase the dental students' knowledge about MI through a mandatory MI module. Second, a reference sheet was developed, which was designed to aid in application/practice of MI during patient interactions. As for the IPE portion of the project, a cohort of FNP students were each scheduled UoP rotations over a two-week period that included a full day clinical from January to March 2019. During this rotation, dental students worked alongside FNP students in applying MI during patient interactions while the FNP students practiced oral assessments on mannequins and had the opportunity to apply fluoride varnish as appropriate cases become available.

**Development of the MI module.** The module was a PowerPoint presentation that discusses the key concepts of MI including the four process of MI (engaging, focusing, evoking, planning) and the key communication skills in MI (OARS: Open-ended questions, Affirmation,

Reflective listening, Summarizing) (Miller & Rollnick, 2013). An adaptation of MI, the FRAMES model of counseling (Schwartz, n.d.), was also included in the module. FRAMES is a model of brief intervention which stands for Feedback, Responsibility, Advice, Menu of options, Empathy, and Self-efficacy (Substance Abuse and Mental Health Services Administration [SAMHSA], n.d.). Brief interventions (BI) can be applied as quickly as five minutes and are mainly used to motivate behavior changes regarding substance abuse and related health issues (SAMHSA, n.d.). This DNP project manager was optimistic about the successful adaptation of FRAMES for counseling patients on oral health in the fast-paced setting of clinical rotations during school/training. Lastly, scenarios based on patients seen in the UoP clinic were presented in the module and included application of MI skills.

The PowerPoint presentation (Appendix H) was developed starting from July 1, 2018 with feedback from the members of the project team Dr. David Lee, DDS - UoP faculty, Assistant Professor, Department of Pediatric Dentistry; and two dental students Christopher Niu and Grace Kim. The presentation included voice commentaries by this project manager and was converted into a video. The third and final version of the module was completed in September 1, 2018. The 24-minute video was uploaded on YouTube in September 3, 2018. The YouTube link (https://www.youtube.com/watch?v=CJ803Sy8gDw&feature=youtu.be) was provided on the instructions provided to both dental and NP students. The students were also provided access to the PowerPoint slides so that they could view the presentation on their preferred media type. They were required to view the module before they start their clinical rotations.

**MI reference "cheat" sheet.** The MI reference sheet (Appendix I) includes the OARS skills, the readiness ruler, and the FRAMES model of counseling. Sample questions and statements for pediatric patients and/or parents or guardians were also included. Just like the MI

module, the reference sheet was designed and adjusted based on feedback from the UoP project team members. Twenty sheets were printed and laminated by August 10, 2018. The cheat sheets were made available for the students during their clinical rotation and were to be used during their patient intake, risk assessment, and discharge teaching.

**SWOT analysis.** During the planning phase, this DNP project manager conducted a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis of the project (Appendix J) including aspects of personnel, the setting, and resources. Some of the strengths of this project include the reinforcement of MI knowledge, great support from faculty and focus group, quick access to MI principles and sample questions, no maintenance cost since module will be posted online and the reference sheets are reusable, and actual opportunity to practice MI with the guaranteed patients during clinical rotations. Some of the weaknesses included the allocation of time for the MI module and the module being perceived as additional non-essential task during clinical. Students review dental modules in preparation for their clinical rotations and may not invest as much attention to the communication/MI skills as the clinical competencies. At the time, there were also concerns regarding the tracking of actual completion of the module and use of the reference sheet.

As for opportunities, the most anticipated was the improvement of the students' communication skills and increased likelihood of the students utilizing MI even after they graduate. Additionally, as MI is shown to improve health outcomes, the possibility of behavioral changes in patients, parents, or guardians will result to improved oral hygiene compliance and overall oral health. Threats to the success of the project included the perceived redundancy of the topic for those students who viewed the previous introductory MI module. Furthermore, the time constraints during clinical/appointments may prohibit the students from engaging patients in MI

conversations. In addition, a large number of pediatric patients with parents or guardians who speak limited English are seen in this setting. The patient cognitive development and/or the language barrier with a parent/guardian posed to be a challenge in utilizing MI and FRAMES. Lastly, schedule conflicts were anticipated due to the fact that the participating universities have different academic schedules. Also, all of the NP students were practicing registered nurses (RN) at the time of the project and needed to clear their work schedules in order to attend to the IPE activity.

**Resources and project timeline.**

***Needed resources.*** In addition to the prepared module and reference sheet, resources needed for the project include Canvas© learning management system, Zoom© video conferencing software, and UoP clinical (non-faculty) staff. Twenty reference sheets were printed and laminated. These were kept in the UoP dental clinic and will be utilized by the students only while in the clinic. The MI module was uploaded to Canvas© and YouTube for the students to access before their scheduled clinical. Zoom© was utilized for video conferencing between the project team members. Lastly, the UoP clinical staff helped in the distribution of the reference sheet during clinical rotations as well as in distributing and collecting the pre and post intervention evaluations.

***Project timeline.*** The project milestones were plotted on a Gantt chart (Appendix K). The planning phase started in April 2018, while the implementation started on September 4, 2018. Initially, the projected cohort size was 140 dental students and 13 FNP students. Since the two universities have different schedules, the outcomes of the MI portion of the project were intended to be measured only for the Fall 2018 while the IPE portion with the FNPs measured only during Spring 2019. The MI module was finalized only after the 2018 dental cohort already

started their classes thus this project manager decided to also measure the MI outcomes for the 2019 dental cohort. This also gave the project manager an opportunity to compare results from two separate dental cohorts. Fourteen students were in clinical every week of while UoP classes were in session. Collections of the pre and post intervention evaluation sheets were done weekly. The pre-evaluations were due right before a group's start of clinical while the post evaluations were due a week after their rotation. The FNP cohort was scheduled for rotations from January 7 to March 15, 2019. Each FNP student was expected to spend three days at the clinic: one day for orientation, one full day of clinical immersion, and one day for a post clinical seminar. A sign-up sheet (Appendix L) was made available for the FNP students that they themselves were able to update for the schedules that worked best for them. The sing-up sheet was shared on Google Drive with the link provided to the students via e-mail and the Canvas module. Overall, the project ran until April 26, 2019.

***Work breakdown structure.*** The major tasks in this project include the development of the PowerPoint presentation (MI/FRAMES module), creation of the reference sheet, and gathering of the project data. These tasks are further broken down (Appendix M) into smaller sub-tasks that coincide with the tasks listed on the Gantt chart (Appendix K).

***Communication plan.*** The project team includes this writer, Ulyses Reamico, USF FNP-DNP student project manager; Dr. David Lee, UoP Department of Pediatric Dentistry Assistant Professor and IPE Coordinator, UoP dental students Grace Kim and Christopher Niu; and Dr. Alexa Curtis, DNP Chair. Communications between the team members are conducted via face-to-face meetings, e-mails, phone calls, or video calls using Zoom ©. At least weekly communications were planned (Appendix N) throughout the project timeline and the distribution will depend on the project progress and deliverables.

***Project budget summary.*** The cost of the project (Appendix O) mainly revolves around the development of the presentation and the reference sheet. Including revisions based on the project team feedback, the presentation and reference sheet was completed in 28 total hours. The total hours were multiplied by an hourly salary rate of $40 (based on project manager's RN salary) totaling $1,120. Actual cost of printing and laminating 20 sheets of the reference sheet at FedEx Printing was $79.99. Actual cost of printing the pre and post surveys was $66.86. Lastly, $100 was budgeted for miscellaneous expenses incurred during the development of the project including transportation and parking fees. The total cost of the project was $1,366.85.

The return on investment (ROI) of this project (Appendix P) is primarily cost avoidance. The prevalence of caries among children aged 2 to 19 is 43% (Fleming & Afful, 2018), or 43 per 100 patients (.43 x 100). The cost of one dental filling (white) in San Francisco ranges from $250 to $330 (Delta Dental, 2018). Using the lower amount, we can potentially save $10,750 per 100 patients (43 x $250). Going by "per prevented tooth decay" through MI utilization, at the 6$^{th}$ prevented tooth decay, the ROI of the project will be between 10% (at $250) and 45% (at $330).

Another cost that could be avoided is parental or caregiver/guardian time off work. The DNP project manager was not able to locate published data regarding average dental appointment time but a web search revealed dental filling lasts at least 15 minutes to about an hour (Haji, 2016; Kool Smiles, n.d.). Taking into account family preparation, travel, and wait times, the project manager will use a half-day or four hours worth of lost work time. Using this number multiplied by the San Francisco minimum wage ($15 per hour) (Office of Labor Standards Enforcement, 2018) equals a potential cost saving of $60 per dental appointment per family.

**Study of the Interventions**

As previously mentioned, the overarching aim of this project is to improve pediatric oral health. Studies show that one of the limitations of IPEs, especially those done in a university setting, is the lack of or the difficulty of measuring post intervention patient outcomes (Illingworth & Chelvanayagam, 2017; Rutherford-Hemming & Lioce, 2018). This DNP project manager acknowledged this limitation given this project's setting, the patient population, and the time frame for this project. Patients at the UoP clinic include uninsured individuals/families who may or may not return within the standard six months interval of dental visits. If this project was for a longer period, data of interest from the patients would have included maintenance of oral health, development of new carries, and behavioral changes regarding oral health such as increased oral hygiene compliance (brushing or flossing) and dietary changes.

Consequently, the short-term effects of the IPE activity, MI module, and the MI reference sheet on learners were studied for this paper. Just as the previous IPEs between USF and UoP, the Readiness for Interprofessional Learning Scale (RIPLS) was utilized for this project to assess select students' perception of the IPE activity. For the MI interventions, this author designed pre and post activity surveys that included quantitative and qualitative questions. One of the feedback/suggestions from the previous IPE activity was to reduce the amount of paper used for future sessions. Accordingly, this author decided to only require the RIPLS sheet from the FNP students and the dental students that got paired up with them during the clinic rotation. Also, all RIPLS sheet from the NP students were sent to this project manager electronically. Although they were required to view the MI module, the FNP students were excluded from doing the MI pre and post activity surveys. This project manager anticipated no statistically significant change from the FNP students' MI surveys if they did one since MI has been part of multiple modules included in the FNP curriculum that these students would have viewed/learned by the time of the

project.

**Measures**

The primary outcome measure for this project was a post intervention questionnaire utilizing a Likert-type scale to assess the dental students' frequency and confidence in utilizing MI (Appendix R). Other questions/items on the questionnaire assessed the students' knowledge of MI and FRAMES key concepts. The data was then compared to the pre-intervention data (Appendix Q), which was consisted of nine statements to which the responders can select from *Strongly Agree, Agree, Neutral, Disagree,* or *Strongly Disagree*. The tenth item was a multiple choice type question. The post activity survey consisted of the same ten items plus four additional Likert-type items and two fill-in the blanks items (Appendix R). Qualitative follow-up questions were included within item number 11 and 14 to assess the efficacy of the MI/FRAMES module and reference sheet and to gather feedback on both.

The pre- and post- RIPLS surveys (Appendix S) were collected starting in January 2019 when the first cohort of FNP students was scheduled to work with dental students at UoP. The RIPLS is a validated scale that measures learners' attitudes about interprofessional learning. It is a 19-item Likert-type survey with the response choices of *Strongly Agree, Agree, Undecided, Disagree,* or *Strongly Disagree* with four sub-categories: Teamwork and Collaboration (items 1-9), Negative Professional Identity (items 10-12), Positive Professional Identity (items 13-16), and Professional Roles (items 17-19) (as cited in Gunaldo et al., 2015). A previous project manager, Dr. Luke Creasman, DNP, added 4 items to the RIPLS used for this project. Dr. Creasman called the -category for these items, "Skills Competency". Two of the new items (20 and 21) are directed to NP students and the other two (22 and 23) are for dental students.

**Analysis**

Project data were manually extracted from participant surveys and consolidated in Microsoft Excel. Descriptive statistics on participant characteristics were analyzed including their age and gender. The pre and post intervention evaluations were quantified using a 1-5 (*Strongly Agree* to *Strongly Disagree*) Likert scale. Pre-post intervention data were analyzed descriptively including the mode, mean, and standard deviation. Two-tailed paired sample t-test was done on the FNP RIPLS since completed pre and post surveys were collected from all 13 students. The two tail, independent samples t-test of equal variances was used for the other quantitative analysis due to the uneven numbers of pre and post survey results. The equal variances were confirmed using the comparison of variances function on the add-in tool XLSTAT in Excel. Thematic analysis of the qualitative responses was performed and documented in Microsoft Word.

**Ethical Considerations**

This DNP project was approved as a quality improvement project exempt from IRB approval (see Appendix T for Statement of Non-research Determination). Demographics on the surveys were limited to the first three letters of first name, last three letters of last name, year of birth, and gender for confidentiality. Also, the surveys were collected by UoP staff and placed in boxes/envelopes at the clinic. Only this project manger tallied and read the actual responses. The NP students earned at least 11 hours for participating in the IPE while non-participation would have resulted in “incomplete” grade for their Community Health Promotion class. This project did not have any impact on dental students’ grades or clinical hours.

The University of San Francisco’s (USF) approach to learning is defined by Jesuit tradition (University of San Francisco, 2018). Based on this tradition, one of USF’s core values is the commitment to advancing diversity of perspectives and experiences as essential

components of quality education (University of San Francisco, 2018). This aligns perfectly with this project since the IPE encouraged the exchange of knowledge between the students of two institutions with different practice guidelines/backgrounds. Furthermore, IPE satisfies the provision 8 of the American Nurses Association (ANA) (2015) Code of Ethics, which guide nurses to collaborate with other health professionals in promoting health and reducing health disparities.

Two other Jesuit values that relate to this project are: the belief in "reasoned discourse rather than coercion as the norm for decision making," and "a culture of service that respects and promotes the dignity of every person" (University of San Francisco, 2018). These values are in a way, the core of MI. When utilizing MI, a healthcare provider fosters a "reasoned discourse" by utilizing OARS. MI enables providers to step away from the authoritarian communication style while also guiding their patients to present their own arguments for change. This aspect of MI also provides a good example of provision 1 of the ANA's Code of Ethics (2015), which includes respect for human dignity (provision 1.1), relationship with patients (provision 1.2), and patients' rights to decide their own treatment process (provision 1.4).

## Results

### MI Survey

**Demographics.** Summary of the IPE participants' demographics is shown in Appendix U. The MI surveys were collected from the two cohorts of dental students. The actual count of students who actually viewed the MI module was not obtained. The analyses of results were based solely from the collected/returned surveys.

*2018 Cohort*: The 2018 DDS cohort were on their third pediatric rotation at the time of this project. This cohort was also the same cohort who received the voluntary MI module two

semesters prior. Sixty-one pre-activity surveys were collected from the cohort but one was excluded from analysis due to incomplete data. Of the 60 analyzed, 32 were from male students and 28 were from females. The students were born between 1988 and 1996. Depending on if a student has had a birthday by the time of the survey, the presumed age range of the cohort was 21 to 30 years old. Fifty-nine post-activity surveys were returned. Four was excluded from the analysis due to incomplete data bringing the analyzed survey total down to 55. There were 29 surveys from male students and 26 from female students. There was no change in the presumed age range by the time of the post-activity survey.

*2019 Cohort*: The 2019 cohort were on their first pediatric rotation during the implementation of this project. For this cohort, the interventions/module were applied from the beginning of the school semester, thus there were more surveys collected for analysis. A total of 110 pre-activity surveys were collected and only one was excluded for only having 1/10 items answered. The final yield of 109 was from 50 male students and 59 female students. The presumed age range for this cohort was between 18 to 40 years old based on the reported birth years of between 1979 and 2000. Depending on if a student has had a birthday by the time of the survey, the presumed age range of the cohort was 21 to 30 years old. The post-activity survey return was 15% less at 93 total. Six were excluded in the analysis since they only included nine to eleven items out of the 16 items of the post-activity survey. Eighty-seven were obtained for analysis, 41 of which came from male students and 46 from female students. There was no change in the presumed age range for this cohort as well.

**MI Survey Results.** The total of the collected surveys were different for pre and post surveys. Also, it was not clear who among the students completed both pre and post surveys or who completed only either one. This was especially true with the larger pre and post discrepancy

of the 2019 cohort. Nonetheless, the variances of the samples were found to be equal, therefore, this project manager utilized the independent samples t-test with equal variances to analyze the first 10 items of the pre and post survey. Items 11-16 of the post survey included Likert-type and fill-in the blank items. Descriptive data including the mode, mean, and standard deviation were calculated on the applicable items. Thematic analysis of the qualitative responses was also done.

*2018 Cohort:* Figure 1 below shows the summary of the 2018 survey results. The survey results were encoded from 1 to 5 in Excel corresponding to responses from *Strongly Agree* to *Strongly Disagree*. Lower number responses to items 1 through 5 means more positive or favorable. Item 1 inquired about the students' previous experience in viewing an MI training module. Fifty-five percent (n=33) answered on the affirmative (1-2) on the pre-activity survey, seven students responded with *Neutral*, and 20 students on the negative (4-5). Most answered 2 with the mean set at 2.68 (s.d. 1.27), which was expected since this cohort had the opportunity to view the MI module from the previous IPE. The mode remained at 2 for the post survey but the mean improved to 1.82 with 51 out of 55 answering on the affirmative (p=0.000).

| DDS 2018 Cohort Pre-activity MI Survey | | | |
|---|---|---|---|
| Q | Mode | Mean | Standard Deviation |
| 1 | 2 | 2.68 | 1.27 |
| 2 | 4 | 3.65 | 0.84 |
| 3 | 3 | 3.12 | 0.74 |
| 4 | 4 | 3.58 | 0.96 |
| 5 | 4 | 3.53 | 0.81 |
| 6 | 4 | 3.27 | 1.07 |
| 7 | 4 | 3.50 | 0.97 |
| 8 | 2 | 2.62 | 0.74 |
| 9 | 3 | 2.98 | 0.77 |
| 10 | 2 | 2.08 | 0.28 |

| DDS 2018 Cohort Post-activity MI Survey | | | | |
|---|---|---|---|---|
| Q | Mode | Mean | Standard Deviation | p-value |
| 1 | 2 | 1.82 | 0.75 | 0.000 |
| 2 | 2 | 2.24 | 0.58 | 0.000 |
| 3 | 2 | 2.40 | 0.66 | 0.000 |
| 4 | 2 | 2.51 | 0.90 | 0.000 |
| 5 | 2 | 2.65 | 0.84 | 0.000 |
| 6 | 4 | 3.13 | 1.14 | 0.500 |
| 7 | 4 | 3.38 | 1.05 | 0.530 |
| 8 | 2 | 2.45 | 0.60 | 0.202 |
| 9 | 2 | 2.58 | 0.71 | 0.005 |
| 10 | 2 | 2.05 | 0.23 | 0.586 |
| 11 | 2 | 2.28 | 0.56 | |
| 12 | | | | |
| 13 | | | | |
| 14 | 2 | 2.44 | 0.60 | |
| 15 | 2 | 2.33 | 0.51 | |
| 16 | 2 | 2.29 | 0.50 | |

*Figure 1. DDS 2018 Cohort MI Survey Results*

Item 2 asked the students if they could name key components of MI. The majority answered 4 ($\bar{x}$=3.65, s.d. 0.84) on the pre survey but improved to 2 ($\bar{x}$=2.24, s.d. 0.58) on the post survey. Item 3 asked the students about consistently utilizing MI in their practice at the time, while item 5 was an affirmation of confidence in practicing MI without any printed or electronic reference. The post survey indicated the students' improvement with utilizing MI with the mean of items 3 and 5 improving to 2.4 (s.d. 0.66) and 2.65 (s.d. 0.84) from 3.12 (s.d. 0.74) and 3.53 (s.d. 0.81) respectively. Item 4 responses were expected to improve since it asked about encountering the FRAMES model of brief intervention. An improvement of 0.88 on the average of the responses was observed during the post survey. Items 2 through 5 were found to have statistically significant change post-intervention (p=0.000).

For items 6 and 7, higher number responses indicating disagreement to the statements are better. Item 6 assessed the belief that patient teaching is more effective when the healthcare provider dominates the conversation during a patient encounter. On the other hand, item 7 stated that treatment plans are more effective when patient choices were limited to one or only the "best" option available. There were no significant changes (item 6 p=0.500; item 7 p=0.530) from baseline for both items since the majority answered *Disagree* on both pre and post surveys.

Item 8 was a self-appraisal of a student's confidence in apprehending patient ambivalence to treatment plan or health issue. Thus, lower number is better/positive change for this item. While there was a decrease in the mean (-0.17) after viewing the MI module, this change was deemed to be insignificant statistically (p=0.202). This could be attributed to the high number of students already rating their confidence level high during the pre survey. Item 9 was a follow-up statement claiming knowledge of how to help a patient resolve his/her ambivalence. A subpart of item 9 asked for at least 3 ways to help the patient. The Likert portion of item 9 showed

significant improvement after intervention (p=0.005). The mode improved from 3 to 2 while the mean improved from 2.98 to 2.58. On the pre survey, 21 students (35%) listed at least one way to help patients resolve their ambivalence. Seventeen of the 21 listed three ways but only eight of the 17 were able to express MI/FRAMES BI on all three of their responses. Twenty-nine (52.7%) of the post survey responders listed at least one way to help patients, 16 of whom were able to express MI/FRAMES on all three of their answers.

Item 10 asked the students to pick a statement from three choices that will most likely help explore a patient's ambivalence for change. Eleven (18.3%) students left this item blank. This can be attributed to the survey sheet itself. On the original survey papers, nine of the ten items were printed on the front page of the paper while the last item was printed on the back. Of those who answered (n=49), 45 (91.8%) picked the correct answer (letter b). Item 10 was answered in all 55 post-intervention surveys. Only 3 (5.45%) students picked answers other than letter b on the post survey but the change was not significant (p=0.586).

Items 11 through 16 were included in the post survey only. Items 11 and 14 both have two parts. The first parts of the items asked the students if they found the MI presentation and MI reference/cheat sheet helpful. The response choices ranged from *Strongly Agree* to *Strongly Disagree* and were coded 1-5 in Excel. One student left items 11 through 14 empty but completed the rest of the survey. This leaves the total of 54 responses for both items 11 and 14. Another student answered *Disagree* to item 11 and *Strongly Disagree* on item 14. Thirty-eight students (70.4%) found the MI module helpful in increasing their knowledge about MI while 15 (27.8%) answered *Neutral*. For the MI reference sheet, 32 students (59.3%) responded affirmatively and 21 students (38.9%) found it neutral.

The second part of items 11 and 14 asked the students to list up to three answers to "What

went well" and "Suggestions for improvement." The qualitative responses were transcribed in Microsoft Word, cleaned for redundancy, and observed for recurrent themes (Appendix V). For the PowerPoint, 33 students left at least one comment on either what was good or needed improvement section. The most common theme was that the presentation was clear. Most of the positive feedback applauded the organization and clearness of the presentation. Some liked how the module was accessible and allowed for "own pace" viewing. Another theme was that the presentation helped students improve their utilization of MI at the clinic. Others commented on how the presented acronyms helped them remember the key points and had improved interactions with patients when they applied the concepts in practice. On the other hand, some students recommended fewer acronyms for future presentations. A theme asking for shorter presentation was observed with some students asking to have a dedicated time or class allowed for the module. Alternate delivery of the information was also a theme with some calling for in-person seminar or formal presentation. Six of the 19 students (31.6%) who had suggestions for improvement listed adding more examples/scenarios in future presentations.

There were 26 students who added comments on item 14. One student's responses were applied on the MI module (item 11) data set based on the responses provided (e.g. "video" and "interactive modules"). The prevailing themes regarding the reference sheet are being an organized sheet and useful in clinic. Another theme gathered from the responses was that having the physical sheet made the students more cognizant of applying MI aspects such as asking open-ended questions, reflective listening, and summarizing. This in turn resulted to more positive parent/patient interactions. The majority of students who reported better engagement, understanding, and compliance from parents and patients they encountered. Six students listed suggestions for improvement. One student found the sheet to be "busy" but suggested more

explanation on the "Respond to Readiness" section of the sheet. Three suggested more practice questions or examples geared towards children. A theme that patient encounter time took longer was noted. Lastly, a theme that more reminders are needed about the reference sheet emerged. Eight students indicated that they did not use the reference sheet in the clinic. Of the eight, four reported not finding the sheet in the clinic during their rotation, one forgot about the sheet being available in the clinic, and the other three did not provide additional detail. One of the three was the same student who answered *Strongly Disagree* on the first part of item 14.

Items 12 and 13 were intended to be "test of knowledge" items and asked the students to define the acronyms OARS and FRAMES respectively. Fourteen students or 25.5% of the cohort left item 12 blank, 34 (61.8%) were able to completely define OARS, five (9.1%) listed 3/4 aspects correctly, and two (3.6%) correctly named one aspect. For FRAMES, 11 (20%) did not answer, one (1.8%) correctly defined 1/6, one (1.8%) defined 2/6, two (3.6%) defined 3/6, three (5.5%) got 4/6, and another (1.8%) got 5/6 correctly. Thirty-four (61.8%) of the cohort correctly and completely defined FRAMES.

Items 15 and 16 were the main outcomes of interest for this project. They were "fill-in the blank" items to which the students were to pick from *Much Higher, Higher, The Same, Lower,* or *Much Lower* choices to complete the statements. Item 15 compared the students' rate of utilizing MI during patient/caregiver interactions before and after viewing the MI/FRAMES module. Thirty-six students (65.5%) reported utilizing MI higher or much higher compared to before this project interventions. The rest (34.5%) reported utilizing MI at the same rate as before. The last item asked the students to rate their confidence level in utilizing MI in their own future practice. Thirty-eight students (69.1%) rated their confidence to be higher or much higher and the rest (30.9%) reported no change.

*2019 Cohort:* The summary of the 2019 survey results is shown in Figure 2. The pre-activity survey total was 109 and the post-activity survey totaled 87. With this cohort, the majority answered 4 on item 1 ($\bar{x}$=3.74, s.d. 1.21) on the pre survey. Only 24 (22%) reported having seen an MI training previously. As expected, there was a statistically significant change post-intervention (p=0.000) with majority of the cohort answering 1 ($\bar{x}$=2.22, s.d. 1.25). Just like with the 2018 cohort, significant change (p=0.000) was also observed in the responses to items 2 through 5 in the post survey confirming that the students viewed the MI/FRAMES module.

| DDS 2019 Cohort Pre-activity MI Survey | | | |
|---|---|---|---|
| Q | Mode | Mean | Standard Deviation |
| 1 | 4 | 3.74 | 1.21 |
| 2 | 4 | 3.72 | 1.09 |
| 3 | 3 | 3.39 | 0.95 |
| 4 | 4 | 3.90 | 1.02 |
| 5 | 4 | 3.72 | 0.98 |
| 6 | 4 | 3.15 | 1.15 |
| 7 | 4 | 3.35 | 1.08 |
| 8 | 3 | 2.81 | 0.81 |
| 9 | 3 | 3.18 | 0.85 |
| 10 | 2 | 2.04 | 0.31 |

| DDS 2019 Cohort Post-activity MI Survey | | | | |
|---|---|---|---|---|
| Q | Mode | Mean | Standard Deviation | p-value |
| 1 | 1 | 2.22 | 1.25 | 0.000 |
| 2 | 2 | 2.48 | 0.76 | 0.000 |
| 3 | 2 | 2.47 | 0.70 | 0.000 |
| 4 | 2 | 2.61 | 1.06 | 0.000 |
| 5 | 2 | 2.79 | 0.89 | 0.000 |
| 6 | 4 | 3.38 | 1.07 | 0.149 |
| 7 | 4 | 3.47 | 1.00 | 0.416 |
| 8 | 2 | 2.37 | 0.67 | 0.000 |
| 9 | 2 | 2.62 | 0.74 | 0.000 |
| 10 | 2 | 2.05 | 0.21 | 0.864 |
| 11 | 2 | 2.25 | 0.61 | |
| 12 | | | | |
| 13 | | | | |
| 14 | 3 | 2.52 | 0.76 | |
| 15 | 2 | 2.30 | 0.53 | |
| 16 | 2 | 2.20 | 0.45 | |

*Figure 2. DDS 2019 Cohort MI Survey Results*

Items 6 and 7 results showed a slight change in attitude of the students regarding healthcare providers doing most of the talking ($\bar{x}$=3.5 to 3.38; s.d. 1.15 to 1.07) and giving limited treatment choices to patients ($\bar{x}$=3.5 to 3.38; s.d. 1.08 to 1.00). The difference were not big enough to be statistically significant though with the p-values at 0.149 and 0.416 respectively. Items 8 and 9 suggest the cohort's improved confidence in apprehending ambivalence ($\bar{x}$=2.81 to 2.37; s.d. 0.81 to 0.67) and increased knowledge of strategies in reducing patient ambivalence ($\bar{x}$=3.18 to 2.62; s.d. 0.85 to 0.74). Both were found to be statistically

significant improvements (p=0.000). On the second part of item 9, 82 (75.23%) did not provide a response, 25 (22.94%) listed 3/3, while 2 (1.83%) listed 2/3. Of the 27 who answered, eight (29.63%) listed aspects of MI/FRAMES on 3/3 responses, nine (33.33%) had 1-2 MI/FRAMES response, and ten (37.04%) listed specific topics they would discuss with patients such as finances, flossing, brushing habits, using visual aids, et cetera. The post survey results show improvements with more than half of the responders listing at least one answer. Three (3.4%) listed one answer, four (4.6%) listed two, 42 (48.3%) listed 3 ways, and 38 (43.7%) did not provide any answer. Twenty-seven (55.1%) of the 49 students who listed an answer had aspects of MI/FRAMES on their responses while the rest have 1-2 aspects of MI/FRAMES. The two most referenced were asking open-ended questions and reflective listening.

Seven students left item 10 unanswered on the pre survey, leaving the total of responses that were analyzed at 102. It was easier to miss item 10 on the pre survey since it was the only item on the backside of the sheet compared to having six items on the post survey. All 87 post-activity survey collected had an answer on item 10. Ninety-four students (92.2%) picked the correct answer during the pre survey and 83 (95.4%) during the post survey (p=0.864).

Out of 87, five students (5.7%) strongly agreed the MI module was helpful in increasing their knowledge about MI/FRAMES and another 58 (66.7%) agreed. These combined accounts for 72.4% of the cohort. Twenty-one students (24.1%) answered neutral and three (3.4%) disagreed with the statement. Thirty students (34.5%) did not leave any feedback about the presentation. Feedbacks from 50 students were consolidated and analyzed for themes (Appendix W). Themes observed in the 2019 cohort are similar to the 2018 cohort despite the more number of respondents. Just like the previous cohort, the most prevalent theme about the module was that it was a well organized and clear presentation. A lot liked the acronyms, the diagrams used,

having the notes on the slides, and the sample questions/scenarios. Others liked how the presentation was “succinct” or “concise” given the topic and information covered. As expected, some suggestions for improvement overlapped or contradicted each other. While others liked the acronyms, others commented that there were too many and were hard to memorize. The most prevalent theme was the need for more examples or scenarios of MI/FRAMES application. Others suggested adding more interactive portions like a check-in or post presentation quiz. Three students suggested to have this module earlier in their program, preferably before clinical rotations. A live presentation will also be welcomed. Compared to the previous cohort, more students in this cohort interpreted “what went well” and “suggestions for improvement” portions as referring to their experiences in applying MI/FRAMES rather than critiquing the module. Consequently, 14 students described utilizing MI during their clinical rotations led to better communication (more open-ended questions and listening), more engaged/receptive parents/children, and better self-awareness on empathy.

The majority of the cohort (n=67, 77%) were able to completely define OARS. Seven (8%) correctly listed one to three aspects of OARS while 13 students (15%) left item 12 blank. FRAMES, on the other hand, was completely and correctly defined by 66 students (75.9%), partially (1-5 out of 6) by nine students (10.3%), and 12 (13.8%) did not provide any answer.

Five students indicated that they did not “use” or “see” the MI reference sheet in clinic during their rotation. Forty-four students (50.6%) provided feedback/suggestions for improvement and 38 students (43.7%) did not leave any comment. The summary of responses is shown in Appendix W. Majority of survey responders liked the appearance of the sheet. Most commented that it was “easy” to read and follow. Others suggested to have more pictures or graphics than texts in future sheets. The utilization in the clinic had pros and cons as well. Some

reported the sheet guided their patient conversations with parents well and resulted in optimistic feeling about treatment plan compliance. Time constraint in using the sheet was another theme with some students reporting not having enough time to apply concepts and "had to read quickly".

Lastly, 58 (66.7%) of the 87 students (mode=2, $\bar{x}$=2.30, s.d 0.53) evaluated themselves as having *Higher* or *Much Higher* MI/FRAMES utilization rate during patient interactions since viewing the module or using the reference sheet. Sixty-eight (78.2%) of the cohort (mode=2, $\bar{x}$=2.20, s.d 0.45) rated their confidence in using MI in future practice as *Higher* or *Much Higher*. These data suggest that more than half of the future dentists in this cohort will continue to unitize MI/FRAMES after becoming aware of their immediate benefit of improving communication between patients and providers.

*2018-2019 Comparison:* Figures 3 and 4 show the comparison of results from the two cohorts. On the pre surveys (Figure 3), item 1 came out to be statistically significant (p=0.000). More students in the 2018 cohort saw a previous voluntary MI module, which may explain the difference. Post survey (Figure 4) still showed significant difference (p=0.034). While both groups had reduction in mean, the shift was going towards 1 for the 2018 cohort while it was going towards 2 for the 2019 cohort. In a way, 2018 pre survey data is more comparable to 2019 post survey data with both cohorts having received/viewed MI/FRAMES training at least once at the time of their survey.

The previous exposure to MI by the 2018 cohort also explains the lower mean values and standard deviation on items 3 through 5 both in the pre and post surveys, although, the difference were not statistically significant. There were no other significant differences on the rest of the items from both pre and post surveys from both cohorts.

| 2018 vs 2019 Pre-activity MI Survey | | | | | |
|---|---|---|---|---|---|
| Q | 2018 | | 2019 | | p-value |
| | Mean | Standard Deviation | Mean | Standard Deviation | |
| 1 | 2.68 | 1.27 | 3.74 | 1.21 | 0.000 |
| 2 | 3.65 | 0.84 | 3.72 | 1.09 | 0.686 |
| 3 | 3.12 | 0.74 | 3.39 | 0.95 | 0.060 |
| 4 | 3.58 | 0.96 | 3.90 | 1.02 | 0.051 |
| 5 | 3.53 | 0.81 | 3.72 | 0.98 | 0.199 |
| 6 | 3.27 | 1.07 | 3.15 | 1.15 | 0.508 |
| 7 | 3.50 | 0.97 | 3.35 | 1.08 | 0.368 |
| 8 | 2.62 | 0.74 | 2.81 | 0.81 | 0.133 |
| 9 | 2.98 | 0.77 | 3.18 | 0.85 | 0.133 |
| 10 | 2.08 | 0.28 | 2.04 | 0.31 | 0.419 |

*Figure 3. Comparison between 2018 and 2019 Pre-intervention Survey Results*

| 2018 vs 2019 Post-activity MI Survey | | | | | |
|---|---|---|---|---|---|
| Q | 2018 | | 2019 | | p-value |
| | Mean | Standard Deviation | Mean | Standard Deviation | |
| 1 | 1.82 | 0.75 | 2.22 | 1.25 | 0.034 |
| 2 | 2.24 | 0.58 | 2.48 | 0.76 | 0.041 |
| 3 | 2.40 | 0.66 | 2.47 | 0.70 | 0.544 |
| 4 | 2.51 | 0.90 | 2.61 | 1.06 | 0.563 |
| 5 | 2.65 | 0.84 | 2.79 | 0.89 | 0.358 |
| 6 | 3.13 | 1.14 | 3.38 | 1.07 | 0.185 |
| 7 | 3.38 | 1.05 | 3.47 | 1.00 | 0.610 |
| 8 | 2.45 | 0.60 | 2.37 | 0.67 | 0.435 |
| 9 | 2.58 | 0.71 | 2.62 | 0.74 | 0.757 |
| 10 | 2.05 | 0.23 | 2.05 | 0.21 | 0.820 |
| 11 | 2.28 | 0.56 | 2.25 | 0.61 | 0.810 |
| 12 | | | | | |
| 13 | | | | | |
| 14 | 2.44 | 0.60 | 2.52 | 0.76 | 0.552 |
| 15 | 2.33 | 0.51 | 2.30 | 0.53 | 0.753 |
| 16 | 2.29 | 0.50 | 2.20 | 0.45 | 0.241 |

*Figure 4. Comparison between 2018 and 2019 Post-intervention Survey Results*

**RIPLS Survey**

**Demographics.** Appendix U shows the Summary of the IPE participants' demographics.

The FNP student cohort was consisted of 10 females and 3 males. All 13 completed both pre and post surveys. Six pre activity survey and five post surveys were received from the dental students. Only two dental students completed both pre and post surveys. Reported birth years of all RIPLS survey responders were from 1979 to 2000. The presumed age range was between 18 and 40 years old at the time of the project and survey collection

**RIPLS Survey Results.** Since each NP student was paired up with a dental student during their clinical rotation at UoP, the expected survey total was 52 – 26 each for pre and post surveys. As mentioned, there was a lower return of surveys from the dental students. This may have been prevented if this project manager was able to oversee the project personally at the UoP clinic. Unfortunately, this was impossible given the project manager's separate and different school schedule. Initially, there was also a low return of surveys from the NP students, especially the post survey. One of the NPs notified this project manager that she asked a clinic staff about the post surveys at the end of her clinical but was informed that there was none. This might have been the case for the "missing" dental surveys. The difference was that this project manager was able to follow up and connect directly with the NP students via the USF system (Canvas) and e-mail albeit resulting in a longer than anticipated collection period.

The raw data from the survey results are shown in Appendix X (FNP) and Appendix Y (DDS). The analysis of the RIPLS results focuses on the five sub-categories: Teamwork and Collaboration, Negative Professional Identity, Positive Professional Identity, Professional Roles, and Skills Competency. Generally, RIPLS results are interpreted such that the higher the total, the better or more favorable attitude towards interprofessional learning (Gunaldo et al., 2015; Talwalkar et al., 2016). This is because the Likert scores are coded from 1-Strongly Disagree to 5-Strongly Agree. This also applies to the sub-categories except for the Negative Professional

Identity, which is either coded reversely or interpreted inversely (Gunaldo et al., 2015; Talwalkar et al., 2016). In this paper, the data was coded as follows: 1-*Strongly Agree,* 2-*Agree,* 3-*Undecided,* 4-*Disagree,* or 5-*Strongly Disagree,* to coincide with the coding pattern used for the MI survey results. This means that the data presented here will look reversed when compared to results seen in other available studies.

Figure 5 shows the results of the FNP survey. Since the pre and post survey results were from the same 13 students, the single tail paired t-test was used. The average response for Teamwork and Collaboration items increased to 1.67 from 1.36 (p=0.000). The raw data shows two students picked 3-5 on most of the items (1-9) under this sub-category compared to 2-3 on the pre surveys. In addition, the fact that the cohort started with the low average (1.36), a shift from 2-4 for example may have skewed the post results. The significant change may be attributed to some of the students' perceived lack "of learning opportunities." Six of the students commented on the post survey sheet and five of them mentioned not having had the opportunity to do hands-on training. Outside of the orientation activities with Dr. Lee, they reported limited gain from the activity. Despite the modules being made available to the students months before the activity, one commented that she did not receive the same preparation as the dental students.

**NP RIPLS Survey Results**

| RIPLS Sub-category | Pre | | Post | | p-value |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | |
| Teamwork and Collaboration | 1.36 | 0.66 | 1.67 | 1.04 | 0.000 |
| Negative Professional Identity | 4.10 | 1.19 | 3.77 | 1.27 | 0.190 |
| Positive Professional Identity | 1.58 | 0.78 | 1.90 | 1.09 | 0.014 |
| Professional Roles | 2.67 | 1.40 | 3.18 | 1.45 | 0.021 |
| Skills Competency | 3.04 | 1.15 | 2.38 | 1.17 | 0.014 |

*Figure 5. FNP RIPLS Survey Results*

The Negative Professional Identity (items 10-12) sub-category is interpreted inversely.

While there was no statistically significant change (p=0.190), the shift of the mean went towards the negative. One students "Strongly Agreed" to the statements suggesting IPEs are a waste of time and not needed. Again, this may be based on the single experience and may not be the student's attitude towards IPEs as a whole, especially in the future.

Positive Professional Identity (p=0.014) and Professional Roles (p=0.021) also turned for the "worse." Positive Professional Identity (items 13-16), which measures willingness to work and learn alongside other professionals, had a mean increase of 0.32 towards "Disagree" while Professional Roles (items 17-19), which includes an item to self-validate professional roles, had a mean increase of 0.51. The Skills Competency (items 20-21) is the only sub-category that had a positive trend ($\bar{x}$=3.04 to 2.38; p=0.014) after the activity suggesting the students' increased confidence in their own skills in properly addressing oral health issues.

Only two dental students completed both pre and post surveys. Instead of analyzing only two surveys, a decision was made to consider all the results came from two separate groups (Figure 6). One group was considered the pre survey/pre-intervention group while the ones that received the interventions and spent time with FNPs for the IPE were considered the post survey/post-intervention group.

**DDS RIPLS Survey Results**

| RIPLS Sub-category | Pre | | Post | | p-value |
|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | |
| Teamwork and Collaboration | 1.52 | 0.61 | 1.64 | 0.48 | 0.263 |
| Negative Professional Identity | 3.89 | 0.68 | 3.93 | 0.59 | 0.844 |
| Positive Professional Identity | 1.79 | 0.78 | 2.05 | 0.60 | 0.233 |
| Professional Roles | 2.61 | 1.24 | 2.40 | 1.12 | 0.615 |
| Skills Competency | 1.90 | 0.57 | 2.50 | 0.76 | 0.072 |

*Figure 6. DDS RIPLS Survey Results*

The two tail, independent samples t-test with equal variances was therefore used for the

data analysis. There was no significant difference between the two groups ($\bar{x}$=1.52 versus 2.38; p=0.263) in regards to Teamwork and Collaboration. The Negative Professional Identity results were also identical at averages of 3.89 and 3.93 (p=0.844) suggesting that both groups welcomed the IPE activity. Both groups were open to working and learning with other healthcare professionals as indicated by the results of Positive Professional Identity sub-category ($\bar{x}$=1.79 versus 2.05; p=0.233). Both group showed that they were more likely to "Agree" that they know what their professional roles will be, as suggested by the similar results ($\bar{x}$=2.61 versus 2.40; p=0.615) on this sub-category. Lastly, the pre survey/intervention group ($\bar{x}$=1.90, s.d. 0.57) indicated more confidence with their communication skills compared to the post survey/intervention group ($\bar{x}$=2.50, s.d. 0.76) but the difference was not significant (p=0.072).

## Discussion

### Summary

The overarching aim of this project was to improve pediatric oral health through improved behavior regarding oral hygiene through increased utilization of MI among future health providers. Therefore, one of the goals was to continue to raise knowledge regarding MI among dental students via the established IPE between USF and UoP. Current IPE studies show the difficulty of measuring the direct effect of the IPE activities to the actual patients. This proved to be true with this DNP project. Including the planning phase, this project ran for a year. Within that time frame, some of the patients could have had a return visit at the clinic, especially those who follow the routine six-month appointments. Unfortunately, time is but one of the variables. Other variable are more dynamic – student providers change clinical locations, DNP project manager's school-work schedule, different support staffs to name a few. So even if some of the patients return, measurement of changes would have been challenging.

Unexpected outcome was noted on the RIPLS survey results. Viewed as a whole, the post activity results suggest decreased "readiness for interprofessional learning" when compared to the baseline/pre survey. The NP students' post survey mean response increased (decreased for Negative Professional Identity) in four sub-categories suggesting diminished positive attitude towards IPE. On the other hand, looking at the post survey as a stand-alone result would still show a favorable attitude towards IPEs. The mean values of the NP responses would lie close to "Agree" on the sub-categories Teamwork and Collaboration ($\bar{x}$=1.67, s.d. 1.04), Positive Professional Identity ($\bar{x}$=1.90, s.d. 1.09), and Skills Competency ($\bar{x}$=2.38, s.d. 1.17). The mean value for Negative Professional Identity ($\bar{x}$=3.77, s.d. 1.266) still suggests "Disagree," which is an expected outcome. The same conclusion can be reached about the DDS post survey results.

The Skills Competency sub-category results give credence to earlier studies suggesting IPEs lead to increased skills among the disciplines involved. The NP mean value improved from 3.04 to 2.38 after the activity. For the dental students, the post/intervention group had a mean value of 2.50, which still lies towards the "Agree" or positive side of the equation. In RIPLS, the Skills Competency sub-category gauges NP students' knowledge and comfort with assessing pediatric oral health as well as dental students' therapeutic communications skills.

One of the goals of this DNP project is to increase utilization of MI in practice among future providers. The goal was set to have at least 50% of the dental student cohorts to report increased confidence and actual application of MI in practice. Data from the post activity survey show that this goal was met with 65.5% of 2018 cohort and 66.7% of 2019 cohort reporting increased utilization of MI since viewing the MI module. The majority of each cohort (69.1% and 78.2% respectively) also reported increased confidence in applying MI during their patient interactions.

**Interpretation**

As discussed above, the RIPLS data from the FNP students indicate diminished positive attitude towards IPE when pre and post data were compared. However, this does not seem to capture the whole feeling towards the IPE. While five of the six students who left comments indicated limited hands-on learning opportunities, four of them acknowledged that they enjoyed the IPE activity itself. While there was a limited return of RIPLS survey from the dental students, the data extracted allude to a welcoming attitude towards future IPEs. Furthermore, the positive attitude of the dental students towards the IPE is more evident if the MI survey qualitative feedback is put into account.

One of the PICOT questions that guided this project was: In dental students who had introductory module on motivational interviewing (MI) (*P*), how does receiving additional MI module (*I*), compared to no additional training (*C*), affect utilization of MI during patient interactions (*O*) within six months (*T*)? Fu et al. (2015) found refresher MI courses improve individual proficiency. This project manager saw a similar result with this DNP project based on some of the qualitative feedback from the 2018 DDS cohort outlined in Appendix V.

While MI may not be the focus topic for the next reiteration of this IPE, some of the suggestions for improvement from the MI survey may be of benefit for the upcoming year. If some form of teaching or training is included as project intervention in the future, many dental students expressed interest in in-person seminar or demonstration. This would be complemented well with slide handouts or access to the presentation via the school Canvas. For the NP side, more opportunities for hands-on training/skills application has been the foremost request. Even from the past IPE, the idea of having both practices in a community setting to apply and share each other's skills has been discussed. A setting similar to the IPE with the UoP PharmD

students wherein the students from different disciplines were paired up to deal with clients with limited faculty intervention is ideal. Future observation-only IPEs may have more value for nursing students or for NP cohorts who have not yet started clinical rotations.

**Limitations**

The biggest limitation encountered during this project was the schedule conflict between the schools. This limitation had greater impact on the FNP students. For example, this project manager was invited to be involved before the end of the last IPE to be able to plan ahead. Despite that, the implementation started later than originally planned since the project ran concurrent to the project manager's scheduled work, personal responsibilities, and school/clinical. Schedule conflict also impacted some of the NP students as they had to take days off work to attend the IPE. The plan was for the NP students to sign up for their preferred date of clinical by the end of December 2018. While that was originally met, a few had to change schedules last minute because of work conflict. The project manger had to coordinate with Dr. Lee for some NP students' schedule as late in the project as February. This schedule conflict in addition to the "no hands-on" clinical experience could very well explain the decrease in the IPE post surveys.

The conflict in schedule also barred this project manager from being at the clinical site during the NP clinical rotation. Even being present for the orientation day for all NP cohorts may have cleared up most of the confusions regarding this project. This project manager was only able to meet briefly with the first cohort at UoP during their orientation day, but was unable to accompany them up to the clinic to meet the dental students due to another appointment. A regular check-in with the clinic staff would have resulted in increased survey returns as well. On the other hand, since the setting was at UoP, the dental students did not have to allocate large

amounts of time for this activity aside from the viewing of the MI module and answering the surveys. But the MI module did impact the dental students' schedules too. One of the weaknesses identified during the SWOT analysis at the planning phase of the project was the allocation of time for the MI module. The activity was made mandatory for the dental students and was an additional task in their already hectic school/clinical schedule. This indeed prompt some of the students to recommend allocating an actual class or schedule for the MI module in the future.

Another limitation of this project is the short duration of actual interprofessional collaboration to practice. The dental and NP students only worked together for about eight hours and only in the dental clinic setting. As previously discussed, there was limited opportunity for the NP students to practice actual oral assessments in the said setting. Suggested activities for future IPEs include community outreach programs and/or a comprehensive school health fair that have both dental and medical health stations.

**Conclusion**

Studies show that patients of dental students utilizing motivational interviewing (MI) have better outcomes compared to patients of students who did not receive MI training. This DNP project resulted in increased utilization of MI during the clinical rotations as well as future dentists' confidence in conducting MI in their future practices. On the NP's side, continuation of the IPE will provide future NP students the opportunity to practice pediatric oral health assessment and continue to hone their MI skills specifically addressing oral-systemic health. Although MI may not be the focus intervention next IPE between these two programs, the NP students can still share their knowledge in the area through demonstration or while actually applying the skills during patient encounters in the future IPE. While direct effect of IPEs to

patient outcomes is unclear, evidence show improvements in skills of individuals involved in IPEs, which was also demonstrated within this project.

## Funding Sources

No external funding was obtained for this project. All material cost were incurred solely by this project manager while the rest of the project team donated their time to help develop and execute this project.

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# Appendix A

## JHNEBP Research Evidence Appraisal Tool

| STRENGTH of the Evidence | |
|---|---|
| **Level I** | Experimental study/randomized controlled trial (RCT) or meta analysis of RCT |
| **Level II** | Quasi-experimental study |
| **Level III** | Non-experimental study, qualitative study, or meta-synthesis. |
| **Level IV** | Opinion of nationally recognized experts based on research evidence or expert consensus panel (systematic review, clinical practice guidelines) |
| **Level V** | Opinion of individual expert based on non-research evidence. (Includes case studies; literature review; organizational experience e.g., quality improvement and financial data; clinical expertise, or personal experience) |

| QUALITY of the Evidence | | | |
|---|---|---|---|
| **A** | High | Research | consistent results with sufficient sample size, adequate control, and definitive conclusions; consistent recommendations based on extensive literature review that includes thoughtful reference to scientific evidence. |
| | | Summative reviews | well-defined, reproducible search strategies; consistent results with sufficient numbers of well defined studies; criteria-based evaluation of overall scientific strength and quality of included studies; definitive conclusions. |
| | | Organizational | well-defined methods using a rigorous approach; consistent results with sufficient sample size; use of reliable **and** valid measures |
| | | Expert Opinion | expertise is clearly evident |
| **B** | Good | Research | reasonably consistent results, sufficient sample size, some control, with fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence |
| | | Summative reviews | reasonably thorough and appropriate search; reasonably consistent results with sufficient numbers of well defined studies; evaluation of strengths and limitations of included studies; fairly definitive conclusions. |
| | | Organizational | Well-defined methods; reasonably consistent results with sufficient numbers; use of **reliable and valid** measures; reasonably consistent recommendations |
| | | Expert Opinion | expertise appears to be credible. |
| **C** | Low quality or major flaws | Research | little evidence with inconsistent results, insufficient sample size, conclusions cannot be drawn |
| | | Summative reviews | undefined, poorly defined, or limited search strategies; insufficient evidence with inconsistent results; conclusions cannot be drawn |
| | | Organizational | Undefined, **or** poorly defined methods; insufficient sample size; inconsistent results; undefined, poorly defined or measures that lack adequate reliability or validity |
| | | Expert Opinion | expertise is not discernable or is dubious. |

**A study rated an A would be of high quality, whereas, a study rated a C would have major flaws that raise serious questions about the believability of the findings and should be automatically eliminated from consideration.*

Newhouse R, Dearholt S, Poe S, Pugh LC, White K. The Johns Hopkins Nursing Evidence-based Practice Rating Scale. 2005. Baltimore, MD, The Johns Hopkins Hospital; Johns Hopkins University School of Nursing.

Appendix B

Evidence Evaluation Table

| Citation | Conceptual Framework | Design/ Method | Sample/ Setting | Variables Studied and Their Definitions | Measurement | Data Analysis | Findings | Appraisal: Worth to Practice |
|---|---|---|---|---|---|---|---|---|
| Albino, J., & Tiwari, T. (2016). Preventing childhood caries: A review of recent behavioral research. *Journal of Dental Research*, *95*(1), 35–42. https://doi.org/10.1177/0022034515609034 | None | Review of literature<br><br>Studies published in 2011 only<br><br>Searched databases: MEDLINE, PubMed, Ovid Med, Google Scholar, and Web of Science | Children 18 years of age or younger<br><br>18 published studies; 10 ongoing at time of publication<br><br>Four completed studies with MI intervention | Dental caries<br><br>Oral health behaviors: brushing; fluoride use; self or caregiver checking for cavities<br><br>Interventions used: MI; Conventional education; Chlorhexidine; Fluoride varnish; Health education; Oral health education; Oral health promotion | Identification of dental caries between 3 to 18-month intervals | Variable per study but not specified in this review | Three of the four completed studies with MI as intervention resulted to decreased incidence of caries from birth to seven years old | Strengths: studies included within five years of publication; meaningful analysis of results<br><br>Limitations: small sample size as limited to studies published in 2011;<br><br>Level V-A on JHNEBP Research Evidence Appraisal Tool |

| Citation | Conceptual Framework | Design/ Method | Sample/ Setting | Variables Studied and Their Definitions | Measurement | Data Analysis | Findings | Appraisal: Worth to Practice |
|---|---|---|---|---|---|---|---|---|
| Cuevas, J., & Chi, D. L. (2016). SBIRT-based interventions to improve pediatric oral health behaviors and outcomes: Considerations for future behavioral SBIRT interventions in dentistry. *Current Oral Health Reports*, *3*(3), 187–192. https://doi.org/10.1007/s40496-016-0106-y | None | Literature review<br><br>Evaluation dental SBIRT-based interventions | Seven studies on SBIRT interventions to decrease childhood caries<br><br>Four studies with MI aspect<br><br>Children 4-17 years of age; pregnant women and mothers of children from age 2 months | Childhood caries<br><br>Target behaviors: diet, fluoride exposure, dental care use<br><br>Interventions: Complete SBIRT; Screening + BI (education on brushing, fluoride application, dental hygiene counseling); BI only – utilization of MI; BI + Referral to treatment | Caries risk/rate between intervention and control groups<br><br>Rate of use of preventive dental care<br><br>Oral health behaviors such as tooth brushing or sugar intake | Variable per study but not specified in this review | Dental care utilization improved with SBIRT<br><br>MI resulted in decreased caries rate and increased fluoride varnish use in one study<br><br>Considerations: screening, behavior theory, study description, SBIRT in clinical setting | Strengths: Comprehensive analysis of results; suggestions for future research provided<br><br>Limitations: Limited to seven studies, six with mixed results; search methodology not discussed<br><br>Level V-C on JHNEBP Research Evidence Appraisal Tool |

| Citation | Conceptual Framework | Design/ Method | Sample/ Setting | Variables Studied and Their Definitions | Measurement | Data Analysis | Findings | Appraisal: Worth to Practice |
|---|---|---|---|---|---|---|---|---|
| Hinz, J. (2010). Teaching dental students motivational interviewing techniques: Analysis of a third-year class assignment. *Journal of Dental Education*, *74*(12), 1351–1356. | None | Single research study<br><br>Evaluation of brief training of MI techniques | 94 third-year dental students receiving 3 hours of MI training over 2 consecutive years | Target behaviors: brushing; flossing, smoking, soda intake<br><br>Readiness: Precontemplation; Contemplation; Preparation; action; Maintenance<br><br>Interventions: BA – Brief Advice; BCC – Behavior Change Counseling; MI – Motivational Interviewing | Matching of intervention with patient readiness<br><br>Accurate recognition of and response to patient resistance | Chi-square analysis to check the difference of target behaviors between the BA and BCC groups<br><br>Kruskal-Wallis test; Fisher exact test; and Monte Carlo simulation<br><br>Software used: JMP Statistical Software Release 8.0.1; StatXact 7 | 51 percent of the students reported BCC behaviors; 46 percent BA<br><br>BA and BCC groups did not differ on target behaviors and stage or readiness<br><br>Brief training is effective for teaching basic MI techniques (BA and | Strengths: Comprehensive analysis of results; suggestions for future research provided<br><br>Limitations: non-experimental, single study design<br><br>Level III-A on JHNEBP Research Evidence Appraisal Tool |

| Citation | Conceptual Framework | Design/ Method | Sample/ Setting | Variables Studied and Their Definitions | Measurement | Data Analysis | Findings | Appraisal: Worth to Practice |
|---|---|---|---|---|---|---|---|---|
| Naidu, R., Nunn, J., & Irwin, J. D. (2015). The effect of motivational interviewing on oral healthcare knowledge, attitudes and behavior of parents and caregivers of preschool children: an exploratory cluster randomised controlled study. *BMC Oral Health*, *15*(1). https://doi.org/10.1186/s12903-015-0068-9 | None | Randomized controlled trial | 79 parents and caregivers from six preschools<br><br>Test group n=25<br><br>Control group n=54 | Oral health knowledge, beliefs, attitudes, brushing, oral health self-efficacy, oral health fatalism, and the Readiness Assessment of Parents Concerning Infant Dental Decay (RAPIDD)<br><br>Interventions: traditional DHE – dental health education vs. DHE + MI | Self-administered oral health questionnaire and RAPIDD results | Chi-square test and independent t-test<br><br>Software used: not listed<br><br>Qualitative data transcribed to Word document | Both groups had increased knowledge on fluoride use, tooth brushing, dietary practice, and dental attendance after four months but DHE+ME group had better improvement in brushing frequency<br><br>Greater positive outcome in DHE+MI group | Strengths: Good measures<br><br>Limitations: Small sample size; short duration; self-administered test may affect accuracy and bias<br><br>Level I-C on JHNEBP Research Evidence Appraisal Tool |

| Citation | Conceptual Framework | Design/ Method | Sample/ Setting | Variables Studied and Their Definitions | Measurement | Data Analysis | Findings | Appraisal: Worth to Practice |
|---|---|---|---|---|---|---|---|---|
| Olson, R., & Bialocerkowski, A. (2014). Interprofessional education in allied health: A systematic review. *Medical Education*, *48*(3), 236–246. https://doi.org/10.1111/medu.12290 | None | Systematic review<br><br>Studies published between 1998 and 2013<br><br>Searched 10 databases: AMED, EMBASE, CINHAL, Cochrane, MEDLINE, PubMed, PEDro, Sportdiscus, Science Direct, and Web of Knowledge | Seventeen studies meeting set criteria<br><br>Undergraduate, graduate, and post-graduate students of different healthcare practice from universities around the world.<br><br>Class sizes ranges from 10 to 1197 | IPE model, mode of delivery and length of activities<br><br>Location and characteristics of schools<br><br>Student age and gender<br><br>Outcomes to patient, student, or administrator | Percentage agreement and Kappa statistic<br><br>Factors affecting IPE implementation | Data synthesized in narrative manner | Most IPE interventions include patient scenarios or simulation<br><br>IPE activities perceived more successful in smaller groups; feasible and effective pre-licensure<br><br>Most students are from undergraduate, pre-licensure | Strengths: Rigorous search of pertinent studies. Studies from the US and international institutions. Sound recommendation for future research.<br><br>Level III-B on JHNEBP Research Evidence Appraisal Tool |

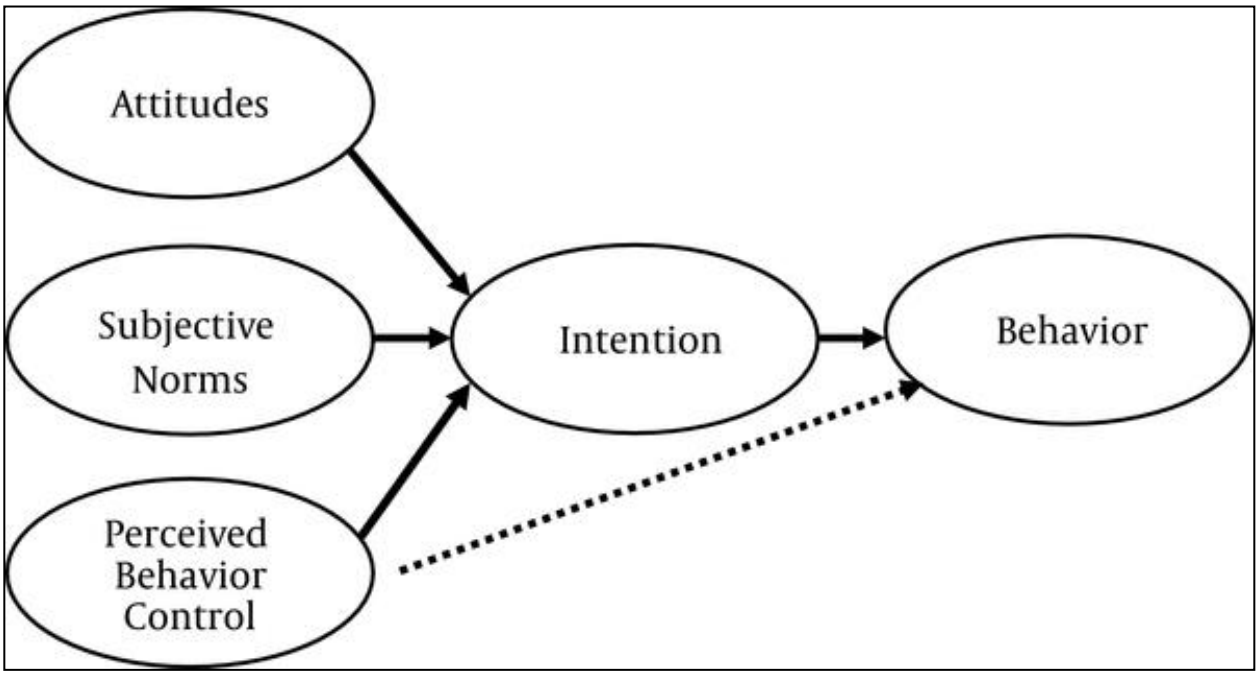
| Citation | Conceptual Framework | Design/ Method | Sample/ Setting | Variables Studied and Their Definitions | Measurement | Data Analysis | Findings | Appraisal: Worth to Practice |
|---|---|---|---|---|---|---|---|---|
| Rutherford-Hemming, T., & Lioce, L. (2018). State of Interprofessional Education in Nursing: A systematic review. *Nurse Educator*, *43*(1), 9–13. https://doi.org/10.1097/NNE.0000000000000405 | None | Systematic review<br><br>Studies published between 2011 and 2016<br><br>Searched 7 databases: CINHAL, PubMed, ProQuest, Evidenced-based Medicine Reviews, EBSCOhost, Science Direct, and Scopus | 49 studies after application of inclusion criteria; 32 of 49 studies from outside US | IPE design, purpose, sample, intervention, methods, measurement, outcomes, limitations, and notes | Data extraction form with the variables being reviewed | Narrative summary | Most studies are of quantitative design with pre and post test<br><br>Most interventions were simulation based; second most common is lecture only<br><br>Comparison of outcomes needed for future studies | Strengths: Identified gaps in reviewed IPEs and gave recommendations for future application; high number of studies<br><br>Limitations: Lack of comparable design and outcomes on studies included in the review<br><br>Level III-A on JHNEBP Research Evidence Appraisal Tool |

| Citation | Conceptual Framework | Design/ Method | Sample/ Setting | Variables Studied and Their Definitions | Measurement | Data Analysis | Findings | Appraisal: Worth to Practice |
|---|---|---|---|---|---|---|---|---|
| Woelber, J. P., Spann-Aloge, N., Hanna, G., Fabry, G., Frick, K., Brueck, R., … Ratka-Krüger, P. (2016). Training of dental professionals in motivational interviewing can heighten interdental cleaning self-efficacy in periodontal patients. *Frontiers in Psychology*, *7*. https://doi.org/10.3389/fpsyg.2016.00254 | None | Randomized controlled trial; single blinded | 172 patients treated by 56 students<br><br>MI group n=73; 24 students<br><br>Control group n=99; 32 students | PI – plaque index<br>GI – gingival index<br>PPD – pocket depth<br>BOP – bleeding on probing<br>Gingival recession<br><br>MI group treated by dental students who received 8 hours of MI training<br><br>Control group treated by students who did not receive MI training | Self-efficacy questionnaire with Likert scale on 19 items<br><br>PI, GI, PPD, BOP, and gingival recession measured after 6 months from baseline | t-test analysis<br><br>Software used: Stata 13.1; Excel | No significant difference in PI, GI, PPD, BOP between groups but MI group have significant improvement in self-efficacy of interdental cleaning | Strengths: Good sample size<br><br>Limitations: MI group assessed after control group; conclusion is only fairly in favor of MI<br><br>Level I-B on JHNEBP Research Evidence Appraisal Tool |

| Citation | Conceptual Framework | Design/ Method | Sample/ Setting | Variables Studied and Their Definitions | Measurement | Data Analysis | Findings | Appraisal: Worth to Practice |
|---|---|---|---|---|---|---|---|---|
| Wu, L., Gao, X., Lo, E. C. M., Ho, S. M. Y., McGrath, C., & Wong, M. C. M. (2017). Motivational interviewing to promote oral health in adolescents. *Journal of Adolescent Health*, *61*(3), 378–384. https://doi.org/10.1016/j.jadohealth.2017.03.010 | None | Single blind, randomized controlled trial<br><br>Patients randomly assigned to one of three groups:<br>PE=prevailing health education;<br>MI;<br>MI + Risk Assessment (RA) | 512 adolescents with unfavorable oral behaviors<br><br>PE n=161<br>MI n=163<br>MI+RA n=188 | Oral health behaviors including brushing frequency and snacking, plaque score, and dental caries | Oral health self-efficacy and behaviors questionnaire answered at baseline, 6 months, and 12 months.<br><br>Five-point Likert-scale<br><br>Oral hygiene status measured using Silness-Loe plaque index and dental caries detected using mouth mirror. | Chi-square test<br><br>Analysis performed using Statistical Package for Social Sciences (SPSS) | MI and MI+RA group had significant reduction of snaking, lower incidence of new caries, and increased tooth brushing compared to the PE group<br><br>MI+RA had the best outcome after 12 months. | Strengths: Comprehensive analysis of results; large sample size<br><br>Limitations:<br><br>Level I-A on JHNEBP Research Evidence Appraisal Tool |

Appendix C

Theory of Planned Behavior



Appendix D

Dental Students Cohort 1 Instructions

## Motivational Interviewing (MI) Research Project of Summer/Fall 2018

Hello DDS Class of 2019 (Third Rotation) /IDS 2018!

During this rotation, we will **require your participation** in our interprofessional research with the nurse practitioners at the University of San Francisco. The research topic is 'Motivational Interviewing in the Dental Setting'. In your first rotation, you may have voluntarily participated in viewing a MI power-point presentation and filled out a pre- and post- survey of your experience. Your feedback was useful in helping us develop this next phase of the research.

Your participation this week will require you do the following 4 things.

- **Pre-op Survey**- The form will be passed out at Orientation. Fill it out and leave it at the front desk before 5 pm.
- **View the 15 minute MI video**- by the 2nd day of clinic. You can access this video on YouTube at https://youtu.be/CJ803Sy8gDw
- **Adopt the MI techniques** with parents/caretakers this week in each of the following instances.
  - Prophy/Prevention Appt for ODTP
  - Explaining your Preventative Treatment Plan at Recall appts.

  Laminated 'cheat cards' are in the cubicles as reminders of the MI techniques.
- **Post-op Survey**- The form will be passed out at Friday's seminar. Fill it out and leave it at the front desk by 5 pm.

Your participation will help us craft an even more effective MI teaching module. It is hoped that you will learn and make use of MI techniques in your future clinical practice to the benefit of yourself and your patients. Your participation is greatly appreciated.

[All survey forms will be accounted for as an indication of your individual participation. This information will not be divulged to any USF researcher.]

Appendix E

Dental Students Cohort 2 Instructions Page 1

Welcome to your first Pediatric Rotation!

In this rotation, you will be exposed to two activities in inter-professional education (IPE) with Nurse Practitioner (NP) doctoral candidates from the University of San Francisco. There are two parts to this research.

**'Motivational Interviewing' (MI)**

This is a **MANDATORY** activity applying to all DDS/IDS students. There are 4 parts to the research

- **1.Pre-MI Evaluation Form**- This form will be passed out to you at Orientation. Please fill it out and return it to the Pedo Clinic Front Desk by 5 pm TODAY.

- **2. View the 'MI and Frames 3.0 Presentation'.** It file is located on CANVAS PD 346/347 under the module titled, Motivation Interviewing- 1st Rotation. It is a 24 mins video. Review the video before you begin to see patients.

- 3. **Adopt the MI techniques** with parents/caretakers this week at each of the following opportunities-
    - Prophy/Prevention Appt for ODTP—regarding OH and diet
    - Explaining your Preventative Treatment Plan at Recall appts.

  Laminated 'cheat cards' are in the cubicles as reminders of the MI techniques.

  For any questions, feel free to consult and converse with any available NP.

- **3. Fill out a Post-MI Evaluation Form on the day of Seminar** A DDS student will be assigned to pass out the form. Please fill it out and return it to the Pedo Clinic Front Desk that Friday.

Your participation will help craft an even more effective MI teaching module. Hopefully, you will make use of MI techniques in your future practice to the benefit of yourself and your patients. If any of you have interests in helping develop this curriculum, please contact me, Dr. David Lee, at dlee1@pacific.edu.

FYI: A NP student has on average 12 years of RN experience before they enter a program. They are well versed in their fields and particularly familiar with compassionate and interpersonal communication skills. A goal of IPE is that they will have the opportunity to model these skills for you.

**[Turning in the survey forms as well as watching the video is mandatory. Your participation will be tracked.]**

Appendix F

Dental Students Cohort 2 Instructions Page 2

**Observation Case and Joint Seminar presentation with the NP**

This applies only to the DDS students working with a NP on a case.

- Before the patient: You will be handed a **Pre-evaluation RIPLS (Readiness for Interprofessional Learning Scale) Form**. Fill it out and return it to the Pedo Clinic Front Desk.

- With the patient: The DDS student will take the lead in all clinical activities—interviewing and behavior management. Only when appropriate will the NP be allowed to attempt a Knee-to-Knee exam and/or fluoride application. Interviewing the caregiver for medical history should be done by mutual agreement between the DDS student and NP. Both should attempt to use the MI techniques and learn from the experience.

**Requirement:** For DDS students who have been assigned on a Wednesday or Thursday AM case with an NP, this **must be** your case for seminar. Please fill out a joint seminar form with the NP **before the clinic session ends.**

The **Exception** —the DDS student during the 2nd week Thursday morning case. Since the DDS student will have had to turn in their Seminar Form the day before, the DDS student can assist the NP in their presentation by introducing the case. So by Wednesday noon of the 2nd week of rotation, if you have not yet worked with a NP, you may pick any case you wish.

Note to participating DDS students: By the end of the rotation, you may feel that there were other cases that interested you more as a learning experience but could not present at seminar. Don't lose heart but view this IPE and seminar presentation as an opportunity to expand your professional horizon and, more importantly, to share with your fellow classmates your unique experience in working and learning from the seasoned 'communication specialists' .

- Seminar Friday: Joint presentation. Afterwards, please fill out a **Post-evaluation RIPLS Form**. A DDS student will be assigned to pass out the form. Please fill it out and return it to the Pedo Clinic Front Desk.

Thank you all in advance for your participation! Dr. Lee

Appendix G

Gap Analysis

| Current State | Desired State | Plan to Address Gap |
|---|---|---|
| Compared to FNP students who mostly have years of experience interacting with patients as registered nurses (RN), dental students have limited contact with patients outside their clinical rotations. A previous IPE introduced motivational interviewing (MI) to a cohort of dental students but the module was offered as volunteer or optional class. | The same dental cohort that received the MI introduction class and subsequent cohorts will continue to develop and apply their MI proficiency. The students will be more confident in applying MI during their patient interactions. | Develop an additional MI module that will serve as refresher course for those students who viewed the previous MI module. This module can also serve as MI introductory module for those who did not get to see the previous module. This module will mandatory. A reference "cheat" sheet will be developed and made available for the students during their clinical rotation to aid with applying MI in practice. |

# Appendix H

## Motivational Interviewing PowerPoint Presentation

### Motivational Interviewing (MI) and Introduction to the FRAMES Model

Ulyses R. Reamico, MSN, RN, CNL
DNP/FNP Student
University of San Francisco
In Collaboration with
University of the Pacific
Arthur A. Dugoni School of Dentistry

### Objectives

- Discuss concepts of motivational interviewing (MI)
  - Four processes of MI
  - OARS: Key Communication Skills
- Discuss the Readiness Ruler
- Discuss the FRAMES model of brief intervention
- Examine the Reference "Cheat" Sheet

### Patient Scenario

**Patient with caries**

- Loves sweets
- Inconsistent tooth brushing
- Does not like to floss

### "Righting Reflex"

- Care providers' instinctive response
- Fixing the problem or "making things right"
- Relies particularly on directing
- Patient likely to take up defensive/denial attitude

### Motivational Interviewing

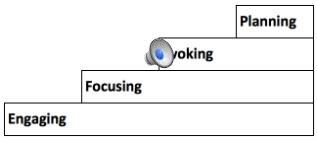
- Evidence-based
- Patient-centered
- Collaborative
- Empathetic
- Non-judgmental
- Supportive
- Non-confrontational
- Improves healthcare outcomes

### Motivational Interviewing

- Explore and resolve patient **ambivalence**

- **Ask and listen**

### Four Processes in MI




### 1. Engaging

- Patient and provider establish a helpful connection and working relationship
  - Be welcoming
  - Ask and listen
  - Assess the importance of the patient's goal(s)
  - Provide a sense of what to expect
  - Offer hope
- Non-verbal communication
- "How important is it for you to not have a toothache/healthy teeth?"

### 2. Focusing

- Developing and maintaining a specific direction in the conversation about change
- "I know you came in about toothache/dental filling, but we should also talk about flossing and how it might _____."

## 3. Evoking

- Eliciting the **patient's own motivations** for change
- "What worries you about having cavities?"
- "Tell me more about the effects of sugary food that you are experiencing."

## 4. Planning

- Encompasses both developing commitment to change and formulating a specific plan of action
- "What do you think will work?"
- "What barriers do you anticipate?"

## OARS: Key Communication Skills in Motivational Interviewing

## Open-ended Questions

- Invites the person to reflect and elaborate
- Helps during the engaging process by strengthening a collaborative relationship
- "What concerns you about cavities?"


## Affirming/Affirmation


- Comment on the patient's strengths, abilities, good intentions, and effort
- Builds confidence and encourages readiness to change
- "You did a good job!"
- "You are a good help."
- "Thank you for coming in today."

## Reflective Listening

- Reflecting back patient's underlying meanings and feelings
- Used to clarify statements and convey understanding
- "It sounds like you are concerned about how you developed cavities quickly."


## Summarizing

- Reflections that collect what a person has been saying and offering it back
- Can be used to
  - Pull together information
  - Suggest links between present and past material
  - Used as a transition
  - Promote understanding
  - Direct the flow of change talk


## Eliciting Change Talk

- Help patient resolve ambivalence
- Ask open questions
- Listen for signal words expressing:
  - **Desire** – I want…, I would like to…, I wish,…, I hope
  - **Ability** – I can…, I am able to…, I could/would
  - **Reason** – e.g. I'll probably smile more, I will not have toothache when I eat
  - **Need** – I need to…, I must…., I have to…
- Use readiness ruler and ask straight, backward, and forward questions

## Readiness Ruler

- *On a scale of 0 to 10, how ready are you to get some help and/or work on this oral health issue (e.g. caries, oral hygiene compliance, high sugar diet)?*
- **Straight question**: *Why did you say (e.g. 5)?*
- **Backward question**: *Why a 5 and not a 3 (lower number)?*
- **Forward question**: What would it take to move you from a 5 to a 7 (higher number)?

## Respond to Readiness

| Not ready (0-3) | Unsure (4-6) | Ready for change (7-10) |
|---|---|---|
| Educate, Advise, and Encourage<br><br>"Roll with resistance" | Explore ambivalence | Strengthen commitment and facilitate action<br><br>"Develop and document" |

## FRAMES

- Feedback
- Responsibility
- Advice
- Menu
- Empathy
- Self-efficacy

Brief Intervention (BI)

**Brief Intervention** is a brief motivational and awareness-raising intervention given to risky or problematic substance users

Brief Intervention is based on **Motivational Interviewing** skills and methods

The University of Iowa

## Feedback

- Provide Feedback on the risks and consequences of the behavior
- Direct, factual point
- Provide score if using a scale
- "Based on the risk assessment we filled out together, you are considered to be on the "high risk." Issues included with that are _____."

## Responsibility

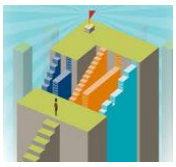
- Emphasize personal Responsibility for change
- Promote autonomy - patient has personal control
- "It's up to you." or "You decide."
- "I'd like to help, but it's very important that you take responsibility for changing your eating habits."

## Advice

- Offer clear Advice
- Provide concrete recommendation to change
- "I believe consuming less sweets is the best thing for you."

## Menu

- Offer a Menu of options
- All options will lead closer to the desired behavior
- "To help you remember to brush, you can brush your teeth right after you eat OR you can do so right before you go to b..."



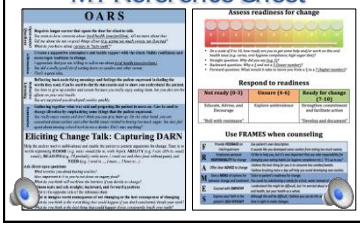
## Empathy


- Counsel with Empathy
- Work from the patient's agenda
- Non-judgmental
- "I understand…"
- "It must be very hard to…"

## Self-efficacy

- Encourage Self-efficacy
- Indicate optimism of the patient's success
- Empowers and provides hope
- Instills confidence in ability to change
- "Although this will difficult, I believe you can do this when you decide the time is right to make the changes."
- "You can do it!"

## MI Reference Sheet



## Summary

- Four processes of MI
  - Engaging, Focusing, Evoking, Planning
- OAR(E)S: Key Communication Skills
- The Readiness Ruler
- The FRAMES model
- Reference "Cheat" Sheet


## Acknowledgments


- Special thanks to the following individuals who helped prepare this presentation:

**Dr. David Lee, DDS**
Assistant Professor, Department of Pediatric Dentistry
University of the Pacific

**Grace Kim**
DDS Student
University of the Pacific

**Christopher Niu**
DDS Student
University of the Pacific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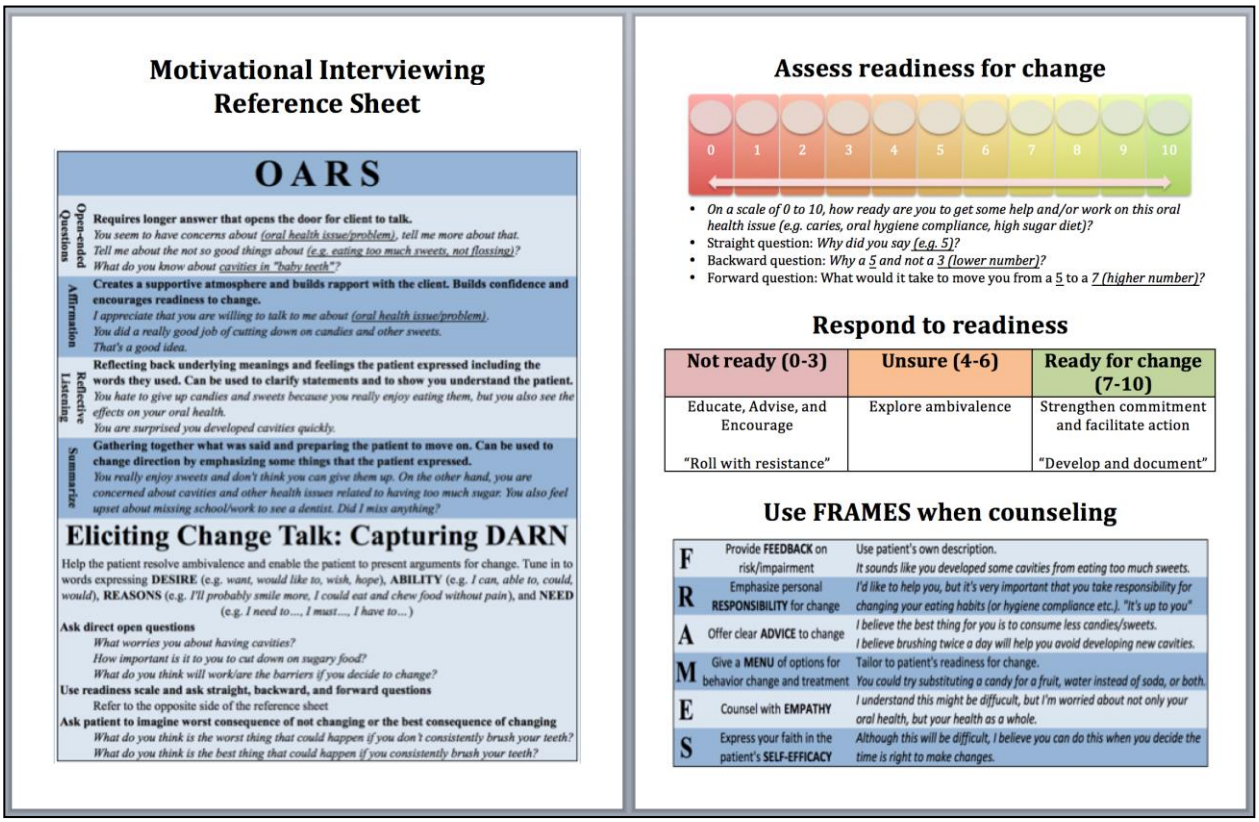
# Appendix I

## Motivational Interviewing Reference Sheet



### Motivational Interviewing Reference Sheet

**OARS**

**Open-ended Questions**
**Requires longer answer that opens the door for client to talk.**
*You seem to have concerns about (oral health issue/problem), tell me more about that.*
*Tell me about the not so good things about (e.g. eating too much sweets, not flossing)?*
*What do you know about cavities in "baby teeth"?*

**Affirmation**
**Creates a supportive atmosphere and builds rapport with the client. Builds confidence and encourages readiness to change.**
*I appreciate that you are willing to talk to me about (oral health issue/problem).*
*You did a really good job of cutting down on candies and other sweets.*
*That's a good idea.*

**Reflective Listening**
**Reflecting back underlying meanings and feelings the patient expressed including the words they used. Can be used to clarify statements and to show you understand the patient.**
*You hate to give up candies and sweets because you really enjoy eating them, but you also see the effects on your oral health.*
*You are surprised you developed cavities quickly.*

**Summarize**
**Gathering together what was said and preparing the patient to move on. Can be used to change direction by emphasizing some things that the patient expressed.**
*You really enjoy sweets and don't think you can give them up. On the other hand, you are concerned about cavities and other health issues related to having too much sugar. You also feel upset about missing school/work to see a dentist. Did I miss anything?*

**Eliciting Change Talk: Capturing DARN**

Help the patient resolve ambivalence and enable the patient to present arguments for change. Tune in to words expressing **DESIRE** (e.g. *want, would like to, wish, hope*), **ABILITY** (e.g. *I can, able to, could, would*), **REASONS** (e.g. *I'll probably smile more, I could eat and chew food without pain*), and **NEED** (e.g. *I need to…, I must…, I have to…*)

**Ask direct open questions**
*What worries you about having cavities?*
*How important is it to you to cut down on sugary food?*
*What do you think will work/are the barriers if you decide to change?*

**Use readiness scale and ask straight, backward, and forward questions**
Refer to the opposite side of the reference sheet

**Ask patient to imagine worst consequence of not changing or the best consequence of changing**
*What do you think is the worst thing that could happen if you don't consistently brush your teeth?*
*What do you think is the best thing that could happen if you consistently brush your teeth?*

**Assess readiness for change**

0 1 2 3 4 5 6 7 8 9 10

- *On a scale of 0 to 10, how ready are you to get some help and/or work on this oral health issue (e.g. caries, oral hygiene compliance, high sugar diet)?*
- Straight question: *Why did you say (e.g. 5)?*
- Backward question: *Why a 5 and not a 3 (lower number)?*
- Forward question: What would it take to move you from a 5 to a *7 (higher number)?*

**Respond to readiness**

| Not ready (0-3) | Unsure (4-6) | Ready for change (7-10) |
|---|---|---|
| Educate, Advise, and Encourage<br><br>"Roll with resistance" | Explore ambivalence | Strengthen commitment and facilitate action<br><br>"Develop and document" |

**Use FRAMES when counseling**

| | | |
|---|---|---|
| **F** | Provide **FEEDBACK** on risk/impairment | Use patient's own description.<br>*It sounds like you developed some cavities from eating too much sweets.* |
| **R** | Emphasize personal **RESPONSIBILITY** for change | *I'd like to help you, but it's very important that you take responsibility for changing your eating habits (or hygiene compliance etc.). "It's up to you"* |
| **A** | Offer clear **ADVICE** to change | *I believe the best thing for you is to consume less candies/sweets.*<br>*I believe brushing twice a day will help you avoid developing new cavities.* |
| **M** | Give a **MENU** of options for behavior change and treatment | Tailor to patient's readiness for change.<br>*You could try substituting a candy for a fruit, water instead of soda, or both.* |
| **E** | Counsel with **EMPATHY** | *I understand this might be diffucult, but I'm worried about not only your oral health, but your health as a whole.* |
| **S** | Express your faith in the patient's **SELF-EFFICACY** | *Although this will be difficult, I believe you can do this when you decide the time is right to make changes.* |

*Adapted from Miller and Rollnick (2013) and Shalwitz et al. (2007).*

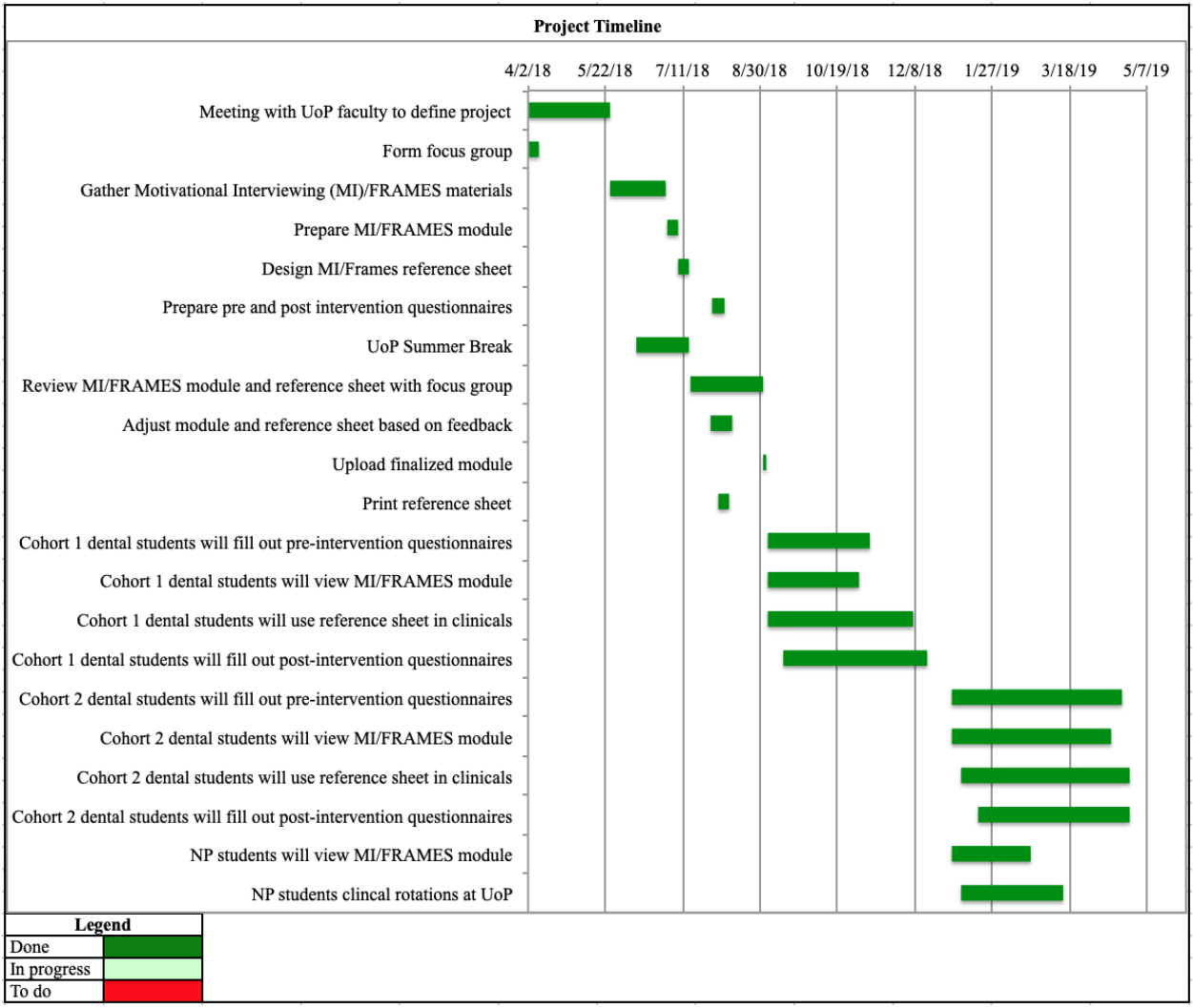
Appendix J

S.W.O.T. Analysis of Additional Motivational Interviewing (MI) Module and Reference Sheet

| **Strengths** | **Weaknesses** |
|---|---|
| • Reinforces knowledge about MI<br>• Quick access to essential MI principles and sample questions<br>• Reference sheet ("cheat sheet") project based on student feedback<br>• Reusable laminated reference sheets<br>• Application of MI to the patient and/or parent or guardian<br>• Support from faculty and focus group | • Allocating time for MI module<br>• Initial cost of supplies for reference sheet<br>• Potential to be perceived as additional work/task during clinical rotation<br>• Difficult to track actual practice of MI during patient interactions<br>• Support from clinical (non-faculty) staff |
| **Opportunities** | **Threats** |
| • Modules will be offered as required classes prior to clinical rotations<br>• Improved communications skills<br>• Potential for improved application of MI in personal practice after graduation<br>• Improved oral hygiene compliance and oral health of pediatric clients<br>• Potential for behavioral changes in patients, parents, or guardians | • Perceived redundancy of topic<br>• Time constraints during clinical rotations<br>• Perceived lack of relevancy in the current learning/clinical setting<br>• Potential barriers (e.g. patient cognitive development, language barrier) during patient interview<br>• Schedule conflict between dental students and NP students |

# Appendix K

## Project Gantt Chart



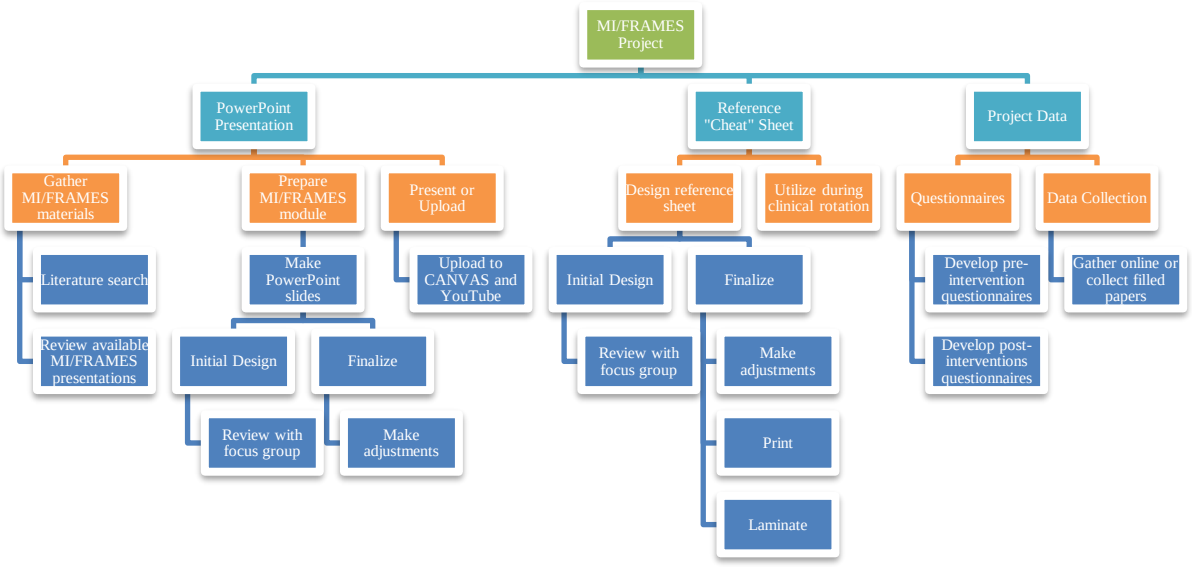
# Appendix L

## FNP Students IPE Sign-up Sheet

| | | 10am-5pm | 10am-5pm | 10am-5pm | 10am-5pm | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Cohort 1:** | **Monday, Jan 7th, 9:30 am-1pm** | **Wed, Jan 9th, 2019** | **Thurs, Jan 10th, 2019** | **Wed, Jan 16th, 2019** | **Thurs, Jan 17th, 2019** | **Seminar, Friday, Jan 18th, 2019** | | | |
| **Student A** | Orientation | Alvin Abad | | | | Morning 10am-1pm | | | |
| **Student B** | Orientation | | Deanna Garza | | | Afternoon 2pm-5pm | | | |
| **Student C** | Orientation | | | Sabrina Wong | | Morning 10am-1pm | | | |
| **Student D** | Orientation | | | | **Zaira Torres (unable to attend orientation)** | Afternoon 2pm-5pm | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| ***Please note that this week, the orientation is on a TUESDAY morning, and the days you can come in for the full day clincal are, Thursday of WEEK 1, and Monday, Wed, Thurs of WEEK 2** | | | | | | | | | |
| | | 10am-5pm | 10am-5pm | 10am-5pm | 10am-5pm | | | | |
| **Cohort 2:** | **Tuesday, Jan 22nd, 9:30 am-1pm** | **Mon, Jan 28th, 2019** | **Thurs, Jan 24th, 2019** | **Wed, Jan 30th, 2019** | **Thurs, Jan 31st, 2019** | **Seminar, Friday, Feb 1st, 2018** | | | |
| **Student A** | Orientation | Ashley Babcock | | | | Morning 10am-1pm | | | |
| **Student B** | Orientation | | Whitney Weyhing | | | Afternoon 2pm-5pm | | | |
| **Student C** | Orientation | | | | | Morning 10am-1pm | | | |
| **Student D** | Orientation | | | | **Nnenna Abaeze (Orientation Only)** | Afternoon 2pm-5pm | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | 10am-5pm | 10am-5pm | 10am-5pm | 10am-5pm | | | | |
| **Cohort 3:** | **Monday, Feb 4th, 9:30 am-1pm** | **Wed, Feb 6th, 2019** | **Thurs, Feb 7th, 2019** | **Wed, Feb 13th, 2019** | **Thurs, Feb 14, 2019** | **Seminar, Friday, Feb 15th, 2018** | | | |
| **Student A** | Orientation | **Zaira Torres (Orientation Only)** | | | | Morning 10am-1pm | | | |
| **Student B** | Orientation | | Kelly Straight | | | *Morning 10am-1pm* | | | |
| **Student C** | Orientation | | | Michael Barnett | | Morning 10am-1pm | | | |
| **Student D** | Orientation | | | | | Afternoon 2pm-5pm | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| ***Please note that this week, the orientation is on a TUESDAY morning, and the days you can come in for the full day clincal are, Thursday of WEEK 1, and Monday, Wed, Thurs of WEEK 2** | | | | | | | | | |
| | | 10am-5pm | 10am-5pm | 10am-5pm | 10am-5pm | | | | |
| **Cohort 4:** | **Tuesday, Feb 19th, 9:30 am-1pm** | **Mon, Feb 25th, 2019** | **Thurs, Feb 21st, 2019** | **Wed, Feb 27th, 2019** | **Thurs, Feb 28th, 2019** | **Seminar, Friday, Mar 1st, 2018** | | | |
| **Student A** | Orientation | **Nicole Beamish (unable to attend; 3/4 orientation)** | | | | Morning 10am-1pm | | | |
| **Student B** | Orientation | | Igor Mocorro | | | Afternoon 2pm-5pm | | | |
| **Student C** | Orientation | | | Christine Smyth | | Morning 10am-1pm | | | |
| **Student D** | Orientation | | | | Tiffany Brown | Afternoon 2pm-5pm | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | 10am-5pm | 10am-5pm | 10am-5pm | 10am-5pm | | | | |
| **Cohort 5:** | **Nicole B. (Orientation 3/4 10am-1pm)** | **Wed, Mar 6th, 2019** | **Mon, Mar 11th, 2019** | **Tue, Mar 12th, 2019** | **Thu, Mar 14, 2019** | **Seminar, Friday, Feb 15th, 2018** | | | |
| **Student A** | Orientation | | | | | Morning 10am-1pm | | | |
| **Student B** | Orientation | | Zaira Torres | | | *Afternoon 2pm-5pm* | | | |
| **Student C** | Orientation | | | Nicole Beamish | | *Morning 10am-1pm* | | | |
| **Student D** | Orientation | | | | Nnenna Abaeze | *Morning 10am-1pm* | | | |

# Appendix M

## Project Work Breakdown Structure



# Appendix N

## Project Communication Plan

| Communication Type | Timing | Distribution | Deliverable | Contributors | Owner |
|---|---|---|---|---|---|
| Kick-off meeting | Weekly | Face to face | E-mail copy | UoP Project Team, Ulyses | Dr. Lee |
| Define project focus | Weekly | Face to face, e-mail | Status update | UoP Project Team, Ulyses | Ulyses |
| General information (Zoom Orientation) | Once | Video call | None | Dr. Lee, Ulyses | Ulyses |
| Status update | Bi-weekly, as needed | Video call, e-mail, face to face | Status update | UoP Project Team, Ulyses | Ulyses |
| Project Interventions | Weekly | Face to face | Initial PowerPoint and reference sheet | UoP Project Team, Ulyses | Ulyses |
| Status update after intitiation of interventions | Weekly, as needed | Video call, e-mail, face to face | Status update | Dr. Lee, Ulyses | Ulyses |
| Status update | As needed | Video call, e-mail | Status update | Dr. Curtis, Ulyses | Ulyses |
| Project results | Once | Face to face | Pre and post-intervention questionnaire results | Project Team | Ulyses |

| Project Team |
|---|
| Dr. David Lee, UoP School of Dentistry Faculty |
| Grace Kim, UoP Dental Student |
| Chris Niu, UoP Dental Student |
| Dr. Alexa Curtis, USF DNP Chair |
| Ulyses Reamico, USF FNP Student |

Appendix O

Project Cost

| Items | Cost |
|---|---|
| **PowerPoint Presentation** | |
| Preparation of slides (24 hours) | $960.00 |
| **Reference "Cheat" Sheet** | |
| Design (4 hours) | $160.00 |
| Printing and lamination (20 sheets) | $ 79.99 |
| **Pre/Post Activity Survey** | |
| Printing | $66.86 |
| **Miscellaneous** | |
| Travel to University of the Pacific (public transport and/or parking fees) | $100.00 |
| **Total Cost** | **$1,366.85** |

*PowerPoint presentation will be uploaded to CANVAS or YouTube, thus no additional cost is anticipated for presentations.

*Cost for preparing slides and reference sheet calculated using $40/hour rate.

*FedEx printing and lamination actual price for reference sheets and survey sheets including discount.

Appendix P

Projected Return on Investment

**Estimated Minimum Cost**

| | Prevented Tooth Decay | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1st | 2nd | 3rd | 4th | 5th | 6th | **Total** |
| **Benefit (Savings/cost avoided )** | $250.00 | $250.00 | $250.00 | $250.00 | $250.00 | $250.00 | $1,500.00 |
| **Total Cost of Intervention** | $1,366.85 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $1,366.85 |
| **Net** | -1116.85 | 250 | 250 | 250 | 250 | 250 | 133.15 |
| **ROI** | -82% | -63% | -45% | -27% | -9% | 10% | 10% |

**Estimated Maximum Cost**

| | Prevented Tooth Decay | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1st | 2nd | 3rd | 4th | 5th | 6th | **Total** |
| **Benefit (Savings/cost avoided )** | $330.00 | $330.00 | $330.00 | $330.00 | $330.00 | $330.00 | $1,650.00 |
| **Total Cost of Intervention** | $1,366.85 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $1,366.85 |
| **Net** | -1036.85 | 330 | 330 | 330 | 330 | 330 | 613.15 |
| **ROI** | -76% | -52% | -28% | -3% | 21% | 45% | 45% |

Prevalence of caries among children aged 2 to 19 = 43%
Estimated minimum cost of filling in San Francisco = $250
0.43 x 100 = 43 prevented caries per 100 patients
43 x $250 = **$10,750 avoided cost per 100 patients**

*Based on Delta Dental's estimated cost of one filling (white) of a back tooth in San Francisco that ranges from $250 to $330.

# Appendix Q

## Pre Intervention Survey

**University of the Pacific, School of Dentistry**
**Motivational Interviewing (MI)/FRAMES Evaluation**

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

This evaluation is not graded. Your honest feedback/self-assessment is greatly appreciated.

1. I have seen a training module for Motivational Interviewing (MI) before.
Strongly Agree Agree Neutral Disagree Strongly Disagree

2. I can name the key components of Motivational Interviewing.
Strongly Agree Agree Neutral Disagree Strongly Disagree

3. I consistently apply Motivational Interviewing in my current practice.
Strongly Agree Agree Neutral Disagree Strongly Disagree

4. I have heard or known of brief interventions or the FRAMES model.
Strongly Agree Agree Neutral Disagree Strongly Disagree

5. I am confident in practicing Motivational Interviewing without the use of printed or electronic references.
Strongly Agree Agree Neutral Disagree Strongly Disagree

6. I believe patient teaching is more effective if the healthcare provider does most of the talking, explaining, or educating.
Strongly Agree Agree Neutral Disagree Strongly Disagree

7. In patient interactions, providing only one or only the best treatment option makes adherence to treatment plan easier.
Strongly Agree Agree Neutral Disagree Strongly Disagree

8. I feel confident in my ability to address ambivalence from my patients.
Strongly Agree Agree Neutral Disagree Strongly Disagree

9. I have strategies to help my patients resolve their ambivalence towards their health.
Strongly Agree Agree Neutral Disagree Strongly Disagree

If yes, please list at least three:
a.
b.
c.

10. Which statement will most likely explore a patient's ambivalence for change?
a. You need to stop eating sweets and brush your teeth often.
b. Tell me more about your concerns regarding fluoride.
c. You don't want to have cavities, do you?

# Appendix R

## Post Intervention Survey

**University of the Pacific, School of Dentistry**
**Motivational Interviewing (MI)/FRAMES Evaluation**
**(Post-Evaluation)**

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

This evaluation is not graded. Your honest feedback/self-assessment is greatly appreciated.

1. I have seen a training module for Motivational Interviewing (MI) before.
Strongly Agree Agree Neutral Disagree Strongly Disagree

2. I can name the key components of Motivational Interviewing.
Strongly Agree Agree Neutral Disagree Strongly Disagree

3. I consistently apply Motivational Interviewing in my current practice.
Strongly Agree Agree Neutral Disagree Strongly Disagree

4. I have heard or known of brief interventions or the FRAMES model.
Strongly Agree Agree Neutral Disagree Strongly Disagree

5. I am confident in practicing Motivational Interviewing without the use of printed or electronic references.
Strongly Agree Agree Neutral Disagree Strongly Disagree

6. I believe patient teaching is more effective if the healthcare provider does most of the talking, explaining, or educating.
Strongly Agree Agree Neutral Disagree Strongly Disagree

7. In patient interactions, providing only one or only the best treatment option makes adherence to treatment plan easier.
Strongly Agree Agree Neutral Disagree Strongly Disagree

8. I feel confident in my ability to apprehend ambivalence from my patients.
Strongly Agree Agree Neutral Disagree Strongly Disagree

9. I know ways to help my patients resolve their ambivalence towards their health.
Strongly Agree Agree Neutral Disagree Strongly Disagree

If yes, please list at least three:
a.
b.
c.

10. Which statement will most likely explore a patient's ambivalence for change?
a. You need to stop eating sweets and brush your teeth often.
b. Tell me more about your concerns regarding fluoride.
c. You don't want to have cavities, do you?

11. The MI/FRAMES PowerPoint presentation was helpful in increasing my knowledge about these topics.
Strongly Agree Agree Neutral Disagree Strongly Disagree

What went well:
1.
2.
3.

Suggestions for improvement:
1.
2.
3.

12. OARS is an acronym for the key communication skills in MI. OARS stands for:
O-
A-
R-
S-
*Post training, xx% of patient*

13. FRAMES is a brief intervention counseling model that is an adaptation of MI. FRAMES stands for:
F-
R-
A-
M-
E-
S-

14. The MI Reference Sheet was helpful in applying MI during my patient/parent interactions.
Strongly Agree Agree Neutral Disagree Strongly Disagree

What went well:
1.
2.
3.

Suggestions for improvement:
1.
2.
3.

15. I am utilizing MI during my patient interactions at _____ frequency than before viewing the MI/FRAMES module and using the MI Reference sheet.
Much Higher Higher The Same Lower Much Lower

16. My confidence level in utilizing MI in future practice is _____.
Much Higher Higher The Same Lower Much Lower

# Appendix S

## RIPLS Questionnaire

**Readiness for Interprofessional Learning Scale (RIPLS) Questionnaire***

☐ Pre-Evaluation ☐ Post-Evaluation

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

IPHC
Interprofessional Health Collaborative
*A partnership between the*
UNIVERSITY OF THE PACIFIC
*and the*
UNIVERSITY OF SAN FRANCISCO

**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 year ☐ 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**

Thank you for completing this survey. The data will provide us with an understanding of the influence of the Interprofessional Collaborative Practice program that we are facilitating or implementing. The original RIPLS survey has been adapted for use by University of San Francisco and the University of the Pacific for a Interprofessional Activity between the Nurse Practitioner and Dental Student Programs.

Appendix T

Statement of Non-Research Determination Form (SOD)

UNIVERSITY OF SAN FRANCISCO School of Nursing and Health Professions

**DNP Statement of Non-Research Determination Form**

**Student Name: Ulyses R. Reamico**

**Title of Project:** Increasing Utilization of Motivational Interviewing to Promote Pediatric Oral Health

**Brief Description of Project:** This project will help dental students from the Univeristy of the Pacific (UoP) improve their skills in utilizing motivational interviewing (MI) through the development of an MI learning module and MI reference sheet. The MI module will serve as a refresher course for those who have seen an MI presentation in the past but can stand alone as an introductory module for those who have not seen an MI module before. The reference sheet will be made available to the dental students during their pediatric clinical rotation.

**A) Aim Statement:** The overarching aim of this project is to improve pediatric oral health through improved oral health behaviors, which will be guided by utilizing motivational interviewing during patient interactions. By December 2018, a cohort of dental students from the UoP, Arthur A. Dugoni School of Dentistry, will demonstrate improved MI knowledge and improved confidence in utilizing MI.

**B) Description of Intervention:** Develop an MI module, which will become a required training during the dental students' pediatric clinical rotation. Also, an MI reference sheet will be developed and will be made accessible for the students during their patient interaction.

**C) How will this intervention change practice?** Motivational interviewing elicits greater behavioral change compared to traditional or authoritarian communication style. The module is designed to build knowledge about MI while the reference sheet is designed to help the students apply/practice MI during actual patient interactions. As the students become more proficient in MI, the lesser they will utilize the refence sheet. Furthermore, as their MI profienciency increases, utilization of MI will not be limited to the their clinical rotations, but will be part of their practice in general.

**D) Outcome measurements:** Outcomes will be measured by surveying pre and post implementation MI knowledge, skills, and attitude. Also, the students will be ask to reflect and provide feedback about the MI module and reference sheet.

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)

DNP Department Approval 5/8/14 1

UNIVERSITY OF SAN FRANCISCO School of Nursing and Health Professions

☐ 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.

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. | X | |
| 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. | X | |
| 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. | X | |
| 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. | X | |
| 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. | X | |
| 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. | X | |
| The project has **NO** funding from federal agencies or research-focused organizations and is not receiving funding for implementation research. | X | |
| 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. | X | |
| 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."* | X | |

**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.

UNIVERSITY OF SAN FRANCISCO School of Nursing and Health Professions

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

**STUDENT NAME (Please print):** ULYSES REAMICO

**Signature of Student:** _____ **DATE** 9/24/18

**SUPERVISING FACULTY MEMBER (CHAIR) NAME (Please print):**

**Signature of Supervising Faculty Member (Chair):** _____ **DATE** 10/15/18

Appendix U

Demographics of 2018-2019 IPE Participants

# Demographics of 2018-2019 IPE Participants

## DDS 2018 Cohort Pre-activity MI Survey

**61 surveys collected**
**1 had incomplete data, answered only 6/10 items**
**60 included in the analysis**
- **Gender: M=32 F=28**
- **Year of birth: 1988-1996**
- **Presumed age range during the project: 21-30**

## DDS 2018 Cohort Post-activity MI Survey

**59 surveys collected**
**4 with incomplete demographics and/or answered only 10/16 items**
**55 included in the analysis**
- **Gender: M=29 F=26**
- **Year of birth: 1988-1996**
- **Presumed age range during the project: 21-30**

## DDS 2019 Cohort Pre-activity MI Survey

**110 surveys collected**
**1 with incomplete data, answered only 1/10 items**
**109 included in the analysis**
- **Gender: M=50 F=59**
- **Year of birth: 1979-2000**
- **Presumed age range during the project: 18-40**

## DDS 2019 Cohort Post-activity MI Survey

**93 surveys collected**
**6 with incomplete data, answered only 9-11/16 items**
**87 included in the analysis**
- **Gender: M=41 F=46**
- **Year of birth: 1979-2000**
- **Presumed age range during the project: 18-40**

## RIPLS Survey

**Pre: 13 NP – M=3 F=10; DDS – M=1 F=5**
**Post: 13 NP – M=3 F=10; DDS – M=1 F=4**
**Year of birth: 1979-2000**
**Presumed age range during the project: 18-40**

# Appendix V

## 2018 MI Module and Reference Sheet Feedback

| MI Module/PowerPoint | |
|---|---|
| **What Went Well** | **Suggestions for Improvement** |
| Themes:<br>a. PPT was well organized and clear.<br>-Easy to follow and understand<br>-Informative<br>-Liked the voice over presentation<br>-Transcript/notes at bottom helpful<br>-Outlined needed information clearly<br>-Succinct; good examples of questions to ask<br>-Convenient to view at own pace<br>-Ease of understanding; good flow of presentations<br>-Explained the acronyms well<br>-Discussed how to structure the discussions with patients<br><br>b. PPT was useful in improving practice and was a good resource.<br>-Accessible<br>-Good to start with patients as a new practitioner<br>-Helpful guidelines with acronyms<br>-Patients shared more when I asked open-ended questions<br>-Older patients shared more with open-ended questions<br>-Patients liked when I confirmed what they said | Themes:<br>a. Make presentation shorter.<br>-Less acronyms<br>-Shorter video; more concise<br>-Video was long<br>-PPT version was faster to get through<br><br>b. Present the module in a different way.<br>-PPT/lecture is not the best way to learn<br>-No formal presentation<br>-In-person seminar about MI<br>-Put subtitles<br>-Give class time for it<br><br>c. Add more examples/scenarios of MI/FRAMES application.<br>-More examples<br>-Need more explanations how it affects patients<br>-Include questions by students<br>-Have more scenarios for viewers to practice<br>-Need more realistic examples with less extensive vocabulary for kids<br><br>d. There is room for improvements in the current module.<br>-Better layout of information<br>-Use only either OARS or OARES in presentation, not both<br>-Make presentation more interactive like selecting responses to patients' questions |
| **Reference/Cheat Sheet** | |
| **What Went Well** | **Suggestions for Improvement** |
| Themes:<br>a. Reference sheet was well organized.<br>-Quick information for the order of approaching patient interaction<br>-Organized, concise, clear<br>-A lot of useful information<br><br>b. Reference sheet was useful in clinic.<br>-Good to have in clinic; quick resource<br>-More information gathered<br>-Parent was more engaged, asked more questions<br>-Prolonged follow up discussions<br>-Improved patient understanding<br>-Parents understood more, more engaged<br><br>c. Reference sheet improved utilization of MI in practice.<br>-Applied reflective listening, summarizing, and asking open-ended questions<br>-Builds patient compliance and better understanding<br>-More conscious of asking patients open-ended questions<br>-Gave parents chance to ask question which they normally wouldn't | Themes:<br>a. Patient intake interview took longer.<br>-Slightly longer task<br>-Patient/parent interaction took longer<br><br>b. Reference sheet can be made more clear.<br>-Busy design<br>-Need more explanation on Respond to Readiness section<br>-More practice questions/examples especially for kids<br><br>c. Make sure students know or remind them that reference sheets are available in clinic.<br>-Have handout near so we can use it<br>-Leave copies for main clinic |

# Appendix W

## 2019 MI Module and Reference Sheet Feedback

| MI Module/PowerPoint | |
|---|---|
| **What Went Well** | **Suggestions for Improvement** |
| Themes:<br>a. PPT was well organized and clear<br>-Easy to follow; Well structured and organized well<br>-Succinct, clear, interesting presentation<br>-Good diagrams and easy acronyms to remember<br>-Used examples in practice, Simple language<br>-Easy to access<br>-Option to view video or PowerPoint<br>-Voice over was good<br>-PowerPoint had clear explanations in presenter notes<br>-Explained concept of patient ambivalence<br>-Concise (<50 slides) for the topic covered<br>-Presentation is to the point!<br>-Preview of each section;<br>-Repetition of information<br>-Readiness ruler<br>-Utilized MI more often in practice<br><br>b. PPT was useful in improving practice and was a good resource.<br>-Helped develop relationships on first visit<br>-Good reference<br>-Better communication; asked and listened more<br>-More receptive, engaged patients/parents<br>-Less confusion; more focused planning<br>-Increased empathy; more ways to give feedback<br>-Asking more open-ended questions<br>-Learned more about patient interaction<br>-Better awareness how to prompt patient<br>-Patient report went well | Themes:<br>a. Add more examples/scenarios of MI/FRAMES application.<br>-More examples<br>-Video provider-patient interaction<br>-More children scenarios<br>-Add more comprehensive scenarios<br>-Add more interactive aspects<br>-More practice opportunities<br><br>b. Make presentation shorter.<br>-Shorter presentation<br>-Less words per slide<br>-Divide to multiple shorter lectures<br>-“Feels redundant”<br>-Harder to memorize specific mnemonics<br><br>c. Application of MI had some drawbacks.<br>-Longer interview times<br>-More options for patients<br>-Patients hesitant to take responsibility<br><br>d. There is room for improvements in the current module.<br>-Have quiz post presentation<br>-More instructions of clinical application<br>-More clarity between different methods<br><br>e. Students would like more time and reminders to view the PPT before clinical.<br>-More reminders to view the module<br>-Give handouts for notes<br>-More information on the Readiness Ruler<br>-Go over during orientation<br>-Revisit in middle of rotation<br><br>f. Live lecture is welcomed.<br>-In-person presentation<br>-“Watching the NP in person will be helpful” |
| **Reference/Cheat Sheet** | |
| **What Went Well** | **Suggestions for Improvement** |
| Themes:<br>a. Reference sheet was well organized.<br>-Good, concise reference<br>-Well organized<br>-Good cheat sheet, using readiness for change<br>-Clear to follow, nice layout; Color coded, easy to read<br>-Some of MI/OARS taught in ICS<br>-Includes good sample questions to ask<br>-Gives strategies, easy to apply clinically<br>-The scale for “Respond to Readiness”<br><br>b. Reference sheet was useful in clinic.<br>-Helpful tool<br>-Necessary reminder<br>- Acronyms are helpful | Themes:<br>a. Time constraints limited the use of the reference sheet.<br>-Patient intake interview took longer.<br>-Difficult to apply in clinic without practice<br>-Usually did not have enough time<br>-Had to read quickly<br><br>b. Make sure students know or remind them that reference sheets are available in clinic.<br>-Add the MI/Reference sheet to PD240 manual<br>-Post throughout clinic;<br>-Keep in huddle room<br>-Reminders to use<br>-Hard to find<br>-More/other forms of the sheet |

| | |
|---|---|
| -Good it exists; accessible in clinic<br>-I was able to reference often<br>-Made me think about what questions I'm asking<br>-More reflections on how I can improve<br>-Soothed patients<br>-Patients are more receptive<br>-I felt as though my advice was more well received.<br><br>c. Reference sheet improved utilization of MI in practice.<br>-Guided conversation with parents<br>-Parents more engaged, committed<br>-Feel like patients might follow through<br>-Emphasis on personal responsibility<br>-Good gauge on patient compliance<br>-FRAMES helped the way of counseling | -Didn't need it with my patients<br><br>c. Reference sheet can be made more clear.<br>-Less text consolidation, more visuals<br>-Readiness for change section looked complicated<br>-Readiness may help if more detailed<br>-Add pictures or graphics<br>-Add more questions<br><br>d. Introduce the module/reference sheet before earlier in the semester.<br>-Introduce before rotation<br>-Provide more opportunities to use; more workshop |

# Appendix X

## FNP Students RIPLS Results

| NP Pre-activity RIPLS | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q | NP Student | | | | | | | | | | | | | Mode | Mean | Standard Deviation |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | | | |
| 1 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1.38 | 0.870 |
| 2 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1.38 | 0.650 |
| 3 | 1 | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1.46 | 0.877 |
| 4 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1.38 | 0.650 |
| 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1.15 | 0.376 |
| 6 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1.38 | 0.650 |
| 7 | 1 | 3 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1.46 | 0.660 |
| 8 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 1.31 | 0.630 |
| 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 3 | 1 | 2 | 1 | 1 | 1.31 | 0.630 |
| 10 | 5 | 2 | 1 | 4 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 4 | 5 | 5 | 4.08 | 1.256 |
| 11 | 5 | 2 | 1 | 4 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 5 | 5 | 3.92 | 1.256 |
| 12 | 5 | 5 | 1 | 4 | 5 | 5 | 5 | 4 | 4 | 5 | 4 | 4 | 5 | 5 | 4.31 | 1.109 |
| 13 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 2 | 2 | 1 | 1 | 1.62 | 0.870 |
| 14 | 1 | 2 | 1 | 1 | 1 | 2 | 1 | 1 | 3 | 3 | 2 | 3 | 1 | 1 | 1.69 | 0.855 |
| 15 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 2 | 2 | 2 | 1 | 1 | 1.46 | 0.660 |
| 16 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 3 | 1 | 2 | 2 | 2 | 1 | 1.54 | 0.776 |
| 17 | 1 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 1.46 | 0.660 |
| 18 | 3 | 5 | 1 | 4 | 3 | 4 | 1 | 4 | 4 | 5 | 4 | 4 | 5 | 4 | 3.62 | 1.325 |
| 19 | 3 | 4 | 1 | 3 | 5 | 1 | 3 | 3 | 2 | 3 | 4 | 4 | 2 | 3 | 2.92 | 1.188 |
| 20 | 4 | 3 | 3 | 4 | 1 | 4 | 5 | 3 | 2 | 4 | 2 | 4 | 2 | 4 | 3.15 | 1.144 |
| 21 | 4 | 3 | 2 | 4 | 1 | 4 | 5 | 3 | 2 | 4 | 2 | 2 | 2 | 2 | 2.92 | 1.188 |

| NP Post-activity RIPLS | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q | NP Student | | | | | | | | | | | | | Mode | Mean | Standard Deviation | p-value |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | | | | |
| 1 | 1 | 3 | 1 | 1 | 1 | 1 | 2 | 1 | 3 | 1 | 1 | 2 | 1 | 1 | 1.46 | 0.776 | **0.584** |
| 2 | 1 | 5 | 2 | 1 | 1 | 1 | 2 | 1 | 3 | 1 | 2 | 2 | 1 | 1 | 1.77 | 1.166 | **0.054** |
| 3 | 1 | 5 | 2 | 1 | 1 | 1 | 2 | 1 | 3 | 1 | 2 | 2 | 1 | 1 | 1.77 | 1.166 | **0.040** |
| 4 | 1 | 5 | 1 | 1 | 1 | 1 | 2 | 1 | 4 | 1 | 1 | 2 | 1 | 1 | 1.69 | 1.316 | **0.219** |
| 5 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 3 | 1 | 2 | 2 | 1 | 1 | 1.38 | 0.650 | **0.082** |
| 6 | 1 | 5 | 1 | 1 | 1 | 1 | 2 | 1 | 4 | 1 | 3 | 2 | 1 | 1 | 1.85 | 1.345 | **0.053** |
| 7 | 1 | 5 | 2 | 1 | 1 | 1 | 3 | 1 | 4 | 1 | 2 | 2 | 1 | 1 | 1.92 | 1.320 | **0.111** |
| 8 | 1 | 3 | 1 | 1 | 2 | 1 | 2 | 1 | 4 | 1 | 2 | 2 | 2 | 1 | 1.77 | 0.927 | **0.027** |
| 9 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 1.38 | 0.506 | **0.721** |
| 10 | 5 | 1 | 5 | 4 | 3 | 4 | 2 | 4 | 2 | 5 | 5 | 2 | 5 | 5 | 3.62 | 1.446 | **0.363** |
| 11 | 5 | 1 | 4 | 4 | 3 | 4 | 2 | 4 | 2 | 4 | 5 | 2 | 5 | 4 | 3.46 | 1.330 | **0.291** |
| 12 | 5 | 5 | 5 | 4 | 4 | 4 | 3 | 4 | 4 | 5 | 5 | 2 | 5 | 5 | 4.23 | 0.927 | **0.856** |
| 13 | 1 | 5 | 1 | 1 | 4 | 1 | 2 | 1 | 3 | 1 | 2 | 2 | 1 | 1 | 1.92 | 1.320 | **0.367** |
| 14 | 1 | 5 | 1 | 1 | 4 | 2 | 2 | 1 | 4 | 3 | 2 | 2 | 1 | 1 | 2.23 | 1.363 | **0.131** |
| 15 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 1 | 4 | 2 | 2 | 2 | 1 | 1 | 1.69 | 0.855 | **0.190** |
| 16 | 1 | 3 | 1 | 1 | 2 | 2 | 2 | 1 | 3 | 2 | 2 | 2 | 1 | 2 | 1.77 | 0.725 | **0.190** |
| 17 | 1 | 5 | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 1.69 | 1.109 | **0.273** |
| 18 | 4 | 5 | 5 | 4 | 3 | 4 | 5 | 4 | 4 | 4 | 5 | 2 | 5 | 4 | 4.15 | 0.899 | **0.279** |
| 19 | 3 | 5 | 5 | 3 | 5 | 3 | 4 | 4 | 4 | 3 | 4 | 2 | 3 | 3 | 3.69 | 0.947 | **0.075** |
| 20 | 2 | 1 | 2 | 4 | 1 | 4 | 3 | 1 | 2 | 3 | 2 | 2 | 5 | 2 | 2.46 | 1.266 | **0.108** |
| 21 | 2 | 2 | 1 | 4 | 1 | 2 | 4 | 1 | 2 | 3 | 2 | 2 | 4 | 2 | 2.31 | 1.109 | **0.071** |

| RIPLS Sub-category |
|---|
| **Teamwork and Collaboration** |
| **Negative Professional Identity** |
| **Positive Professional Identity** |
| **Professional Roles** |
| **Skills Competency** |

Appendix Y

DDS Students RIPLS Survey Results

| DDS Pre-activity RIPLS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Q | DDS Student | | | | | | Mode | Mean | Standard Deviation |
| | 1 | 2 | 3 | 4 | 5 | 6 | | | |
| 1 | 1 | 2 | 2 | 3 | 2 | 2 | 2 | 2.00 | 0.63 |
| 2 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1.50 | 0.55 |
| 3 | 1 | 1 | 2 | 3 | 1 | 2 | 1 | 1.67 | 0.82 |
| 4 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1.33 | 0.52 |
| 5 | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1.33 | 0.52 |
| 6 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 1.50 | 0.55 |
| 7 | 1 | 1 | 2 | 3 | 1 | 2 | 1 | 1.67 | 0.82 |
| 8 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1.33 | 0.52 |
| 9 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1.33 | 0.52 |
| 10 | 5 | 4 | 4 | 3 | 5 | 4 | 4 | 4.17 | 0.75 |
| 11 | 4 | 4 | 4 | 3 | 5 | 4 | 4 | 4.00 | 0.63 |
| 12 | 4 | 4 | 3 | 3 | 4 | 3 | 4 | 3.50 | 0.55 |
| 13 | 1 | 1 | 2 | 3 | 1 | 2 | 1 | 1.67 | 0.82 |
| 14 | 1 | 2 | 2 | 3 | 1 | 2 | 2 | 1.83 | 0.75 |
| 15 | 1 | 1 | 3 | 3 | 2 | 2 | 1 | 2.00 | 0.89 |
| 16 | 2 | 1 | 1 | 3 | 1 | 2 | 1 | 1.67 | 0.82 |
| 17 | 1 | 1 | 1 | 3 | 1 | 2 | 1 | 1.50 | 0.84 |
| 18 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 3.83 | 0.41 |
| 19 | 3 | 3 | 4 | 2 | 1 | 2 | 3 | 2.50 | 1.05 |
| 22 | | 1 | 2 | 3 | 2 | 2 | 2 | 2.00 | 0.71 |
| 23 | | 2 | 2 | 1 | 2 | 2 | 2 | 1.80 | 0.45 |

| DDS Post-activity RIPLS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Q | DDS Student | | | | | Mode | Mean | Standard Deviation | p-value |
| | 1 | 2 | 4 | 3 | 5 | | | | |
| 1 | 1 | 2 | 1 | 2 | 2 | 2 | 1.60 | 0.55 | **0.297** |
| 2 | 1 | 2 | 1 | 2 | 2 | 2 | 1.60 | 0.55 | **0.770** |
| 3 | 2 | 2 | 1 | 2 | 2 | 2 | 1.80 | 0.45 | **0.753** |
| 4 | 2 | 2 | 1 | 2 | 2 | 2 | 1.80 | 0.45 | **0.148** |
| 5 | 2 | 2 | 1 | 2 | 2 | 2 | 1.80 | 0.45 | **0.148** |
| 6 | 1 | 2 | 1 | 2 | 2 | 2 | 1.60 | 0.55 | **0.770** |
| 7 | 1 | 2 | 1 | 2 | 2 | 2 | 1.60 | 0.55 | **0.880** |
| 8 | 2 | 2 | 1 | 2 | 1 | 2 | 1.60 | 0.55 | **0.428** |
| 9 | 1 | 2 | 1 | 2 | 1 | 1 | 1.40 | 0.55 | **0.840** |
| 10 | 4 | 4 | 5 | 4 | 4 | 4 | 4.20 | 0.45 | **0.933** |
| 11 | 4 | 4 | 5 | 4 | 4 | 4 | 4.20 | 0.45 | **0.568** |
| 12 | 4 | 3 | 3 | 4 | 3 | 3 | 3.40 | 0.55 | **0.770** |
| 13 | 2 | 2 | 1 | 2 | 2 | 2 | 1.80 | 0.45 | **0.753** |
| 14 | 3 | 2 | 1 | 2 | 2 | 2 | 2.00 | 0.71 | **0.716** |
| 15 | 2 | 2 | 3 | 3 | 2 | 2 | 2.40 | 0.55 | **0.407** |
| 16 | 2 | 3 | 1 | 2 | 2 | 2 | 2.00 | 0.71 | **0.493** |
| 17 | 2 | 2 | 1 | 2 | 2 | 2 | 1.80 | 0.45 | **0.492** |
| 18 | 4 | 2 | 4 | 4 | 4 | 4 | 3.60 | 0.89 | **0.579** |
| 19 | 2 | 2 | 1 | 3 | 1 | 2 | 1.80 | 0.84 | **0.259** |
| 22 | 2 | 2 | | 4 | 2 | 2 | 2.50 | 1.00 | **0.407** |
| 23 | 3 | 2 | | 3 | 2 | 3 | 2.50 | 0.58 | **0.079** |

| RIPLS Sub-category |
|---|
| Teamwork and Collaboration |
| Negative Professional Identity |
| Positive Professional Identity |
| Professional Roles |
| Skills Competency |