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Addressing Childhood Obesity in a Rural Community Using Motivational Interviewing

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Abstract

Purpose: Childhood obesity is a significant health problem associated with increased adult morbidity and mortality. Rural areas like Central Valley California demonstrate disproportionate rates of obesity. Children in rural and underserved populations are at a higher risk of developing obesity. Data suggest that obesity is often under-addressed during routine health care visits. Primary care practitioners are the first point of health care contact and have a unique opportunity to prevent and address obesity through health monitoring and education.

In response to escalating rates of obesity, clinical recommendations have been established for primary care providers including the use of patient-centered approaches to motivate families on behavior change. The use of Motivational Interviewing (MI) encourages the patient to recognize their readiness for change, assess the benefits of embracing healthy behavior, and evaluate their confidence and perceived ability to make the change. Recommended behavioral changes to address childhood obesity include encouraging consumption of nourishing foods rich in whole grains, low fat or fat-free foods, fruits and vegetables, lean meat and other protein sources, and daily physical activity of 60 minutes or more for ages 6 to 18 with emphasis on aerobic, muscle, and bone strengthening.

This DNP student developed a health promotion project that focused on educating Family Nurse Practitioner (FNP) students from the University of San Francisco (USF) and San Jose State University (SJSU) on best practices for addressing childhood obesity in the primary care setting. A prevention strategy was designed to use MI to address childhood obesity within the context of a routine pediatric health screening.

Method: An in-service was conducted for the FNP students including (a) MI techniques and Change Talk interactive scenario to elicit change in behavior, physical activity, and diet; (b) BMI

screening guidelines; (c) 5-2-1-0 rule educational tool; (d) the Choose My Plate educational tools; and (e) the Healthy Eating and Activity Together (HEAT) educational tool. Interventions were implemented at Reedley and Orange Cove High Schools in Kings Canyon Unified School District in Fresno County during the sports physical assessment program. **Measures:** Evaluation metrics included a pre/post-test questionnaire to measure student FNP (n=15) knowledge and confidence after delivery of the MI education to students from Reedley and Orange Cove High Schools. The survey evaluated the knowledge of MI techniques, childhood obesity prevention readiness, confidence in the use of MI, and potential barriers to participating in the prevention strategies. **Results:** Project outcomes showed an increased mean of 4.13 (SD 1.06) in knowledge, while confidence increased from mean of 2.6 (SD .06) to 4.13 (SD 0.64) in MI techniques, childhood obesity screening guidelines, and BMI screening. **Conclusions:** Outcomes indicate that an education program can increase student FNP's knowledge and confidence in using the MI techniques to address childhood obesity in the primary care setting.

Keywords: Motivational Interviewing, Childhood Obesity, Central California

Section II

Problem Description

Despite abundant information on the importance of preventing childhood obesity, the epidemic continues. The onset of obesity starts at an early stage, and affected children often become obese adults (Schaefer et al., 2015). Obesity occurs where there is an excessive accumulation of fat in the body. Body Mass Index (BMI) is the unit of measurement for childhood obesity. Childhood obesity is a condition when the BMI is at or above the 85th to the 95th percentile for children of the same age and sex (CDC, 2018). National childhood obesity rates from the National Center for Health Statistics (NCHS), 2015-2016 (CDC, 2017) indicate the prevalence of childhood obesity among adolescents as 20.6%.

Living with obesity can affect all the systems in the body resulting in many physiological and psychological consequences like cardiovascular, endocrine, musculoskeletal, and mental health issues (Kaiser et al, 2015). Development of obesity can be from inability to afford nutritious foods due to poor socioeconomic status, knowledge deficit on prevention of obesity, nutrition-based customs and traditions with intake of staple foods high in carbohydrates and fats, and inadequate activity including excessive screen time (CDC, 2018). Rural and underserved communities with predominantly Hispanic populations are particularly at-risk for childhood obesity (Kaiser et al, 2015). NCHS also reported that overall, a higher percentage of obesity was noted in Hispanics (25.8%) compared to other races like non-Hispanic black youth (22.0%), non-Hispanic Asians (11%) and non-Hispanic whites (14.1%) (CDC, 2018).

One such community is the town of Reedley in the Central Valley county of Fresno California which has demonstrated an increased risk for childhood obesity due to poor socioeconomic status, racial and ethnic vulnerabilities, lack of physical activity, poor access to

healthy lifestyle resources and poor nutrition (Schwarte et al, 2010). The California Central Valley includes a diverse population with a disproportionate representation of low socioeconomic status families and immigrant populations, particularly Hispanic (Valley Children's Hospital (VCH), 2016). According to the US Census Bureau (UCB, 2015), the racial-ethnic representation of Central California is described as follows; white 40%, Hispanic 50.4%, Black 5.1%, Asian 9.6%, and approximately 3% mixed race and other race. The community health needs assessment report (VCH, 2016) for Fresno, Kings, Madera, and Tulare counties in 2016, identifies obese children in Fresno at 42.7%, Kings 43.5%, Madera 44.1%, and Tulare 43.8%. These percentages are significantly higher than the California average of 38.0% and national 18.5%.

The city of Reedley, dubbed the "The World's Fruit Basket," is a part of Fresno County. Fresno County is called the Agricultural Capital of the World because of the massive production of fruits and vegetables. Nonetheless, Fresno County still has one of the highest childhood obesity rates in California (Fresno County Farm Bureau, 2018). The population in Reedley is predominantly Hispanic at 47.7%, and Reedley has a median household income of \$43,036, and a poverty rate of 26.2% compared to the national poverty rate of 13.4% (City of Reedley, 2018).

Cultural disposition of obesity

Health practices of children and families are guided by culture, ethnicity, socioeconomic status, and environment (Tripp, Perry, Romney & Blood-Siegfried, 2011). The target population for this project is Hispanic youth living within the Central Valley. Hispanic children and adolescents have been determined to be disproportionately affected by obesity due to dietary practices and decreased physical activity and possibly a genetic disposition (Schaefer et al., 2015). Genetic predisposition also puts Hispanic teenagers at a risk of gaining more weight over

other teenagers from other races (University of Illinois College of Agricultural, Consumer and Environmental Sciences (ACES), 2013). Due to cultural choices, potentially inadequate knowledge, and lower economic capabilities, the Hispanic family diet may lean toward processed foods that are high in carbohydrates and fat as opposed to whole fresh foods (Sadeghi et al, 2016). Parental feeding methods may play a role in shaping children's weight due to their attitude towards food and nutrition. Hispanic parental involvement in food practices may include applying pressure to eat, withholding food as punishment, and restriction on the amount of food, which may ultimately result in increased BMI over time (Tschann et al., 2015). In response to these influences, experts have suggested using culturally adapted MI techniques on understanding Hispanic culture and encouraging parental involvement on how to promote healthy eating habits. This is especially crucial because Hispanic populations in which food often rich in carbohydrates and fats, is a central cultural practice (Sadeghi et al., 2016).

Health Consequences of obesity

The sustained increase in the occurrence of childhood obesity poses a danger to public health (CDC, 2018). There are several health repercussions of childhood obesity which if not prevented may lead to physiological and psychological problems in adulthood such as hypertension and hyperlipidemia, prominent risk factors for cardiovascular disease and stroke; and risk of insulin resistance and impaired glucose tolerance, which are increased risks for type 2 diabetes (CDC, 2018). Other potential health outcomes include some cancers, breathing problems like sleep apnea and asthma, osteoarthritis, and osteoporosis later in life (CDC, 2018). Furthermore, attributed psychological problems include anxiety, depression, low self-esteem, self-reported lower quality of life, bullying and stigma (CDC, 2016).

Cost factors for Childhood Obesity

In addition to the grave physical consequences of childhood obesity, there are also its crippling effects on the economy. Nationally, childhood obesity is accountable for \$14 billion in obesity-related direct medical costs which include annual prescription drug, emergency room and inpatient costs of \$237.6 million (Cawley, 2010). According to the National League of Cities, the estimated cost for childhood obesity-related medical expenses is expected to rise in the future. Obese children grow up to become obese adults, and with this issue unaddressed, the cost to society will continue to rise. Conversely, if childhood obesity rates decline, an estimated savings of medical expenditure would be \$549.5 billion over the next two decades (National League of Cities (NLC) 2018).

Screening and treatment recommendations for childhood obesity

With the rapid rate at which childhood obesity is growing, health monitoring agencies have recommended numerous guidelines to follow to prevent and eradicate this problem. The recommendation from Healthy People 2020 (2018) includes the consumption of a selection of nourishing foods rich in whole grains, low fat or fat-free foods, fruits and vegetables, lean meat and other protein sources (CDC, 2018). Healthy People 2020 also recommends limiting calorie intake to body needs and limitation of alcohol, saturated fats, smoking, high sodium, and sugar products. The PA guidelines, according to CDC, (2018) recommended daily physical activity of 60 minutes or more for ages six to 18 with emphasis on aerobic, muscle, and bone strengthening.

The United States Preventive Services Task Force (USPSTF) recommends that clinicians refer or offer children and adults with a BMI of above 30 to intensive, multicomponent treatment such as education on nutrition modifications and regular PA (Healthy People, 2018). The task force members for the Endocrine Society recommend routine evaluation of children with BMI

above 85% for diabetes (Endocrine Society, 2017). Recommendations from The American Academy of Pediatrics (AAP) for the treatment of childhood obesity in primary care practice includes an emphasis on the use of a patient-centered approach to motivate families on behavior change (Irby, Kaplan, Garner-Edwards, Kolbash and Skelton, 2010). Furthermore, the use of MI encourages the patient to recognize their readiness for change, deliberate on the benefits and demerits of embracing healthy behavior, and evaluates their confidence and perceived ability to make the change (National Association of Pediatric Nurse Practitioners (NAPNAP), 2018). For this project, the FNP students were educated on the guidelines for childhood obesity for use in the primary care context.

Provider barriers.

Primary care practice is the first point of contact for patients to address health concerns. Provider adherence to screening guidelines for obesity may reduce the effects of childhood obesity. However, despite the recommended guidelines, there are inadequate assessments and identification of high-risk groups of childhood obesity in primary care practice (Busch, Hubka & Lynch, 2018; Masse, Carbert, Scarr & O'Donnell, 2018). Providers barriers to providing health promotion services include; a lack of knowledge and confidence, lack of time and resources, parental perception and poor motivation, poor clinic return visits and patients lack access to resources (Spivack, Swietlik, Alessandrini and Faith, 2010; Rhee, Kessl, Lindback, Littman and El-Kareh, 2012).

In the study on how primary care practitioners (PCP) addressed knowledge of American Academy of Pediatrics (AAP) guidelines for obesity and preventive management strategies at well-child visits, PCPs responded inadequately to the understanding of childhood obesity prevention and AAP guidelines (Spivack, Swietlik, Alessandrini, and Faith, 2010). The PCPs

also revealed the issue of not spending enough time with patients during well-child visits in addressing diet, exercise, and nutrition (Spivack, Swietlik, Alessandrini, and Faith, 2010).

The use of Motivational Interviewing in addressing childhood obesity provides a forum of empathetic conversation between the practitioner and the child/adolescent/parents, to motivate and guide them to recognize and work on their reasons for change. During this time, obstacles to change are addressed and change plan created. Low self-esteem, depression, body dissatisfaction, and social maladjustment issues often accompany childhood obesity (Stapleton et al., 2016). The use of motivational interviewing, praise, highlighting of accomplishments, and celebrating weight loss no matter how minute, will boost their morale and encourage them to keep following the weight loss regimen (Tripp, Perry, Romney & Blood-Siegfried, 2011).

Available Knowledge

A literature review was conducted to examine the use of evidence-based literature in the use of MI to address childhood obesity and the provider barriers in primary care. The literature search revealed many evidence-based studies on the use of MI to address childhood obesity. Also, priority was given to studies that researched the use of MI by family practitioners, the barriers encountered, and actions taken to reduce them as this DNP student posed the following PICO question: In a predominantly Hispanic community, how does MI intervention by primary care practitioners, compare to standard intervention without MI, affect childhood obesity.

Review of the Evidence.

Search strategy methods.

A comprehensive search of the literature was performed using the following databases: Medline, PsychInfo, PubMed, Scopus, and Cumulative Index to Nursing and Allied Health Literature (CINAHL). Qualitative and quantitative studies were examined using Medical Subject

Heading (MESH) terms, free text, and keywords (Motivational Interviewing, Childhood Obesity, Central California). Grey literature, like factsheets and regulatory documents were also reviewed and included. Inclusion criteria were studies that focused on school-aged three-year olds to 19-year olds and peer-reviewed articles published after 2010. Articles were excluded if they addressed ages below three years, were written in languages other than English or addressed obesity-associated diseases, treatments with medications, and surgery.

The search generated hundreds of articles; however, with the process of elimination, articles specific to practitioners using MI techniques, school-based clinics, barriers encountered, and cultural influence were selected. Studies were included in this project if they met criteria for describing PCP involvement and barriers in addressing childhood obesity, evaluated the use of MI techniques by clinicians in school settings that were predominantly Hispanic, low-income communities, or used technology that examined the use of MI in addressing childhood obesity. The Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Research Appraisal tool, (Dang & Dearholt, 2017) was used to evaluate the quality and strength of the literature critically. See Appendix D for the evaluation table.

Primary care provider-based interventions

The primary care provider (PCP) has an essential role in assessing and implementing obesity management approaches in the outpatient setting. Using comprehensive and multiple strategic interventions, they are in optimal position to monitor and prevent inappropriate weight gain and related complications. Practitioners have repeated opportunities to address childhood obesity, especially during the well visits, but barriers to tackling this condition could lead to increased obesity-related complications. Primary care practitioners have been using a traditional method of health education centered on expert advice, pamphlets, and group classes. But, with

MI, primary care practitioners can play a fundamental role in increasing patients' internal motivation to adapt and maintain a healthy lifestyle (Bishop and Jackson, 2013).

A quality improvement study by Tripp et al., (2011) assessed the effectiveness of using MI and Healthy Eating and Activities Together (HEAT) program guidelines to treat obesity in a primary rural clinic. In this rural pediatric clinic, participants were overweight and obese children with BMI of 85th percentile and higher, aged five to 18 years. The provider evaluated the patients' readiness, motivation for change, adherence to obesity counseling, and assessment for the comorbid diseases. The use of MI encouraged the patients to provide their ideas of the healthy changes they had instituted or new ideas they would want to add to get them to a healthier goal. Then, using the MI directing technique, the provider educated them on five healthy lifestyles like limiting sweets and sweetened beverages, limiting watching television or video games to one to two hours daily, improving physical activity to at least 50 minutes daily, eating portion-sized food according to age, and preparing meals at home instead of eating out. The provider also encouraged them to incorporate at least one or two interventions in their daily lifestyles. Results revealed that with the initial contact and consistent use of MI, using a Likert scale, the children that completed the process showed higher and sustained motivation at 3.5 scale on a 1-5 scale. The average BMI for the intervention group dropped from 26.6 to 26.1, and for making lifestyle changes, 93.6% indicated that they were ready to make lifestyle changes while 6.4% were unsure.

In a primary care nurse-delivered MI, Tucker et al. (2013) performed a quasi-experimental study to investigate the effects of the Let-go program 5-2-1-0 along with MI on overweight children. The study included 60 control families that were exposed to standard clinical care (SCC) and 70 intervention families exposed to SCC plus MI, incorporating the 5-2-

1-0 intervention. The eligible participants included children between ages of four and 18 years with BMI at 85-95th percentile and their parents. The emphasis of the 5-2-1-0 was to eat at least five fruits and vegetables per day, limit TV or/and computer use to twice a day, to engage in every day physical activity for at least one hour and to drink more water and milk instead of sugary drinks and soda. The registered nurses conducting the education were trained in the use of MI. The primary variables measured were BMI, BMI percentile, and healthy habits. The study showed that at 6 months, the BMI trended toward decline for the intervention group (BMI change from -2.2 to 2.5 ; $p = .050$). Also, there were an increase in self-reported intervention group over the control group in fruits and vegetable intake (75% versus 33%; $p < .001$), increased physical activity (61% versus 27%; $p = .004$) and decreased screen time (63% versus 39%; $p = .035$).

A pilot study was conducted by MacDonell, Brogan, Naar-King, Ellis and Marshall (2011) in another urban adolescent medicine clinic using MI targeting overweight or obese African American adolescents. The participants were 62 adolescent-caregiver dyads aged 13 to 17 years with a BMI of 85th percentile and above. The project manager randomly assigned half of the participants, MI group (MIG) to receive MI interventions, while the other half, control group (CG) received nutrition counseling over ten weeks. Both groups had 60-minute sessions with registered dietitians, and they were asked to make healthy choices in nutrition, activity, and use of MI to assess and reinforce change talk along with barriers to making healthy choices. Results showed from baseline to three months decreased fast food consumption among the intervention group MIG = from 2.14 [1.51] to 1.07 [SD 1.00] $p = .02$ vs CG = from 1.41 [1.50] to 1.71 [SD 1.31]; $p = .49$, decreased soft drink consumption among the intervention group MIG = from 3.00 [1.81] to 2.25 [SD 1.42] $p = 0.4$ vs CG = from 3.07 [2.12] to 2.67 [SD 1.72]; $p = .51$,

and increased physical activity among the intervention group MIG = from 127.03 [SD 20.28] to 126.73 [20.37] $p = .03$ vs CG = from 131.25 [25.73] to 131.33 [SD 25.05]; $p = .88$. The study noted that there was no significant change in BMI for both groups although the baseline BMI for the MIG was significantly higher ($p = .04$).

An IMAGINE study using a cluster blocked RCT design conducted by Freira et al. (2019) evaluated the effects of MI-based weight management program on the health-related quality-of-life (HRQoL) of an overweight/obese adolescents. Eight hundred adolescents between 14 and 18 years were randomly selected from 47 public schools. They were randomly assigned to a cluster block with a minimum capacity of 22 participants and maximum capacity of 44 participants. The schools were randomly assigned to control intervention groups (CIG) and MI intervention groups (MIG) on a 1:1 ratio. Both groups received three 30-minute individualized and confidential face-to-face counseling sessions, with discussions centered on their lifestyle. The interviewer was a pediatrician who had received 80 hours of MI training from a member of Motivational Interviewing Network of Trainers (MINT). The MIG participants received MI-based counseling interventions. The interviewers of the CIG group were a resident pediatrician and a school nurse both were experts in counseling without MI. The CIG group also received instructions on a healthy lifestyle and dietetic from the dietitian and the physical education (PE) teacher PA information. The study measured the HRQoL and anthropometric of the participants. Results showed a statistically significant BMI improvement in the MIG ($1.54 \pm .48$; CIG $1.83 \pm .28$; $p = .001$) and decreased abdominal circumference (MIG 92.65 ± 11.05 ; CIG 99.57 ± 11.45 ; $p = .006$). The percentage of MI-adherent behaviors increased in the MIG (97.0 ± 3.4 ; CIG 59.8 ± 16.3 ; $p < .001$), and the healthy lifestyle behaviors indicated a significant average increase in the MIG ($p = <.022$) and a significant average decrease in the (CIG $p < .001$).

To evaluate the effectiveness of MI techniques in promoting weight loss and self-efficacy in obese and overweight adolescents with BMI \geq 85th percentile in an outpatient clinic, Walpole et al. (2012) performed a randomized control trial study design using diet, exercise and lifestyle choices evaluation. The participants were randomly assigned to control and treatment groups balanced by age and time of entry into the program. In addition to usual care with diet and exercise, both groups received an additional 30 minutes per minute of individual therapy. The participants and interventionists were blind to randomization. The outcome measures were self-efficacy and anthropometric measures. At six months follow up, pre and post evaluations were done using two instruments for self-efficacy. The first was the Child Dietary Self-Efficacy Scale (CDSS), a 15-item self-report questionnaire with higher scores indicating increased health-related self-efficiency. The second instrument was the Weight Efficacy Lifestyle questionnaire, a 20-item scale consisting of negative emotions, availability for the program, social pressure, physical discomfort, and positive activities. Higher scores also indicated more significant levels of health-related self-efficacy. BMI and weight circumference were used as the anthropometric measures. Results showed that in both groups, reduction in BMI *z*-score 2.6 [2.23-2.99] vs follow up: 2.52 [2.21-2.81], $p = 0.07$, and increased self-efficacy from baseline from 125 ± 28 vs follow up 138 ± 34 , $p = 0.004$. The study showed that although the BMI *z* score was non-significant, it did show a trend for improved BMI *z* score. This article was chosen for this project because of the improved self-efficacy in adhering to health-related activities which could lead to success in reducing their BMI over a longer period of time.

School-based interventions

An MI-based obesity prevention program is useful in an after-school program. Students spend most of their days in the school, and this makes it the first point of contact for the

education of obesity prevention. Including parents in the quest to reduce childhood obesity is essential to removing any potential roadblocks to a healthy lifestyle. Research by Wong and Cheng (2013) used a pre- and post-quasi-experimental study design to assess the effects of MI to promote weight loss in obese children. The study was carried out in four elementary schools in Hong Kong. The screened elementary schools included 187 eligible participants. The authors divided the samples into MI, MI+, and the control group (CG). Counselors provided MI to the MI group, MI+ group received MI with a telephone conversation, while the control group did not receive any intervention. All participants received anthropometric measures, regular physical fitness assessment, and Hong Kong Growth Survey. The authors obtained consents from children and parents, and ruled out any food allergies, dietary supplements, and disability. The study established significant changes in caloric intake, physical activity, BMI and fat% in the MI and MI+ groups as compared to the control group. For caloric intake, in the MI group, decrease from a mean of 2411.77 (SD 865.99) to 2022.2 (SD 639.23); $p = <0.01$, the MI+ group decreased from a mean of 2397.02 (SD 753.73) to 2020.37 (SD 526.13); $p = <0.01$. For physical activity, the MI group demonstrated an increase from 189.01 minutes (SD 155.17) to 2241.11 (SD 1416.17); $p = <0.01$, MI+ increased from 256.76 (SD 186.31) to 2847.4 (SD 1418.31); $p = <0.01$. There were no CG data on caloric and physical activity. The BMI decreased in MI and MI+ groups from a mean of 23.39 (SD 2.89) to 22.72 (SD 3.19); $p = <0.01$ and 23.71 (SD 3.13) to 22.54 (SD 2.84); $p = <0.01$ respectively, for CG from 23.86 (SD 2.91) to 24.67 (SD 2.88); $p = <0.01$. Body fat percentage also decreased in the MI and MI+ groups from mean 32.44 (SD 5.54) to 27.71 (SD 7.39); $p = <0.01$ and 33.09 (SD 6.63) to 28.73 (SD 8.06); $p = <0.01$ respectfully.

A randomized controlled trial by Bean et al. (2015) used MI as an adjunct to an adolescent obesity treatment called Teaching Encouragement Exercise Nutrition Support

(T.E.E.N.S.) to evaluate attrition and adherence as a challenge of obesity treatment. The T.E.E.N.S. program included dietitian and behavioral support visits and physical therapy sessions. Participants were randomized to MI (intervention) or control groups. The intervention group received brief MI sessions; the control group received health education videos, and all participants continued with T.E.E.N.S. The study results showed increased adherence of exercise and healthy eating in the intervention group using MI techniques. Results revealed that after six months, the intervention group showed overall adherence to obesity treatment (87.5% vs 76.2%, $p = 0.026$), and behavioral support visits (87.5% vs 78.8%, $p = 0.011$).

Training PCP's in the use of MI techniques to gain proficiency in addressing youth behavior change was the basis of an ACTION PAC cluster-randomized controlled trial by (Vallabhan et al., 2017). The participants in this study were three nurse practitioners and one physician assistant working in school-based health centers (SBHC). The PCPs were trained by a member of the Motivational Interviewing Network of Trainers (MINT) and expert in the use of MI in adolescents through didactic sessions, homework, role-play, and bi-monthly on-going coaching throughout the study. The participants were also provided with MI introductory training, MI reading materials, and a study manual over a two eight-hour days. The PCPs received feedback during tele-coaching regarding their use of MI interventions with adolescents, with a focus on MI integrity which involved the key MI characteristics. The participants were measured on their comfort levels in using MI techniques. The authors used the MI provider adapted instrument developed by Feldstein and team (Self-Assessment Survey) involving Likert scale responses (1-5) to measure PCP comfort. Results showed that all PCPs reported significantly more satisfaction with MI and mean scores were higher as time progressed with the highest at the fourth time quartile. from the first to the final MI session over the one to four-

month period; first quarter $M = 3.12$, second quarter 3.27, third quarter 3.42, fourth quarter 3.70. $F(3,222 = 10.39, p < 0.001)$.

Although the feasibility of using MI to address childhood obesity is possible, the competence and fidelity of the clinicians may come into question. A comprehensive six-month non-experimental study called “Girls on the Move” intervention was conducted by Robbins et al., (2012) to examine the treatment fidelity of MI delivered by a school nurse to increase girls’ physical activity. Two schools were randomized, and the intervention school received the “Girls on the Move” intervention but the control school did not. The participants were 37 sixth and seventh grade racially diverse girls aged 10 to 14 years. Two school nurses received a two-day MI training workshop by a member of the Motivational Interviewing Network of Trainers (MINT). The school nurses were given ample time to practice, and a printout of an MI computer-generated questionnaire. The MI sessions were recorded to ensure fidelity. Results showed increased proficiency in use of MI adherent questions from 77.32% to 100%. The use of open-ended questions increased from 64.78% to 88%. The school nurses also demonstrated competence in the use MI spirit (The use of open-ended questions (O), affirmations (A), reflective listening techniques ®, summaries (S), and information (OARS + 1), which increased from mean of 4.22 to 4.66; $p = <0.01$, while competence in empathy increased from mean of 4 to 5; $p = <0.01$.

Technology-based interventions

In this era of technology, information disseminates faster and there are several readily available apps for information on prevention of childhood obesity. Computer-generated training can potentially provide easy access and educational materials to prepare practitioners in the use of MI. Mobile-friendly web-based interventions to prevent childhood obesity may be effective

and accessible (Ullmann et al., 2018). Digital tracking devices can provide participants and their parents information on steps taken and calories burned. Social media (Facebook, Instagram, sports mobile apps) also provide some web-based information on nutrition choices with complete meal plans using available low-cost food resources. Web live, or recorded exercise coaches provide motivational and inspirational quotes on a daily basis gearing towards obesity prevention. One might ask, is this not in a poor socioeconomic community? How can they afford phones? Phones may be donated from local phone companies or make them easily affordable. Also, there is a California income-based program called “Lifeline” that provides free smartphones to qualified individuals (Truconnect, 2018).

A study by Gance-Cleveland et al. (2017) evaluated MI training with and without technology support in the school-based health center (SBHC) and providers satisfaction regarding the prevention of childhood obesity. The authors used a comparative effectiveness cluster randomized trial with practitioners who received virtual training on MI. The intervention group (half) received virtual and technology instruction on all aspects of MI, use of HeartSmartKids, and decision support technology. The authors assessed the participants at baseline, after training, and six months later on providers satisfaction with MI training, providers self-report of behavioral counseling related to childhood overweight/obesity and parents perception of care after training. A 4-point Likert scale was used to evaluate provider satisfaction with training. Result showed an average mean of 3.58 to 3.70 on a 4-point Likert scale as compared to the control group of 2.15-2.21. On provider self-report counseling, the providers in the intervention group at the end of the study showed a mean of 2.27 on a 3-point Likert scale after 6 months training; $p = <0.00007$. Using a Likert scale of 1 (not true) to 7 (very true), the parents in the intervention group also showed increased mean of 6.33 to 6.51 for confidence in

making dietary changes for their children (technology effect $p = 0.06$ and technology interaction $p = 0.04$) as compared to the mean of 6.04 to 5.26 in the control group. Although the initial technology effect was not significant, it improved over time with continued technology interaction with significance ($p = 0.04$).

Involving parents in education on childhood obesity has proven to be beneficial because parents decide and provide food and physical activity resources for their children. This was evaluated by Windham et al. (2014) where they measured the influence of an MI Digital Video Disc on parental knowledge of the obesity-related diseases. The RCT study investigated the effect of a 7-minute educational and motivational adolescent weight management on parents and adolescents. The video incorporated real patient/parent testimonials on patient-provider interactions. The study assessed parental knowledge of obesity-related diseases, readiness for change, motivation, self-efficacy to lose weight, connectedness to provider, and the likelihood to return to the clinic for follow up. The participants were overweight and obese adolescents-parent dyad ($n=38$) that visited a referral only weight management clinic. The participants were randomly assigned to standard care (control) and standard care plus DVD (intervention). In the control group, a dietitian and a physician or nurse practitioner-delivered a protocol-driven medical and nutrition assessment and counseling, while the intervention group viewed the DVD. The study assessed results through a 1 – 5 Likert-type scale which showed significant adolescent motivation to lose weight ($p = 0.002$) and self-efficacy ($p = 0.002$) in the intervention group. The intervention parents also experienced more significant improvements in knowledge of obesity-related diseases ($p=0.0002$).

Literature has shown the feasibility and success of PCPs and school nurses using MI techniques to address childhood obesity. The prevalence of childhood obesity and related

complications have been shown to be high in rural, low socioeconomic and underserved communities (Gance-Cleveland et. al, 2017). The knowledge of MI by practitioners would increase their confidence in implementing childhood obesity guidelines in their practices.

Rationale

The issue of childhood obesity if ignored, may lead to devastating complications which could extend into adulthood. The persistence of childhood obesity into adulthood makes it more challenging to manage because of biological structural abnormalities developed at that time (Pandita et al. 2016). Prevention during childhood then becomes the critical ascendant in arresting this disease to reduce long-term complications (Pandita et al. 2016).

Although research supports the prevention of childhood obesity, there is still a gap in the sustainability of the interventions in low socioeconomic communities such as in Fresno County. According to Healthy People 2020, the goal for an overall reduction in childhood obesity prevalence was set at 14.6%. For age-specified targets, a decrease of 9.6% in children aged 2 to 5 years, 15.7% in six to 11 years, and 16.1% in adolescents aged 12-19 years (Wang, Orleans, and Gortmaker, 2012). To meet the Healthy People 2020 benchmark, for the children in Reedley, the purpose of this project is to develop educational resources to support and increase student NP's (and other health care practitioners) MI competence related to childhood obesity management.

According to a Kings Canyon Unified School District (KCUSD) school nurse, (P. Huebert, personal communication, May 22, 2019), there is no collective approach within the school district in the education of weight management. As school nurses, she continued, they can only talk about weight management if the student is identified as having poor academic issues or; is overweight or obese. If that is the case, then the student would receive individual weight reduction education. However, no further follow-up is provided. Another instance could be if

there is a prescription from the doctor for a specific calorie intake, the school nurse would work with the student to obtain meals within the calorie count. Another conversation with the KCUSD health coordinator did not reveal any active steps towards group childhood obesity interventions. Nonetheless, she said that there is a panel made up of a team of social workers, including her, where they address issues concerning childhood obesity (M. Cadena, personal communication, May 20, 2019).

Student NPs from USF have been performing sports physical assessment in Reedley and Orange Cove high schools for the past eight years, but the issue of using MI techniques in addressing childhood obesity in this population has not been practiced. This project improvement increases the use of MI techniques among primary care providers to encourage adherence to healthy behaviors to address childhood obesity.

Motivational Interviewing as Intervention Technique

William J. Miller and Stephen Rollnick in the early 1990s developed the use of MI as a conversation about readiness to change, using a patient-centered approach and empowerment to overcome ambivalence over positive change (Mark, 2018). Fundamental to MI is a clinical practitioner who articulates empathy and understands the ambivalence the client is exhibiting during behavior change (Irby, Kaplan, Garner-Edwards, Kolbash & Skelton, 2010). Rather than the practitioner confronting this patient, the practitioner leads the patient to adopt health-related goals by expressing their rationales and devising their methods for change. MI provides a forum where the dialogue is collaborative, with response reflections and the practitioner asking for patients' permission before addressing health issues. The techniques used in MI are: a) directing, b) following, and c) guiding.

In directing, the practitioner is in charge and shows expertise, but asks questions openly and curiously while maintaining a problem-solving approach. Through listening, the practitioner shows understanding and allows the patient to lead while exploring ideas of change. Guiding encourages the practitioner to work together with patients as a team, being a resource guide and directing their choices, but ultimately allowing them to decide to change (Rosengren, 2018). Knowledge in MI also exposes practitioners to recognize factors that could affect readiness to change, like ambivalence, expecting that change is nonlinear, acknowledging that preparedness is not inert, and preventing the righting reflex (the provider trying to make things right). The critical methods by which practitioners interact with the patients and provide a client-centered approach involve building MI skills.

The practitioner's empathy and collaborations are the qualities incorporated in the MI spirit. The use of open-ended questions (O), affirmations (A), reflective listening techniques (R), summaries (S), and information (OARS + 1) elicit and validate in-depth feelings and evoke reasons for the change talk. The practitioner recognizes the patient as an active participant, accepts the patients total worth and autonomy, shows empathy, compassion, and can draw out solutions and ideas of change from the patient (Rosengren, 2018). Eliciting the client change talk is a product of all the interventions used in MI, and the practitioner reinforces it when it occurs. The change talk emphasizes the different kinds of speech from the patient and is based on the idea that clients are likely to do what they genuinely approve of during the MI sessions. The central goal of MI is to help patients articulate their reasons for changing, and increase the frequency of the change talk, thereby strengthening their intention to change (Rosengren, 2018). Although the MI technique was initially developed for those with substance-abuse issues, it has since advanced to being used for the treatment of other behavior modification issues. Literature

has also shown that it can be successfully used for with addressing childhood obesity (Irby, Kaplan, Garner-Edwards, Kolbash and Skelton, 2010).

Conceptual and Theoretical Frameworks

The theoretical constructs supporting this DNP quality improvement project are the Transtheoretical Model of Change and Kings Theory of Goal Attainment and Transaction Process. They will be applied to the use of motivational interviewing to change behavior for individual children and families with the goal of preventing obesity.

The Transtheoretical or Stages of Change Model. This theory was established by Prochaska and DiClemente (Prochaska, DiClemente, & Norcross, 1992), when they were comparing studies of smokers who quit on their own versus those that stopped with professional treatment. The basic premise for this model is that behavior change is a process, not an event. This model is grouped under five stages: 1) pre-contemplation; 2) contemplation; 3) preparation; 4) action; and 5) maintenance. In pre-contemplation, the child and parent have no intention or need to take any action. However, the NP can increase awareness of the need to change by providing personalized information on the risks and benefits of change. Contemplation is when the child and parent are thinking about actions to change. The NP may support them through motivation and encouragement in the institution of strategies for change. Preparation is defined as when the child and parent intend or have already taken some behavioral actions towards change. The NP assists by developing, implementing, and helping to set measured goals. Action is when the child and parent have performed the actual behavioral changes. The NP assists with positive feedback, problem-solving, social support, and reinforcement. Finally, in maintenance, the definition is continuing the practice of new healthy behavior (Prochaska, DiClemente, &

Norcross, 1992) for which the NP provides ongoing evaluation and positive reinforcement. A representation of this model is seen in Appendix E 2.

Kings Theory of Goal Attainment and Transaction Process. This theory was developed by Dr. Imogen King, a registered nurse, who formulated this theory at a time when nursing was being challenged as an evolving profession. During this time, Dr. King developed the theory as a deviation from systems theory with a concentration of nurse-patient interaction in 1981 (Imogene King: Goal attainment theory, 2013). The postulate of this theory is the focus on nursing as humans, being socially and spiritually inclined, using sentiments, rationalization, reacting, perceiving, controlling, purposeful, action-oriented, timely-oriented and interacting with the environment to promote health (King, 2007). Dr. King also disclosed that the perceptions of the nurse and patient affect the interaction process. It is the health professionals' responsibility to share health information with the patients, and it is the patients right to accept, decline, participate in the discussions and make decisions that influence their lives (King, 2007).

This theory is made up of four concepts: 1) perception, 2) communication, 3) interaction, and 4) transaction. It involves the interaction of personal systems (individuals), interpersonal systems (small groups), and large groups (social systems). Perception is when the nurse identifies the need for an intervention, and through a nurse-patient appropriate relationship, health will be attained. Communication is achieved through nurse-patient mutual understanding. Through interaction, the nurse and patient align their goals and functions with each other to effect change. In the transaction process, there is a shared goal setting between the nurse and the patient and the community demonstrating social equality, justice, and participation in decision making to influence one's health and quality of life (Adib-Hajbaghery and Tahmouresi, 2019).

In using Dr. King's theory for this project, the identified increased childhood obesity issues created the need for this population to build an NP-patient relationship to address this problem. The NP's fostering and sustaining efficient, evident, and complete communication postulates the key to interaction and transaction developments. Using MI techniques was an effective measure to maintain communication and interaction with adolescents. The readiness to change, evocation, and goal setting to improve health, fall under the transaction concept. See Appendix E 3 for a diagram of this theory.

Specific Aim

This DNP-led health promotion project was developed based on recommendations for obesity prevention in the pediatric primary care setting. There are substantial barriers to obesity management in Reedley, CA. Nurse practitioners in the primary care setting with training in childhood obesity management have the potential to bridge that gap.

The overarching aim for this DNP project was to improve health outcomes among obese adolescents and adolescents at-risk for obesity from Reedley and Orange Cove High Schools of Kings Canyon Unified School District, Fresno County. MI techniques were taught and then applied to address readiness and educate on prevention of childhood obesity by the USF and SJSU FNP students during the sports physical assessment program. The major components to this project were to provide evidence-based intervention tool kits to the FNP students to facilitate screening and education on healthy lifestyle choices to prevent obesity. Second, the delivery of education to FNP students on the use of MI along with the resource-based intervention tool kits to assess readiness to make lifestyle changes and provide training on decreasing obesity.

Project objectives

1. Establish a partnership with the USF/SJSU and the Reedley and Orange Cove High Schools for the development and implementation of the interventions to prevent childhood obesity, during the sports physical assessment program.
2. Develop and implemented a curriculum for the USF/SJSU FNP's that are involved in the sports physical assessment program, to improve childhood obesity screening and early interventions using MI.
3. Collect data during the sports physical assessment from the adolescents from Reedley, and Orange Cove High Schools through an interview regarding knowledge of healthy eating and lifestyle habits to prevent obesity.
4. Implement the use of MI techniques and related intervention resource tool kits during the sports physical assessment program.

Section III**Methods****Context***Organizational setting.*

Reedley and Orange Cove high schools are public schools and part of the Kings Canyon Unified School District (KCUSD) in Fresno County. They are located in the Reedley and Orange Cove towns and serve nine to twelve grade students. The KCUSD athletic department provides students opportunities to participate in sports and enjoy interscholastic experiences to enhance education and exhibit sportsmanship. Every school year, different sports are offered in the fall, winter, and spring. Students are required to complete a sports physical assessment and be cleared at the end of every school year in preparation for the following academic school year

sports participation. KCUSD organizes free yearly physicals for students provided by the USF nursing faculty, partnered with Adventist Health every year in May to provide sports physical assessments on students for the following year's sports eligibility. The primary participants for this DNP project were 12 USF NP students enrolled in NUR718, partnered with six NP students in graduate nursing faculty from San Jose State University (SJSU). This project is consistent with academic practice partnership recommendations by the National Organization of Nurse Practitioner Faculty (NONPF, 2016) for FNP students to undertake a community-oriented course in underserved populations.

Key stakeholders

Identifying and keeping an open link communication with stakeholders is essential for a project to be successful. Knowing their needs and their acceptable results are important to improve the project's chances of meeting their needs. For this DNP project, the primary stakeholders were the USF nursing faculty, USF FNP students enrolled in NUR 718 course, and SJSU FNP students enrolled to participate in this program. The above stakeholders acknowledged the high incidence of childhood obesity in this population, and the knowledge deficiency in using MI to address childhood obesity. The other stakeholders are the KCUSD medical and athletic departments, who provided access and assistance to the NP students during the implementation of this project, improving workflow, and easing any barriers that arose. Finally, the Reedley and Orange Cove High School students and their parents participating in sports in the 2019/2020 school year.

Intervention

GAP analysis.

A GAP analysis was completed to determine the gap between the current NP students' knowledge in the use of MI to address childhood obesity. According to this project's pre-implementation survey, NP students were not knowledgeable in using MI techniques to tackle rising childhood obesity as seen in Vallabhan et. al (2017) where PCPs were trained in the use of MI for youth behavior change and confirmed in their study that "primary care providers tend to express discomfort with learning and adopting MI practices and with addressing patient weight issues" (p. 1). According to the KCUSD health coordinator, a complaint was filed that last year at this same sports physical assessment program, an NP student allegedly told one of the high school students that she was fat, which led to the child being emotionally distraught. Referring to adolescents' weight issues should be handled carefully because of their stage of being body image conscious (Kaiser et al. 2015). Some PCP's may not address weight issues due to the sensitivity surrounding it, leaving the patients prone to complications from obesity. Moreover, KCUSD school nurses do not have an ongoing forum to address childhood obesity. These deficiencies led to the development of education on the use of MI techniques to address childhood obesity in this population. See Appendix E for GAP analysis table.

Project Intervention

The initial authorization for this project came from the USF nursing faculty in charge of course NURS 718 for NP students participating in the Central Valley sports physical assessment program. The faculty approved this DNP student to educate the NP students using MI techniques to address childhood obesity during the program. Also, the SJSU nursing faculty approved their NP students that participated in the sports physical assessment program. Another permission was

obtained from the KCUSD health coordinator, allowing the application of MI techniques on the students participating in the sports physical assessment. The letters of agreement can be seen in Appendix B documents 1, 2, and 3.

After approval, this DNP student created a PowerPoint presentation on the use of MI and childhood obesity resources for the NP students that was used during the implementation. The presentation was then disseminated to the students via email one week before the program. At the end of the program, the project analysis was conducted using the pre and post implementation data collected to evaluate the outcome of the program. This project provided an avenue that educated NP students and addressed the issue of childhood obesity in Central California.

This project included adolescents aged 12 to 18 years participating in the sports physical assessment program. This DNP project examined the definition of childhood obesity, the cultural aspects and how it affected childhood obesity, the health consequences of childhood obesity, childhood obesity guidelines, and the primary care practitioner compliance. The range of years chosen were the years required to be in middle school and high school. Due to the California minor consent laws, all children that participated required consent forms signed by their parents. Also, children under 14 years were required to have their parent(s) present during their clinic evaluation. The purpose of using NP students was so that they could apply their knowledge of MI and childhood obesity guidelines to their primary care practice after graduation.

Project Implementation

A voice-over PowerPoint presentation. The start of the intervention process, the PowerPoint was developed and disseminated to all the NP students involved in the sports physical assessment program before the actual week of implementation. The objectives for the PowerPoint presentation were: a) Define and describe MI; b) Heighten NP student awareness on

the importance of allowing adolescents and their parents to make decisions regarding behavioral modification to prevent obesity; c) Improve NP students' knowledge in using MI techniques in addressing and providing education on prevention of childhood obesity; d) Utilize basic MI strategies in day to day practice; e) Increase student NP practice to screen and manage childhood obesity; and f) Increase student NP confidence in the ability to use MI techniques in screening and managing childhood obesity. See samples of PowerPoint presentation and implementation resources in Appendix C documents 1, 2, and 3.

The decision to provide a voice-over presentation that was posted to students via email was made by my DNP committee member (J. Loomis, personal conversation, March 5, 2019) due to the possibility of time constraints during the setup and implementation of the sports physical program. A free interactive and simulation app for MI called Change Talk: Childhood Obesity (Kognito, 2019) endorsed by the AAP was discovered and also included. This exercise provided adequate practice on using MI techniques for the FNP students during the summer intensive sports physical assessment program and will support future primary care practice after graduation.

More research led to the identification of the childhood obesity toolkit used by the National Institute for Children's Health Quality (NICHQ) (2018). This included physical activity and a nutrition survey, assessment of physical activities and diet algorithm for prevention and management of overweight in children 2-12 years, drink comparison chart, food portion size chart by age, healthy weight plan, physical activity, and nutrition survey management plans (NICHQ, 2018). The above resources were also used by (Tucker et al., 2013 and Tripp et al., 2011). Additionally, childhood obesity BMI percentile charts and "Choose My Plate" chart were obtained from the CDC website (CDC, 2018). All these sources were used to guide the FNP

students in the resources used to assess their BMI, nutritional intake, physical activity levels, and extra copies that were handed out to the student participants. The FNP students who will ultimately be primary care practitioners may use the acquired MI knowledge to address and educate their patients on childhood obesity prevention.

Subsequently, an opportunity came up during the sports physical assessment week (May 20th to 24th, 2019) to further perform a summarized in-person presentation version of the project and provide implementation tools for use during the program in the Reedley High School gym. The initial plan for this pilot project was to present only to the USF NP students. However, SJSU NP students were included since they also participated in this program. A verbal authorization was obtained from their school adviser that accompanied them. This afforded another opportunity to expand the MI technique knowledge to more clinical practitioners. The setup of the project involved giving each of the student NP's a packet containing MI techniques and childhood obesity resources to use when they encountered at risk and obese adolescents. This method was seen in Robbins et al. 2012 who used printouts during the counseling sessions to stimulate conversation in the adolescents and explore their ambivalence if any, and readiness to change.

Using the MI technique tools provided (See Appendix C documents 1, 2 and 3), brief MI intervention sessions occurred with at risk and obese adolescents between 15 to 25 minutes depending on individual's level of readiness to change (Tripp et al., 2011). The techniques were client-centered, and unless the adolescent was ready to change, the NP students did not plan any actions. The NP students performed a nutritional and activity assessment as a baseline for further discussion. Using reassurance and commendation, the NP students then engaged the adolescents in diet and discussion allowing them to lead on what they would change in their health behavior,

such as, decreasing intake of particular unhealthy food, what kinds of exercise to engage in and for how long, how much water to drink, and what healthy foods to eat. The NP students also encouraged them to set attainable goals instead of lofty ones.

Change Talk Simulation

The MI techniques were adopted from the Change Talk simulation app endorsed by the American Pediatric Association (APA) that gave feedback as the NP played the role of the practitioner, while the childhood obesity resources were extracted from CDC website on prevention of childhood obesity. The Change Talk is a free app that was included in the PowerPoint presentation with a link to access the simulation (Kognito, 2019). The Change Talk was also used as case studies for this DNP project. The goal was for the NP Students to learn MI techniques and then practice them in simulated conversations with the parents and children. The Change Talk scenarios also provided opportunities for the NP students to interact in the simulations and were given feedback on how they provided care using the MI techniques, thereby increasing their knowledge and confidence. The emotional downfall of weight issues with adolescents was discussed during the presentation and how using MI techniques in the Change Talk could give the adolescent power to evoke behavioral changes that could lead to the effective management of their obesity. Engage, Focus, Evoke and Plan were techniques used in The Change Talk scenarios (Kognito, 2019) . The patient centered interactions used sustain talk and reflections.

The first scenario involved talking with ten-year-old Ethan and his mother about his weight. The NP played the role of a pediatrician Dr. Lewis who saw Ethan for a well-visit. It was noted that Ethan's BMI was at the 95th percentile. Future attempts to address this issue had

proven futile. The NP then used MI to motivate change in Ethan's behavioral habit through open-ended questions, elicit-provide-elicited interactions, and reflections.

The second scenario involved talking with four-year-old Maya and her dad, Adrian. The NP played the role of pediatrician Dr. Kovalik during a follow-up visit after recovering from pneumonia. Her BMI had increased from the 45th to the 75th percentile since then. Maya's dad was not worried about her weight and initially offered resistance to change. During this simulation, the NP used double-sided reflections, affirmations, and reframing to engage Maya's dad. Although Maya's dad showed resistance to change at the initial visit, the NP was able to impact the reasons for change at the end of the visit. At the next visit, Maya's dad was more receptive and accepted change.

Although the third scenario had nothing to do with adolescent weight management, the NP students drew relevant patient interaction inferences from the conversation. The NP student played Dr. Wei, who saw Samantha and her four-month-old Zoe for breastfeeding issues. Samantha was a working mom and had been solely breastfeeding up till that time when she wanted to switch to the bottle during work hours. She was concerned about her milk flow stopping, how her co-workers saw her because of the time she took to pump milk, losing her job and how her mother criticized her because she did not want to switch to bottle feeding. Using simple reflections, complex reflections, and action reflections, the NP student helped Samantha explore her ambivalence and amplified her positive feelings about breastfeeding. The Change Talk Scenarios pictures are seen in Appendix C, Document C2.

GANTT narrative (milestone/timeline)

During the fall semester 2018, the exploration, decision, development of the project, starting and completion of the initial literature review search was conducted. This was followed

by manuscript writing and submission at the end of the fall semester. After the manuscript has been approved, during the spring semester 2019, the DNP project committee was formed, statement of determination and specific aim were also started at that time and completed by the end of February 2019. Also, a draft of the project proposal was created in February 2019, while the agency authorizations were obtained during the spring semester. The development of the contents of the project which included MI PowerPoint presentation and approval, sending the MI PowerPoint to the USF and SJSU FNP students, implementation and pilot testing the project were done from March through May 2019. The DNP project write up continued from April until it was submitted in July 2019. Project data analysis started from June to July 2019, and the DNP project ended in December 2019 with the final presentation. Appendix G shows the GANTT chart and timeline, while Appendix H shows the work breakdown structure.

SWOT analysis

Strengths. The strengths in support of this project are numerous. There is a documented great need to address childhood obesity within the targeted community. The identified population, which is also an agricultural community is a boost. There are also the availability of farmers markets and corner street vendors selling fruits and vegetables, scattered all over the county for easy access to facilitate consumption of fresh fruits and vegetables. The implementation of the project were reinforced by the personal knowledge of USF organizational structure and institutional processes, access to evidence-based resources on the use of MI techniques in addressing childhood obesity, and support from USF nursing faculty and FNP students from USF and SJSU, KCUSD medical and athletic departments.

Weaknesses. The major weakness of this DNP project is the predominantly low-income socioeconomic status of the target population, which may impede their buying power of high-

quality foods. Culture may also affect what they eat, especially when the population is predominantly Hispanic, and the cultural staple food is high in fats and carbohydrates. Nonparental involvement may be detrimental, and when parents are obese, they influence the way their children eat, resulting in the high incidence of childhood obesity. Finally, not knowing the consequences of childhood obesity may lead to worse eating habits and lifestyle.

Opportunities. The main aim of this DNP project, as mentioned earlier, is to address childhood obesity prevention through the use of MI. Responding to the rising childhood obesity trends especially in poor socioeconomic communities, and the need to meet the Healthy people 2020 initiative, this project helped in implementing the guidelines for the prevention of childhood obesity. This DNP project provided many opportunities for clinicians in addressing childhood obesity prevention and improving PCP confidence in the use of MI techniques. The chance to reach the KCUSD school nurses was also achieved through their expression of extra help with the handouts in approaching childhood obesity prevention in schools. This DNP project also provided an opportunity for the KCUSD students to make changes in their nutrition and physical activity levels. The possibility of future billable service for primary care NPs that address childhood obesity, and finally, the opportunity to provide health education efficiently to a large number of students.

Threats. Although there was a large number of students that participated in the sports physical assessment, not all students in both high schools took part in the program. There were also some students that participated in the sports physical assessment, but they did not give their consent to have their weight status discussed. Other threats were noted during the community assessment like the influx of fast food restaurants, fast food mobile vendors, inaccessible transportation to healthy supermarkets or corner street fruit vendors, and costly healthy food. The

lack of trust between students and NP students posed a considerable threat because a trusting relationship was not formed due to a short time contact. Finally, sustainability may be affected due to poor socioeconomic status and inadequate knowledge. See Appendix J for the SWOT analysis table.

Responsibility and Communication Matrix.

This DNP student had the primary responsibility and communication in the execution of this DNP project. This was comprised of producing evidence-based resources, designing the project matrix, development, and presentation of the didactic materials, developing and analyzing project outcome. The responsibility of the DNP chair and committee were to provide counsel, direction, and support. The NP students had the responsibility of receiving education on MI techniques and carrying out the intervention with identified standardized patients during the sports physical assessment. The school district was responsible for coordinating the program and obtaining parental consent. Adventist health sponsored the program, provided some education materials and ensured that referrals were followed up. Finally, the parents were responsible for signing the consent forms, accompanying their children to the program and ensuring that they follow up with NP recommendations. See Appendix I for the table on responsibility and communication matrix.

Budget

The expenditures incurred with this DNP project was minimal. The process of designing and implementation fell under the time used by this DNP student. However, the printing, copying, and lamination of the MI techniques and obesity prevention tools amounted to \$450. In addition, the printing and copying of the pre and post evaluation surveys came up to \$30. The large plastic envelopes used to hold all laminated resources for the NP students and the KCUSD

school nurses amounted to \$25. The travel gas to and from Reedley and Orange Cove High Schools amounted to \$150. The total out of pocket cost for this DNP project was \$655. The time used by the NP students to listen to the short PowerPoint presentation was included in the daily time they were in the clinic. According to the average NP salary per hour (\$64.32) in California (United States Department of Labor, 2018), for the 15 NP students that completed the surveys, the total salary estimate came to \$43,416. The NP students worked a total of nine hours every day. See Appendix K for the itemized budget.

Cost-Benefit Analysis/Cost Avoidance.

The use of MI techniques to address childhood obesity is essential in primary care practice. This is why the primary return on investment (ROI) for this project is the improvement in the NP students' knowledge and as future NPs in the use of MI techniques in primary care practice. This also improved their confidence in the use of MI techniques. By using this project to contribute to the NP students' curriculum, they got to practice over periods during the semester to master the techniques which would hopefully help in arresting childhood obesity. As these NP students graduate and start practicing, they would become adherent with the childhood obesity guidelines, increase reimbursement rates, and improve patient satisfaction. When patients are satisfied, they have improved well-being and quality of life. With decreased visits and personal medical expenses, individuals and communities would put their finances on other needs like education and community events. Avoidance of potential diseases would lead to decreased mortality and morbidity rates. Nationally, there is reduced economic burden as seen in (Duke Global Health Institute (DGHI, 2014) where obesity intervention minimized the cost per obese child to \$12,900, and according to (NLC, 2017), an approximate amount of \$549 billion would be saved with obesity decline. In further research of the national savings in reduction in the

incidence of obesity in this population, where the primary insurance coverage is Medi-Cal, this DNP student found out that the approximate annual reimbursement for pediatric preventive physical exam is \$34.17, while for pediatric well visit is \$23.77 (Department of Health Care Services (DHCS), 2019). If a clinic were to screen 1000 children throughout the year, they would make approximately \$34,170 which is an added income to the clinic. On the other hand, an estimated annual cost per obese child is \$19,000. If one million obese children go unscreened, without subsequent preventive interventions, the cost could run into \$19 billion. Using MI techniques as a preventive measure to address childhood obesity would improve the economy of the country. See Appendix L and M for the tables on cost-benefit/avoidance analysis and ROI.

Study of the Intervention

Measurement for related outcomes before and after the presentation about NP students' experience and process, MI use confidence, intention to change practice, and barriers encountered were the quality measures used for evaluation of this DNP project.

The input measures were: Assessment of PowerPoint presentation, MI resources, childhood obesity resources, confidence in using MI and related resources before the project.

The process measures were: NP students' roles, experiences and process, effectiveness in addressing patient issues, challenges and barriers encountered, and use of childhood obesity resources.

The output measures: Participation of high school students, if any received resources, and if any were referred to outside clinic.

The outcome metric for the process measures assessed if the PowerPoint presentation improved NP students' knowledge, the NP students' knowledge base regarding awareness of clinical guidelines for childhood obesity, knowledge of using MI techniques to address childhood

obesity and to assess quality improvements after implementing the project. Another outcome measure utilized was the participant's confidence in using MI techniques during this project and the possibility of incorporating the MI techniques in future clinical practice. This measure was used in Vallabhan et al. (2017) as an outcome measure in training PCP in the use of MI for youth health behavior change. The NP students' experiences, including the roles they played and the challenges they encountered, were also analyzed in order to determine the effectiveness of this project.

The process outcome measures were also analyzed during the post-evaluation metrics to elicit their feedback regarding the MI technique and childhood obesity prevention resources they used during the implementation of this project. Finally, during the implementation days, this DNP student was available to the NP students for any questions or support. For instance, one NP student invited me to sit in while she was assessing an obese adolescent to assist with delivering MI techniques. Besides, at the end of each day, this DNP student conducted a one to one debrief with the NP students and data was collected to know if they implemented any MI techniques, if any challenges encountered and how they managed it. More so, the pre and post evaluation surveys were obtained from the NP students during and at the end of the program to maintain accountability.

Measures

According to Smith and Ory (2014), evaluation of any project tests the effectiveness of the interventions, measures, and enhance the quality and identification of the success level in checking desired objectives and outcomes. The instruments used to measure the project outcomes were the 11-item questionnaire of which seven questions used a 5-point Likert scale format as was used in Vallabhan et al. (2017) to assess adeptness of core MI skills and processes.

The questionnaire was titled Knowledge of Motivational Interviewing techniques in addressing childhood obesity. Out of the 11– item questionnaire, four questions measured participants knowledge of MI techniques, essential to address childhood obesity and guidelines for the prevention of childhood obesity:

Before the presentation, I was aware of clinical guidelines for the prevention of childhood obesity.

- It is essential for me to address the issue of childhood obesity.
- After the presentation, I was aware of clinical guidelines for the prevention of childhood obesity.
- The PowerPoint presentation improved my knowledge of using MI.

Three of the questions measured the participant's confidence in using MI techniques:

- Before the presentation, I had confidence in using motivational interviewing in childhood obesity prevention.
- After the presentation, I had confidence in using motivational interviewing in childhood obesity prevention.
- After the presentation, I felt confident in using motivational intervention and related tools in primary care practice.

The other five items that provided opportunities for comments, were centered on primary roles during the project implementation; effectiveness in addressing issues, challenges, or barriers encountered, and what they benefited from the presentation:

- During the program, my primary roles in addressing childhood obesity were; Informed child/parent of BMI status, Discussed nutrition recommendations, Discussed barriers to behavior change, Referred to outside clinics and Resources

given.

- I was effective in addressing patients' issues.
- What challenges did I encounter in using motivational interviewing techniques?
- Would changes to this presentation will help me streamline my ability to conduct motivational interviewing in the prevention of childhood obesity?

The comment sections also captured a reflection of the NP students' feelings, behavior, and perceptions towards the success of this project. This qualitative approach was used to analyze the data in the comment section. Another five-point Likert scale titled confidence level during the sports assessment program, investigating information and cues regarding their confidence levels in use of MI techniques were;

- Confidence in the ability to assess patients' non-verbal cues.
- Confidence in the ability to recognize a patients' problem by reading their chart.
- Confidence in the ability to utilize active listening skill to gather information.
- Confidence in the and ability to collect information from patients' relatives.

In support of effective accountability and time constraints, the pre and post evaluation measures were included in one document which was distributed at one time as a post-intervention questionnaire. However, the confidence scale was measured separately. The MI techniques questionnaires were distributed at the end of the third and fourth days respectively because the SJSU NP students who left at the end of the third day, while this DNP student left at the end of the fourth day. The NP students completed and returned the surveys on the same day.

The use of Likert scores for project evaluation through Survey Monkey (2019) was used to measure participant's opinion through the level of agreement. The Likert scales used in this DNP project provided opportunities for the NP students to rate their degree of agreement with

each responses: strongly agree, agree, neutral, disagree or strongly disagree for some of the questions. For this project, this DNP student constructed knowledge of MI techniques used to measure knowledge and confidence in MI use before and after the presentation, roles played, if effective in addressing clients' issues and confidence in using MI and obesity resources during the implementation of the project. The second outcome survey was on confidence level which was rated on a scale of one to five, one being least confident and five being most confident.

Copies of these are seen in Appendix O Documents 1, 2 and 3.

Analysis

The quantitative data was imputed and analyzed using Statistical data analysis SPSS 25 (IBM, Chicago, IL, USA, 2019). Data were inspected for omitted and uncertain values. Descriptive statistics measured the mean, frequency, standard deviation (SD) and percentages of the pre-post evaluation and during implementation surveys on MI knowledge, confidence, awareness, and potential use in primary practice. The purpose of the analysis was to assess for a change in the pre and post presentation surveys on NP knowledge of childhood obesity guidelines, confidence in using MI, the importance of addressing childhood obesity, useful tools in treating patients issues and confidence levels. The mean was determined by calculating the average number of Likert questions and the median number 3 is the neutral portion of the Likert scale. According to the Likert scale, this represents an unbiased score. Any mean score higher than 3 (neutral) demonstrates positive conformity with the perception at hand. Also, the same descriptive analysis was used to measure the confidence level of the NP students during sports assessment sessions. One-sample t-tests were carried out on all the pre and post implementation and confidence level surveys. The p-value of ≤ 0.05 was considered significant.

The qualitative data was analyzed through written interviews with the participants. The discussions included the primary roles of the NP students during the program implementation, if they informed the adolescents their BMI status, discussed nutrition recommendations, discussed physical activity importance, discussed barriers to behavior change, if any resources were provided and if any outside referrals were made. There were also questions about the challenges they encountered and how the PowerPoint presentation helped them in streamlining their ability to use MI techniques. Qualitative data was analyzed using content analysis (Ige, DeLeon & Nabors, 2017).

Ethical Considerations

This DNP project was conducted using evidence-based resources to facilitate change of practice, by educating and implementing MI techniques on overweight and obese adolescents. Also, the American Nurses Association (ANA) code of ethics (ANA, 2016) was taken into consideration especially Provision 1 that states “The nurse practices with compassion and respect for inherent dignity, worth and unique attributes of every person.” Also, permission to conduct this project was granted by KCUSD, USF nursing faculty, and SJSU nursing faculty representative. The DNP project was approved by the USF DNP program as a quality improvement project not requiring IRB approval. NP student participants were informed that their participation in the project and outcomes would not affect their course grade or program progression.

Section IV

Results

This project was implemented during the week of May 20th, 2019, to May 23rd, 2019. This is a pilot project involving participants (N=15) NP students from USF and SJSU

participating in the KCUSD sports physical. Before the week of the sports physical program, the PowerPoint presentation was already disseminated via email to the USF NP students. However, the NP students from SJSU received the PowerPoint presentation on the first day of the program via email due to delay in obtaining authorization from their nursing faculty. Additionally, a brief introduction on the use of MI techniques in addressing overweight and obese adolescents was performed by this DNP student on the second day of the program due to another delay in obtaining authorization from the KCUSD health care coordinator. The students were also provided with the MI technique and childhood obesity prevention resources to implement the project successfully.

The results of the pre and post interventional surveys (N = 14) along with the confidence level during practice surveys established positive results above the level of the mean score greater than 3 (neutral) on the Likert scale indicated a positive outcome. The pre-presentation mean score for being aware of clinical guidelines went from mean 3.27(neutral), standard deviation (Std. Dev) 1.033, confidence interval 95% (CI) {2.7- 3.8}; $p = .334$, to a post-presentation awareness of clinical guidelines mean 4.6 (agree), Std. Dev .83, (CI 95% {4.14- 5.05}; $p = .000$. For essential to address childhood obesity, pre presentation mean 4.6 (agree), std. dev .83, (CI 95% {4.14-5.05}; $p = .000$. The confidence in using MI went from mean 2.6 (disagree), Std. Dev .98, (95% CI {2.13-3.20}; $p = .207$ pre-presentation to mean 4.13 (Agree), Std. Dev .64, (95% CI {3.8-4.5}; $p = .000$ post-presentation. The result of if the PowerPoint improved knowledge also shows a mean of 4.13 (Agree), Std Dev 1.06 and 95% CI {-55-1.7}; $p = .001$. Using a one-sample t-test was carried out for group comparisons of the surveys, there were $p \leq .005$ in all the post-presentation surveys and PowerPoint presentation improved knowledge ($p = .000$) which showed significance. Using qualitative data, ten participants

verbalized that they were effective in addressing patients issues, while the remaining four were neutral.

For “confidence in applying MI skills” while implementing the project during the program, only 12 participants submitted their surveys, and there were no recorded explanations by the two participants that did not complete the survey. The results were then based on 12 participants response. The confidence in active listening skills showed mean 4.4, 95% CI {3.9-4.7}, Std. Dev .65; $p = .000$. Confidence in assessing non-verbal cues showed mean 3.3, 95% CI {2.9-3.8}, Std. Dev .75; $p = .165$. Confidence level in recognizing patient problems from chart disclosed mean 3.7, 95% CI {3.31-4.07}, Std. Dev .63; $p = .002$. Finally, confidence in asking relatives questions indicated mean 3.92, 95% CI {3.12-4.72}, Std, Dev 1.32; $p = .027$.

Response to #7 of the questionnaire that addressed primary roles during the implementation of the project showed that 13 participants informed child/parent of BMI status, while 10 out of the 13 gave resources to this effect. For discussion of nutrition recommendations, 14 provided education, but 10 gave resources. Fifteen participants discussed physical activity importance, but 11 gave resources. Nine participants discussed barriers to behavior change, while 7 gave resources. Six referred adolescents to the outside clinic and gave resources.

Qualitative content analysis, as described by (Ostlund et al., 2015) was used for this project to evaluate the comments. Write in comment sections were provided on the pre and post evaluation surveys (#10, #11) for participants to comment on their perceptions and experiences during the implementation of this project. A majority of the participants thought the PowerPoint presentation was excellent, coupled with the useful resources presented, especially the step to step MI technique use. Four participants added, “the resources are great; this is helping me; thank you so much.” Notably, one participant suggested for the full presentation to be done right

before the implementation because “they were busy with other school assignments and had to relegate the presentation at the last minute. Otherwise, the presentation was great.” Another participant revealed that “the PowerPoint presentation was impossible to access”. One participant commented that “developing rapport through common interests helped set me up for effective MI.”

Many topics arose as challenges from participants comments during the implementation of the project. The NP students raised issues like self-declared time constraints in assessing the adolescents, another issue was that since there were many children, the participants were obliged to spend less time during the assessment. Another issue was getting the adolescents to open up regarding their health. One participant said, “that sometimes the children are timid and did not verbalize their goals or how ready they were.” Another participant commented that “some younger children required assistance or cooperation from their parents that were rarely present.” Many participants agreed “that the environment was boisterous due to many children, which caused distractions.” A couple of participants mentioned that “adolescents are more sensitive than adults with their weight issues, some got emotional and subsequently refused to address the weight issue.” Another participant concurred that some adolescents did not desire to change their routine. Most of these barriers were also emphasized in (Bonde et al., 2014) on school nurses experiences with MI in preventing childhood obesity. The nurses in the study pointed out barriers like adolescents being sensitive to the issue of obesity and not wanting to change and the issue of parent unavailability.

Section V

Discussion.

Summary

This DNP project investigated the efficacy of NP students using MI techniques in assessing at risk and obese adolescents. The pre-intervention self-report on knowledge and confidence in using MI was associated with lack of knowledge. However, the post-interventional responses showed significance and included several substantial changes in the use of MI techniques, which is congruent with the project objectives. The test scores and interview comments of the post-intervention questionnaires showed that there was an increase in MI technique knowledge and confidence in the NP students. Furthermore, the NP students showed positive outcomes in having confidence in practicing MI techniques in primary practice. The success of the PowerPoint presentation was measured after the third and fourth days of the implementation. There were improvements in the NP students' knowledge of clinical guidelines, knowledge of MI techniques, and confidence levels. The positive outcome was associated with improved knowledge after the PowerPoint presentation. Before this presentation, more than half of the participants verbalized unawareness of using MI techniques to address childhood obesity.

Participants revealed that approximately 75% of the at-risk and obese students were interested in positive changes related to behavior, diet, and exercise. Prevailing themes noted in this project mirror the inferences in the literature review. The study by (Wong & Cheng, 2013) validated that MI techniques have a significant outcome on increasing obese children weight loss. Also, brief MI training has been shown to improve provider confidence ($p \leq .001$) in encouraging patients in changes in lifestyle, as well as self-reported usage of MI skills (Gruhl and Van Leuven, 2014). Gruhl and Van Leuven (2014) continued that the fundamentals of NP

training are entrenched in its holistic health approach, which makes it prepared for utilization of MI. This DNP project was based on the NAPNAP's evidence-based guidelines that recommend adopting steps in moving patients to positive behavioral changes. The following steps are; ascertain their inclination to change, reflect on the positive and negative factors of choosing that healthy behavior, measure their confidence level and professed an ability to make the change, then set a plan to remove barriers and create onward steps (Tripp, Perry, Romney, and Blood-Siegfried, 2011). The NAPNAP concept supported the MI techniques used to assess childhood obesity. Consistent with recent evidence-based practice, this DNP project also supports the Healthy People 2020 reduction in the proportion of obese children aged two to 19 years to 14.5% (Healthy People, 2019). The use of TTM and King's Theory of Goal Attainment and Transaction Process as theoretical concepts to guide this project demonstrated NP students' recognition of the stages of change and processes of nurse-patient interactions for health goal attainment.

Interpretation

This DNP project demonstrated positive outcomes of increased knowledge and confidence in the use of MI by NP students. The strengths of this project were rooted in the educational PowerPoint presentation, the MI technique guide step by step, the childhood obesity resources (BMI chart, My plate chart, and 5-2-1-0 template). The positive outcomes of this project are also revealed in the post-test evaluation surveys which demonstrates that even a brief MI technique education can improve the knowledge and confidence of NP students in using MI techniques to address childhood obesity. Another positive outcome was an increase in the number of the NP students that felt the improvement of their confidence level to apply MI techniques in their primary practice when they graduate. Creating an effective educational program with examples of case studies, interactive simulations, and resources can improve

knowledge, confidence, and assessment skills of NP students. Additionally, repeated research has shown that NP's provide longer consultations with their patients than physicians leading to increased compliance with follow-up visits (Gruhl & Van Leuven, 2014).

The use of MI techniques in addressing childhood obesity is relatively new. Little research has been done in this area. To this DNP students' knowledge, this is the first project addressing NP students use of MI techniques in the Central Valley sports physical assessment program. Using MI technique is not a one-time treatment; it requires ongoing interaction and communication between medical providers and the patients. PCP's also need several classes of MI education to become more proficient. However, despite these shortcomings in this project, the outcomes were positive. Addressing the challenges encountered in this project is particularly important for future projects.

Strengths and Limitations

The reliance on self-reported surveys, opens this project to a variety of strengths and limitations for analysis. Self-reporting for this project was done through participants completed surveys which according to (Althubaiti, 2016) are often argued to the possibility of affecting the reliability of the study due to external bias caused by social desirability or approval in cases where "anonymity and confidentiality" (p. 212) cannot be guaranteed. Also, the issue of recall bias may arise where the participants may erroneously provide responses depending on their ability to recall events if the surveys were given retrospectively (Althubaiti, 2016).

Taking this into account, several applications were put into effect to prevent this. For instance, the survey questions were given out in anonymity and results were collected confidentially. The NP students did not identify themselves on paper and each completed survey was collected by this DNP student from each NP student. To prevent the recall bias, the survey

questions were based on the actual interactions between the NP students and the adolescents, and the surveys were handed out at the end of each day was over to ensure that the information was still fresh in their minds. The students were reassured that their honest responses would not affect their performance evaluation by their faculty. Also, the short duration of MI education the NP students received prior to the project implementation could pose a possible strength and/or a limitation.

A strength of this project is highlighted in it being the first to be conducted during this sports physical assessment, where the NP students used the MI techniques to address childhood obesity in this population. Another strength could be the ability of the NP students to embrace the MI spirit and the techniques despite the short period of MI education provided. Furthermore, the large sample of adolescents provided the NP students with a lot of practice using MI techniques. The pre and post surveys were quite simple to understand coupled with the strong sense of anonymity of the self-reported data, which may have improved the reliability and validity of the data obtained.

However, one limitation could be that this project was based on a small sample size of NP students that participated in this program, which confines the generalization. Additionally, the method of observation of the participants is particularly important in order to bridge the gap between what the participants said and what they did. For this project, there was no examination on how the individual NP students applied MI during the program, which may have affected the findings. The short period of MI technique education might not have given the NP students enough time to learn. Similarly, the time constraints during the implementation process might have affected the counseling of the students.

Future project using a sufficient sample of NP students and extended time interval of MI technique education is recommended to examine the effectiveness of using MI to address childhood obesity further. Increased confidence comes from repeated use of MI techniques. This DNP project had a short period for implementation. Therefore, further study is needed to examine the confidence after longer periods of learning and practicing MI techniques.

Conclusions

Assessing an overweight and obese child in the school setting may be an indication that the family needs help. The parents and the children may not be aware or knowledgeable of what overweight and obesity mean. Health education should be tailored individually, considering their cultural background and socioeconomic status. Health care professionals should be pragmatic in providing health education by working with the children and their families to prevent obesity. The national guidelines for the prevention of childhood obesity should be used in primary care settings during health education and support adequate collaboration with other health care professionals and follow up measures.

The health inequalities, poor socioeconomic status, lack of access to fruits and vegetables, poor access to transportation, neighborhood safety impeding physical activity and ignorance, place children in Reedley, Central Valley, particularly vulnerable to obesity. The primary care centers are the first line of contact when families present with any health-related issues. Clinicians should provide first line assessment, identification of at-risk groups, proper screening, and treatment modalities. School nurses in KCUSD should also be educated on the use of MI techniques to address childhood obesity. Provisions should be made for frequent health education in schools.

Notwithstanding the number of at-risk factors like genetics, environmental and socio-economic status, that predispose obesity, successful programs using a MI approach including diet, exercise, parental, and community involvement would prevent or reduce obesity. The community-driven policy on environmental changes in Central Valley to prevent pediatric obesity should be continued. These include ongoing safe environments for physical activity and access to fruits and vegetables (Schwarte et al., 2010). Health education should be provided to students, their parents, and the community as a whole through schools, youth clubs, churches, and medical clinics. This project has shown that providing education on MI techniques even when brief can make an impact on PCP's attitude in incorporating MI techniques in addressing childhood obesity.

Section VI

Relevance to clinical practice

NPs that work in primary care educate their patients on behavior modification. This DNP project has shown that MI technique is a useful method to address childhood obesity. This project also suggests opportunities for improvements in Advance Practice Nurse education on the use of MI in addressing childhood obesity and other health problems.

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Appendix A

USF Non-Research Determination Form/Statement of Determination

DNP Statement of Non-Research Determination Form

Student Name: _____ **Chituru Uwaoma, RN, BSN, MPH**

Title of Project: Motivational Interviewing (MI) approach on screening and educating at-risk adolescents and their parents on the prevention of childhood obesity: A pilot project.

Brief Description of Project: Childhood obesity is a rising epidemic in central California. Insufficient physical activity, poor diet, low socioeconomic status, and ignorance form the risk factors for childhood obesity. This pilot project is intended to use MI to screen readiness to change and educate Reedley and Orange Cove High School students from Kings Canyon Unified School district and their parents during sports physical screening by FNP students from the University of San Francisco, on multifaceted approaches to prevention of childhood obesity. This project will provide education on evidence-based interventions using motivational interviewing to increase knowledge on increased intake of fruit and vegetables, decrease screen time, increase physical activity and assess readiness for behavioral changes.

- A) Aim Statement:** By August 2019, sustainable strategies will be created to improve childhood obesity prevention in Reedley and Orange Cove High Schools. Within these schools, 50% of the at-risk children and their parents will be instructed using motivational interviewing to enhance behavior modification, adequate nutrition, and physical activity, 30% will show increased awareness of the complications of childhood obesity, and 30% will verbalize intention to start diet modification and being active in physical activity. For the USF NP student's, 100% would be instructed on the use of MI, and 50% would verbalize intent to use MI in their practice.

B) Description of Intervention:

1. Collaborate with the director of the USF summer intensive program and the Health Center Nutrition specialist for Kings Canyon School district on how and when to get the children and their parents together for the health education.
2. Create an educational power point presentation for FNP students enrolled in NURS 718 for the Central Valley summer intensive program with the following objectives; a) Define and describe motivational interviewing (MI); b) Heighten NP awareness on the importance of allowing adolescents and their parents to make decisions regarding behavioral modification to prevent obesity; c) Demonstrate knowledge of MI in assessment and education on prevention of childhood obesity; d) Share basic MI strategies utilized in day-to-day practice; e) Increase clinician change of practice to screen and manage childhood obesity; f) incorporating the use of social media and smartphones with weight loss and healthy eating apps; and g) Increase clinician confidence in the ability to use MI in screening and managing childhood obesity.
3. Submit the power point to the USF nursing faculty for approval.
3. Obtain a pre-assessment questionnaire from Reedley and Orange Cove High School students on obesity knowledge
4. Conduct training to at-risk children and their parents on nutrition, physical activity, behavior modification techniques to improve the children's health behavior, and assess readiness to change.
5. Include health education relevant to culture and socioeconomic status.
6. Provide education and training to primary care providers in a primary care clinic on the importance of using MI to assess readiness for change and educate at-risk children for obesity.

C) How will this intervention change practice? The goal is to prevent obesity-related complications, reduce mortality, morbidity and decrease the economic burden of Fresno County and the country in general. This pilot project will increase the knowledge of the children on the benefits of healthy eating, physical activity, and behavior modification.

D) Outcome measurements:

1. Assess the knowledge base of FNP nursing students' through pre and post-MI knowledge and willingness in using Motivational Interviewing

- on causes, complications, preventive interventions with the use of a survey.
- 2. Assess the percentage of MI readiness for change assessments conducted by the FNP students during the summer intensive program.
- 3. Assess increase in recipients’ motivation to adopt good health practices with the use of a post-education survey, increase in their ability to using social media and apps on their smartphones and other resources to search for health information.
- 4. Assess the increase in recipients’ willingness to adopt healthy behavior modifications of an increase in fruits and vegetable intake and physical activity with the use of a survey.
- 7. Assess challenges encountered by NP students during this process with recommendations of changes to make if necessary.
- 8. Assess the FNP students’ and primary care practitioners’ willingness to include MI in their practice.

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

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

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

Comments:

EVIDENCE-BASED CHANGE OF PRACTICE PROJECT CHECKLIST *

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

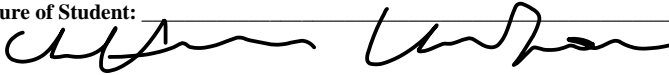
Project Title:	YES	NO
The aim of the project is to improve the process or delivery of care with established/ accepted standards, or to implement evidence-based change. There is no intention of using the data for research purposes.	x	
The specific aim is to improve performance on a specific service or 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: <i>“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.”</i>	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.

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

STUDENT NAME (Please print): CHITURU UWAOMA RN, BSN, MPH

Signature of Student: _____ **DATE** 4/15/19 _____



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

Signature of Supervising Faculty Member (Chair): _____ **DATE** _____

Appendix B

Letter of Support from Agency

Document B1

Verbal Agreement for MI Education using Voice over PowerPoint Presentation

Authorization and support for sending a voice over PowerPoint presentation to students enrolled in NUR 718 for the sports physical assessment program in Reedley and Orange Cove Cities, Fresno California on the use of MI to assess and educate at risk and obese children. Verbal agreement with the faculty member and class professor (J. Loomis, personal communication, March 6th, 2019).

Letter of Support from Agency

Document B2

Verbal Agreement for using MI techniques to address at risk and obese children

Authorization and support to allow NP students from USF enrolled in NUR 718 and from SJSU for the sports physical assessment program in Reedley and Orange Cove high schools, Fresno California on the use of MI to address at risk and obese children. Verbal agreement with the Kings Canyon Unified School District Health Center Specialist (M. Cardenas, email communication, May 2nd, 2019).

Letter of Support from Agency**Document B3**

Verbal Agreement for MI Education using Voice over PowerPoint Presentation

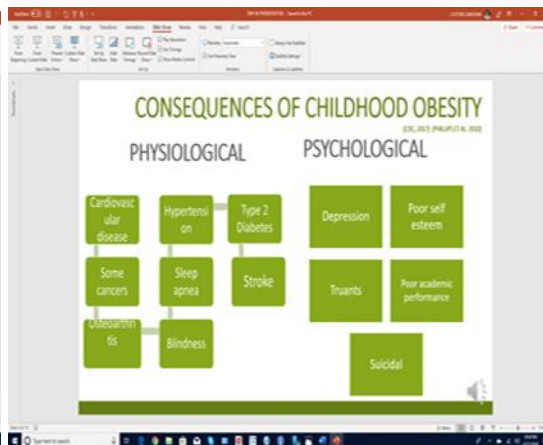
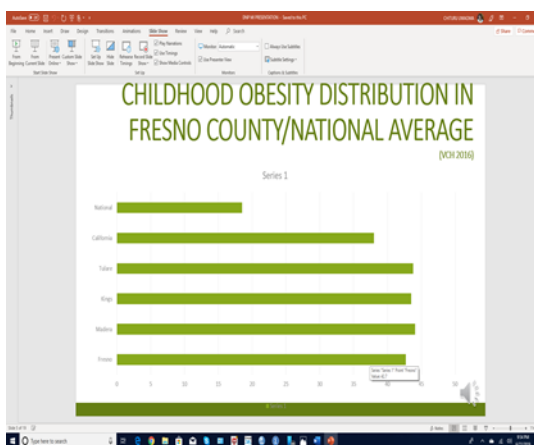
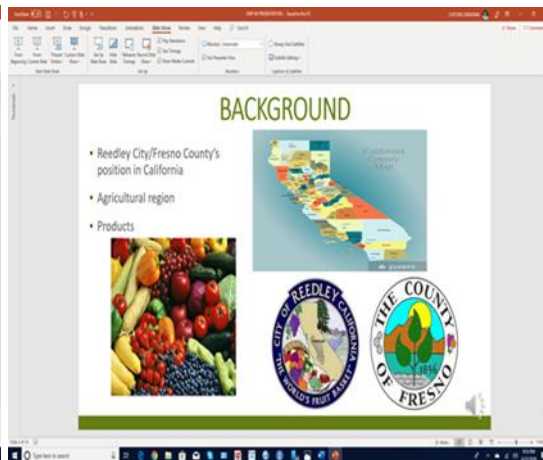
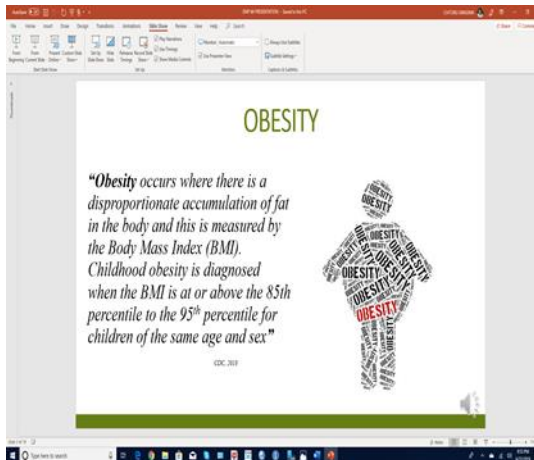
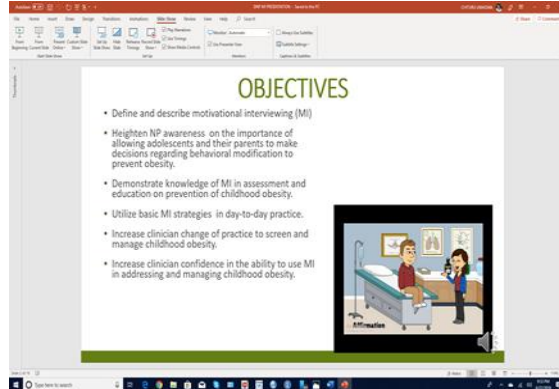
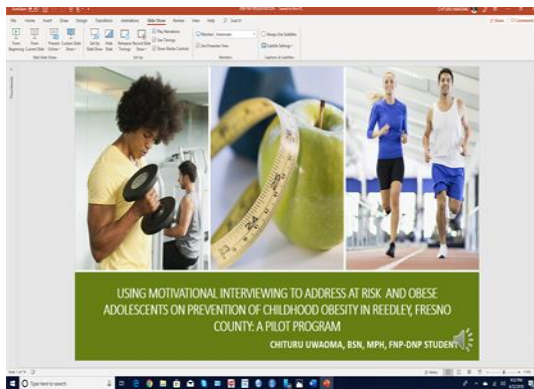
Authorization and support for sending a voice over PowerPoint presentation to students participating in the sports physical assessment program in Reedley and Orange Cove Cities, Fresno California on the use of MI to address and educate at risk and obese children. Verbal agreement with the faculty member and class professor (J. Poyal, personal communication, May 20th, 2019).

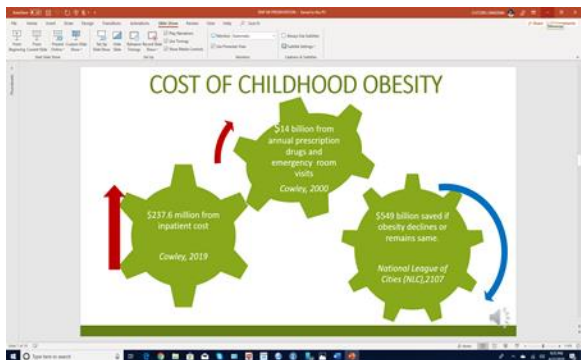
Appendix C

Implementation tools

Document C 1

Voice over PowerPoint Presentation

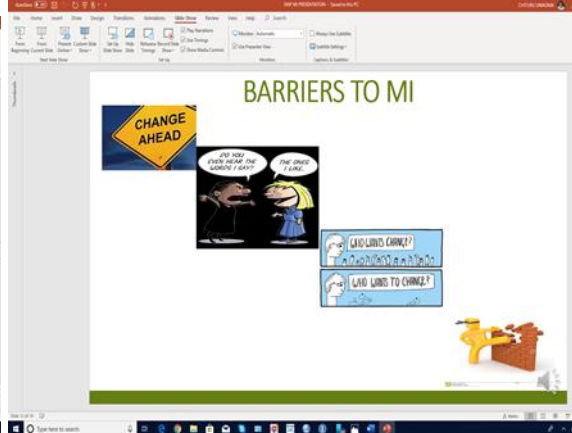
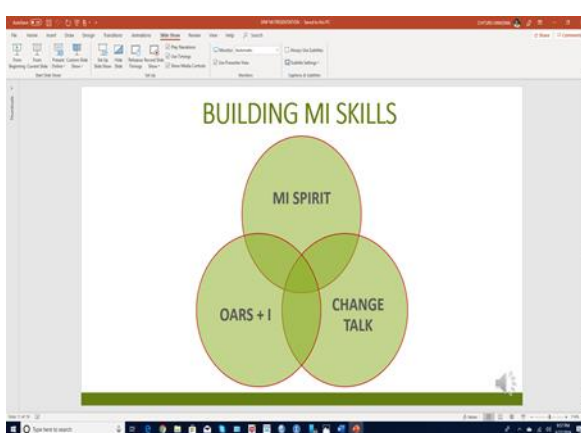




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- CHILDHOOD OBESITY GUIDELINES**
- Endocrine Society (Medscape, 2017)
 - Healthy People 2020 (Healthy People 2020, 2016)
 - CDC (CDC, 2016)
 - USPSTF (Healthy People, 2016)
- (Bouch, Hadda & Lynch, 2016; Moore, Carter, Scan & O'Donnell, 2016)

-
- EVIDENCE-BASED PRACTICE ON MI**
- Primary Care Practitioner:** Tripp et al. (2011), Tucker et al. (2013), MacDonell, Brogan, Naar-King, Ellis and Marshall (2011)
 - School Based:** Wong and Cheng. (2013), Ige, DeLeon, and Nabors, (2017), Bean et al. (2015)
 - Technology:** Armstrong et al. (2018), Gance-Cleveland et al. 2017

-
- MOTIVATIONAL INTERVIEWING**
- What is motivational interviewing? (Rosengren, 2018; Mark, 2018)
 - NAPNP Recommendation.
 - 3 Styles of MI
 - Directing
 - Following
 - Guiding
 - Readiness to change
 - Ambivalence
 - Nonlinear
 - Non static
 - The righting reflex
- Rosengren, D. B. (2018)



EXAMPLE OF MI IN USE

Change Talk

iPhone app
Android app
https://koinon.com/wp-content/uploads/health_ProductSheet_CT12.pdf

MI RESOURCES

On a scale of 1 to 10, how **SHOULD** it be you right now to change?
1 _____ 10
Not at all Slightly
Definitely

On a scale of 1 to 10, how **CONFIDENT** are you for you could make the change?
1 _____ 10
Not at all Slightly
Definitely Confident

Motivational Interviewing

Reduction in Risk Behavior Change

Links to MI Resources

CHILDHOOD OBESITY RESOURCES

Body Mass Index (BMI) Chart for Girls

MyPlate

Healthy Kids

Document C 2*MI Resources***PLEASE USE THIS FOR MI CONVERSATION WITH THE PATIENT**

Engage the patient: Build rapport, listen, and gather information.

- a. Ask if it is okay to talk about their weight? (*asking permission is a great way to start a sensitive conversation. When patients feel like they have control of the conversation, they're more willing to listen. If favorable response, go to (b). If not, do don't address weight.*)
- b. Explain how the weight was measured, ask if they would be interested in hearing what it is. If so, explain what the weight is, what BMI is, and percentage compared to other children of the same age. Show the BMI chart.
- c. Ask how the patients how they feel about their age. (*This helps them become more expressive and on how they feel about being overweight/obese*)
- d. Reflect on what the patient said, ask if they are willing to make changes.

Focus on a part of the problem: Collaboratively set the agenda

- a. Ask what concerns the patient has about their weight, reflect and reinforce the answer. (This helps them volunteer the powerful reason for change)
- b. Validate their concern and ask if they would consider making some changes. (*When patients come to their own conclusions and say them out, it pushes them closer to lasting change. (It is empowering for patients to voice their reasons for change and it helps guide the conversation).*)
- c. Suggest ways to change and ask them which one they would like to choose first. (*By asking them to choose, you are maintaining a collaborative spirit and she will likely choose the area more likely to change*)

Evoke their reasons for the change: Elicit and strengthen change talk, gauge their readiness for action

- a. Get more info on the change they want to make. Ask what they like about it, good things about it and not so good things about it. (*Exploring pros and cons is a great way to generate change talk and an opportunity to follow double-sided reflection*)
- b. Reflect on the pros and cons and see if they will reflect on how to choose something healthier. (*Double-sided reflection will help resolve any ambivalence*)
- c. Use the MI readiness to change chart and find out why they choose the numbers. (*This elicits reasons for change*)

Plan one or two small changes together: If they're ready to change, work with the family on an action plan.

- a. Validate what they want to change and ask them for ideas on what to do and collaborate to set a reasonable goal.
- b. Summarize the change plan
- c. End conversation by thanking them for the talk.
- d. Ask them if we could follow up in a few weeks.

Change Talk Scenarios: Patient centered

Phases of MI

In this conversation, you'll work through the four phases of MI:

1. **ENGAGE** the family
Build rapport, listen, and gather information.
2. **FOCUS** on a part of the problem
Collaboratively set the agenda.
3. **EVOKE** their reasons for change
Elicit and strengthen change talk, gauge their readiness for action.
4. **PLAN** one or two small changes together
If they're ready to change, work with the family on an action plan.

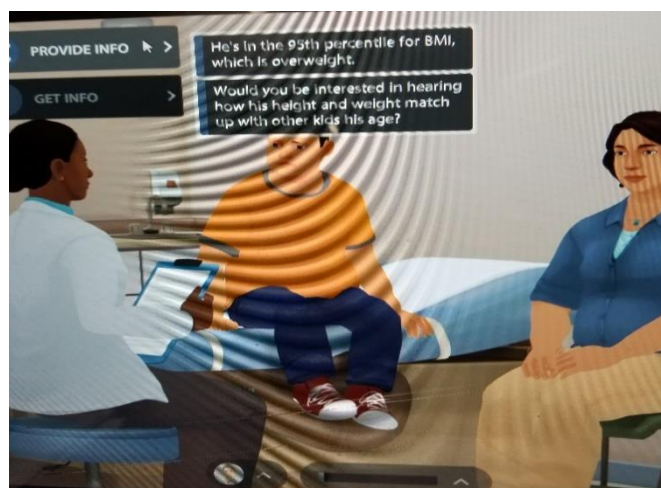
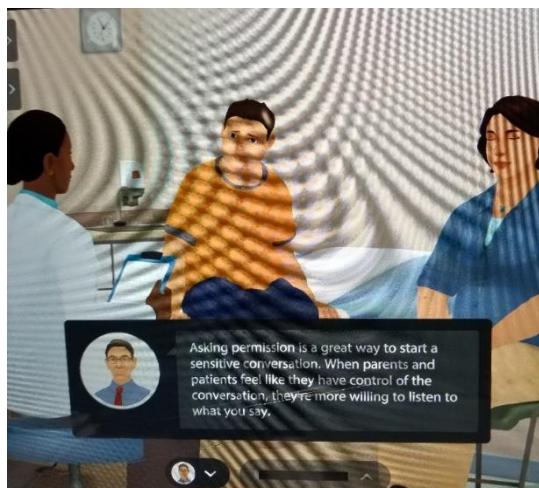
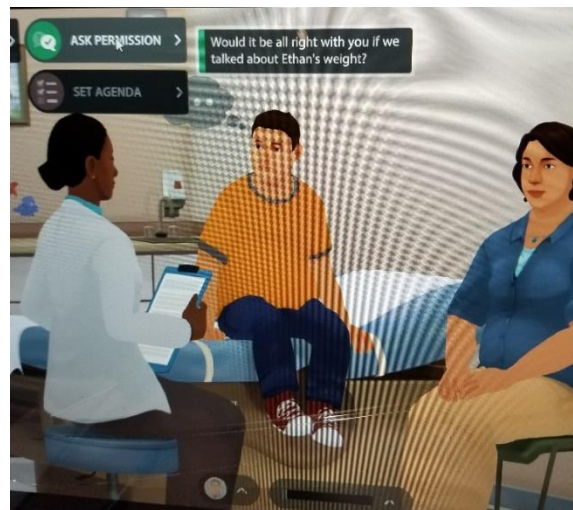
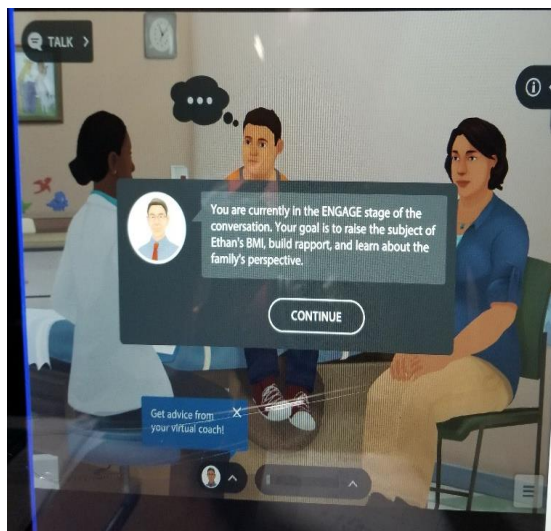
As you progress, the simulation will keep track of which phase you're in and explain what that means.

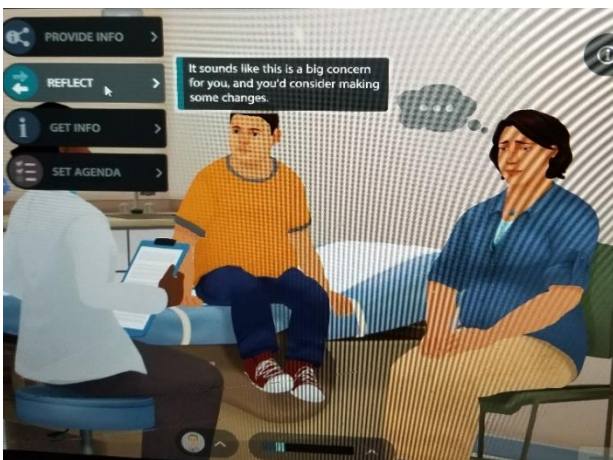
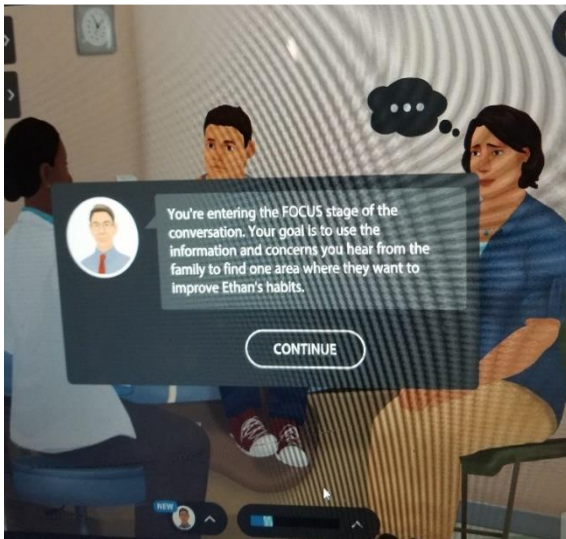
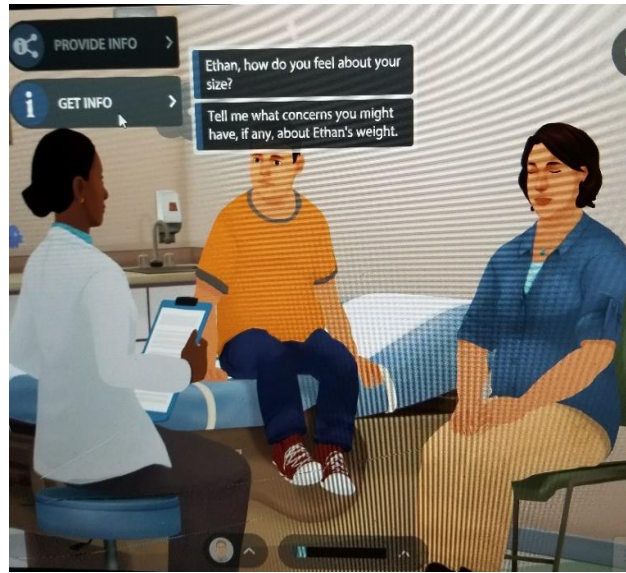
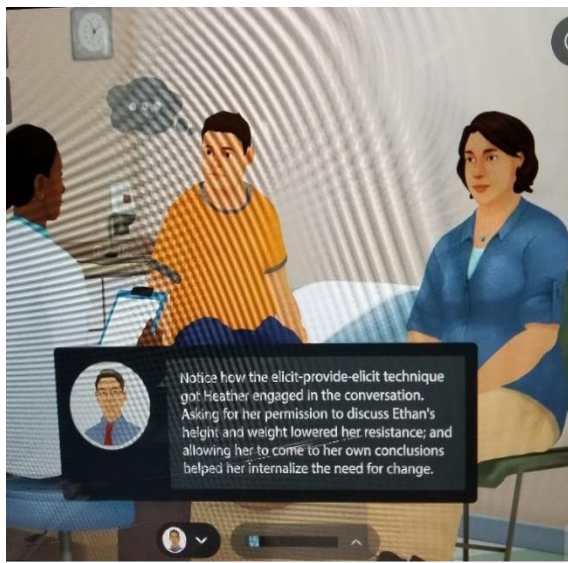
Talk with Ethan and his Mom

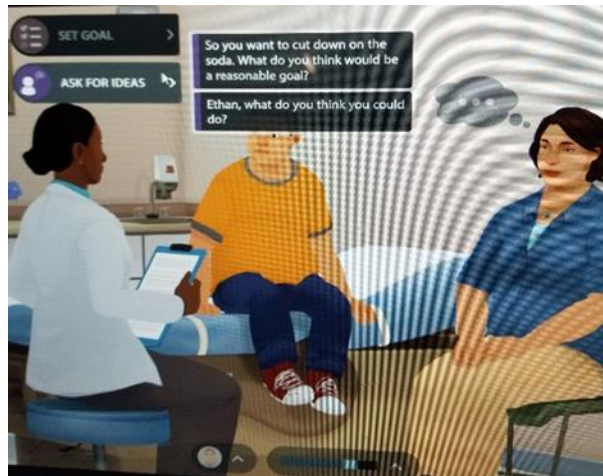
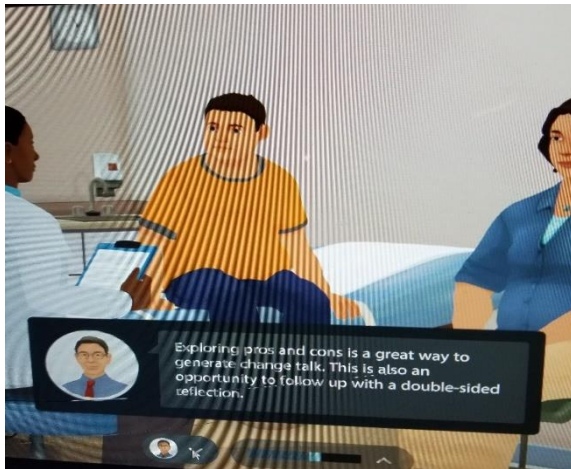
SCENARIO
You play pediatrician Dr. Lewis, seeing 10-year-old Ethan and his mom, Heather, for a well-visit. Ethan's BMI is at the 95th percentile, but your past attempts to talk about his weight have fallen flat.

GOALS
Use MI to motivate this family to change Ethan's habits and then develop a plan that works for them. Use the techniques you learned:

- Open-ended questions (Invite the family to share their story)
- Elicit-provide-elic (Share information respectfully)
- Reflections (Use their own words to motivate them)









Sustain Talk

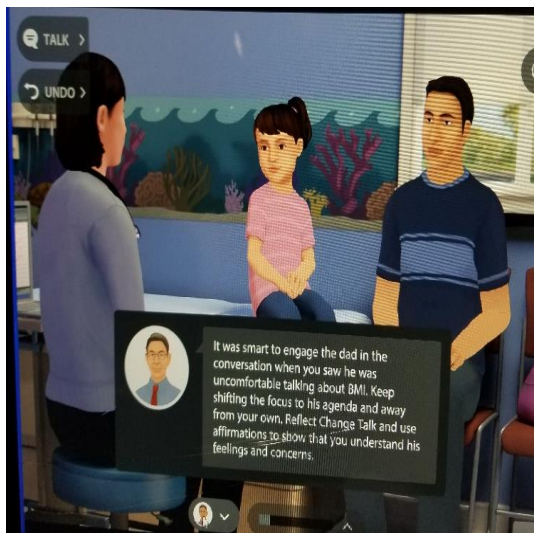
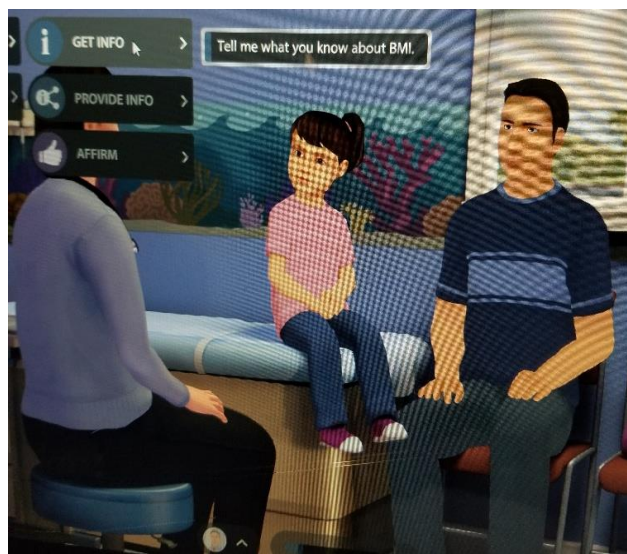
Talk with Maya and her Dad

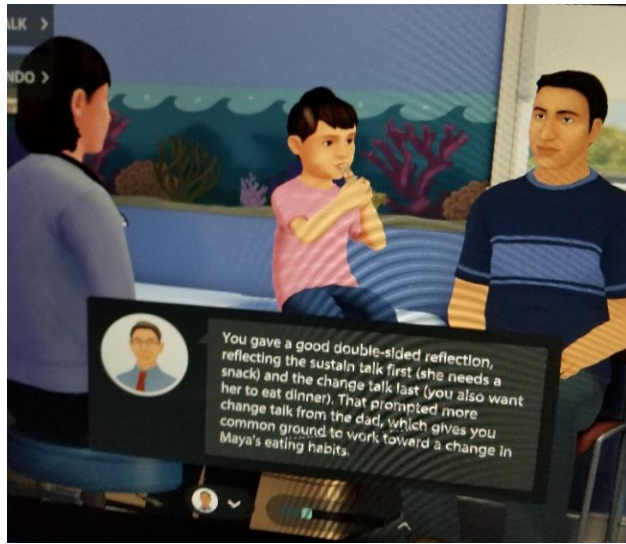
SCENARIO
You play pediatrician Dr. Kovalik, seeing four-year-old Maya and her dad, Adrian. Maya recently recovered from recurring pneumonia. Since then, her BMI has increased from the 45th to the 75th percentile.

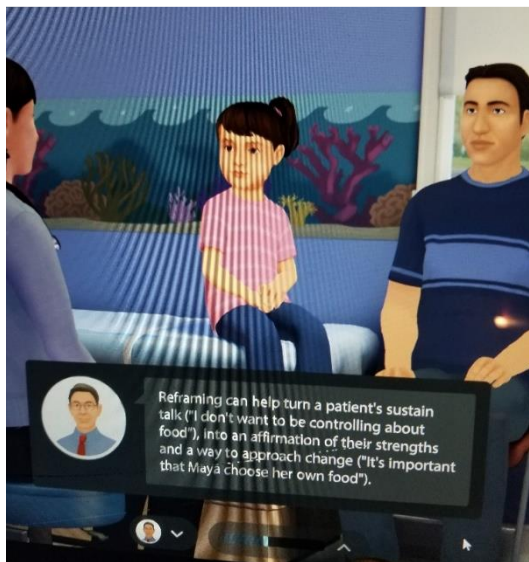
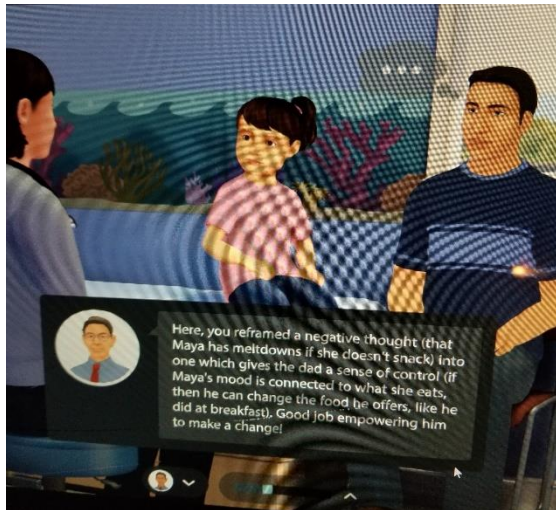
GOALS
Use MI to address this concern. Her dad isn't worried about her weight, so he might use a lot of **sustain talk**. Use the techniques you learned:

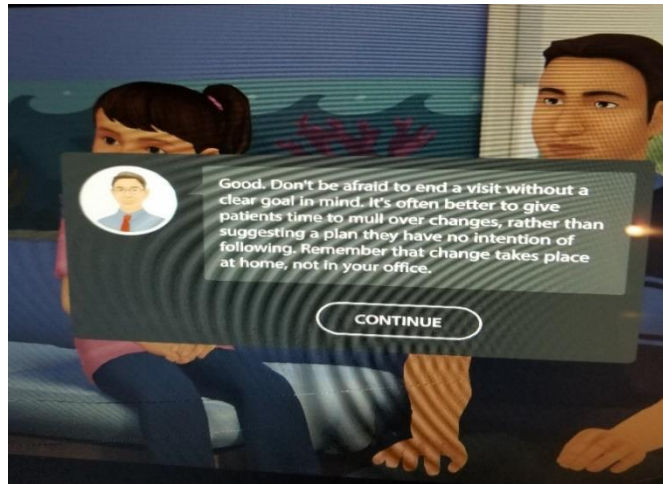
- Double-sided reflections (End with reasons for change!)
- Affirmations (Focus on what is working for this family)
- Reframing (Turn obstacles into solutions)



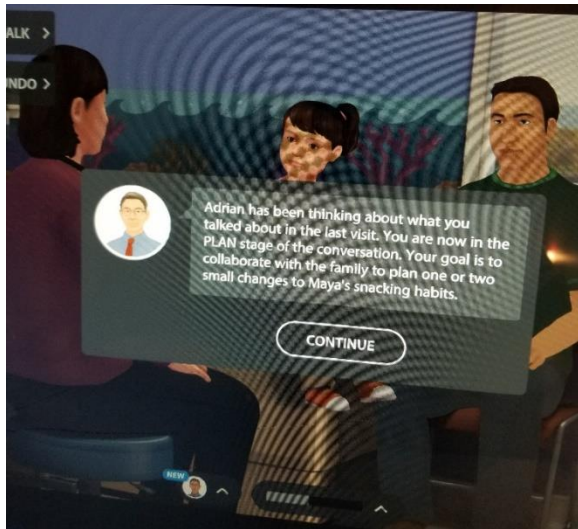


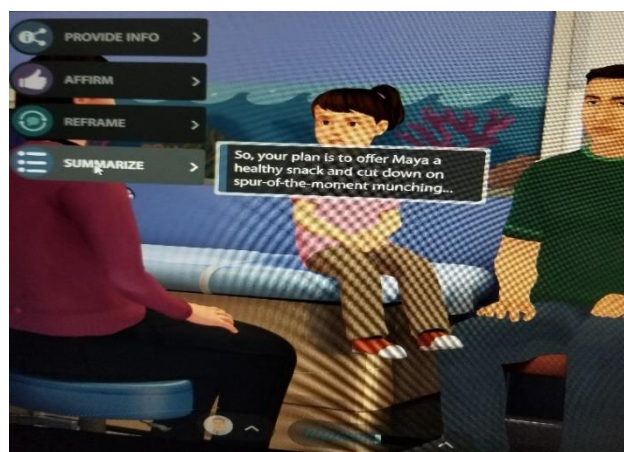






Next Appointment six weeks later





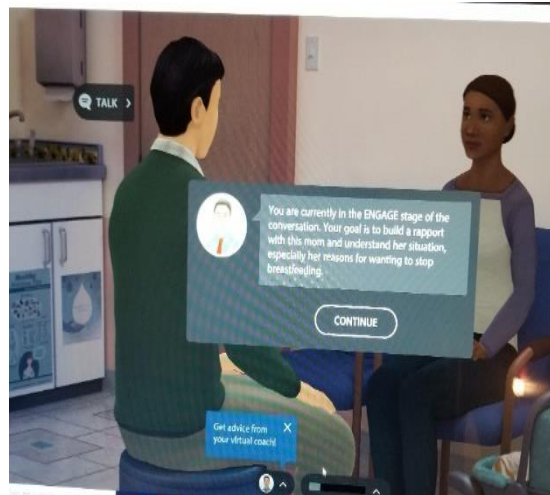
Reflection

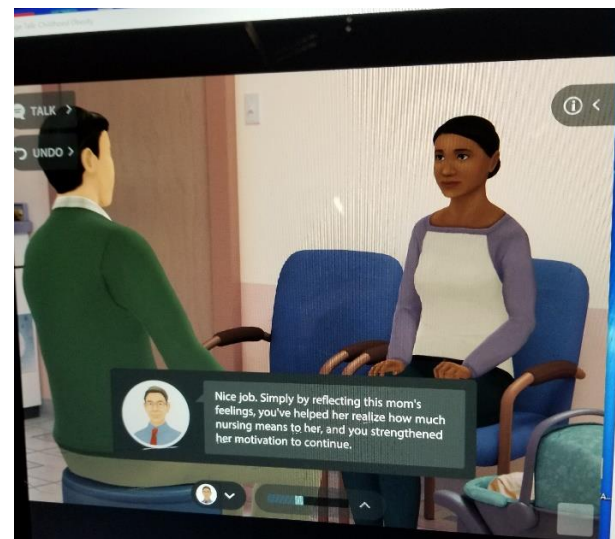
Talk with Samantha

SCENARIO
 You play Dr. Wei, seeing Samantha and her four-month-old Zoe for a well-visit. Samantha has been breastfeeding exclusively, but now she wants to stop.

GOALS
 Use reflections to help Samantha explore her ambivalence and amplify her positive feelings about breastfeeding. Use the techniques you learned:

- Simple reflections (Show you're listening and highlight change talk)
- Complex reflections (Bring emotions to the surface)
- Action reflections (Turn feelings or barriers into possible actions)







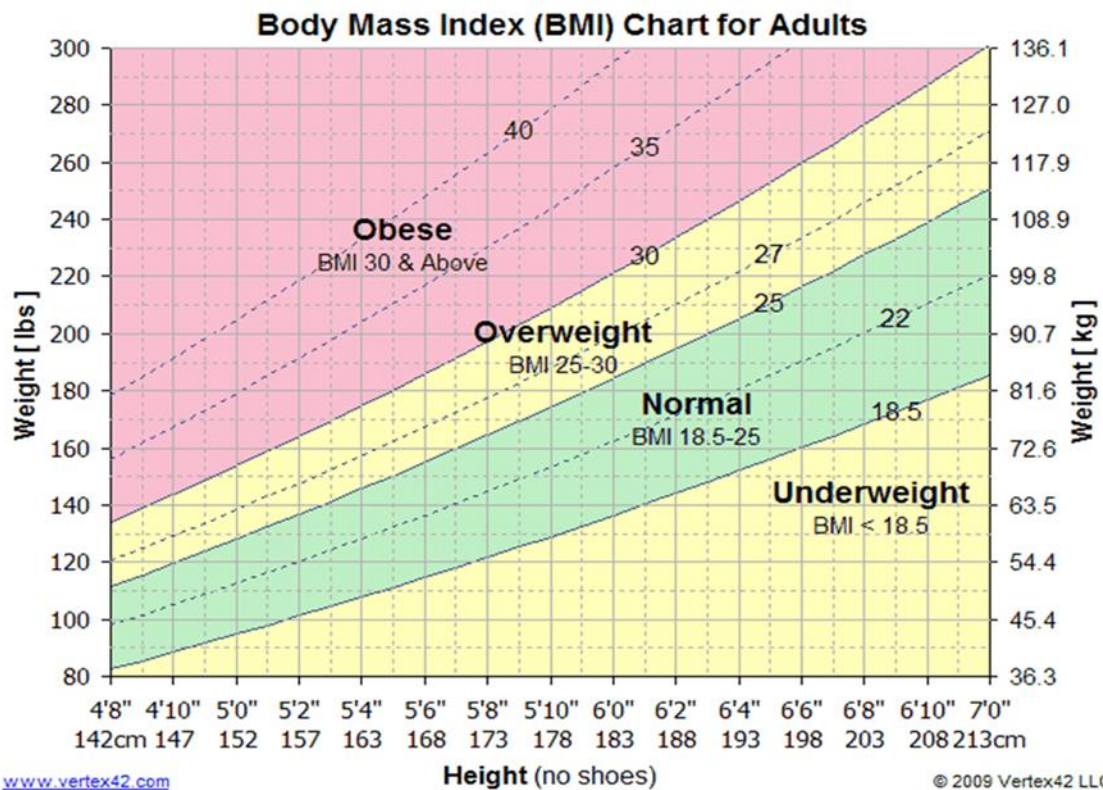
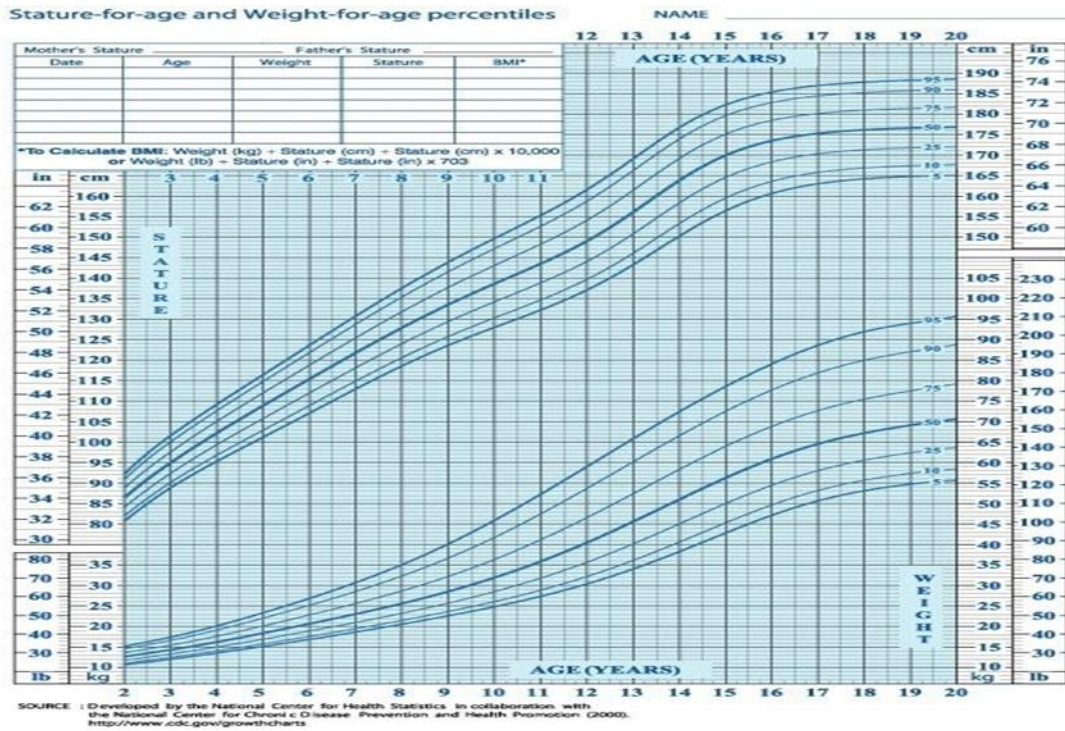


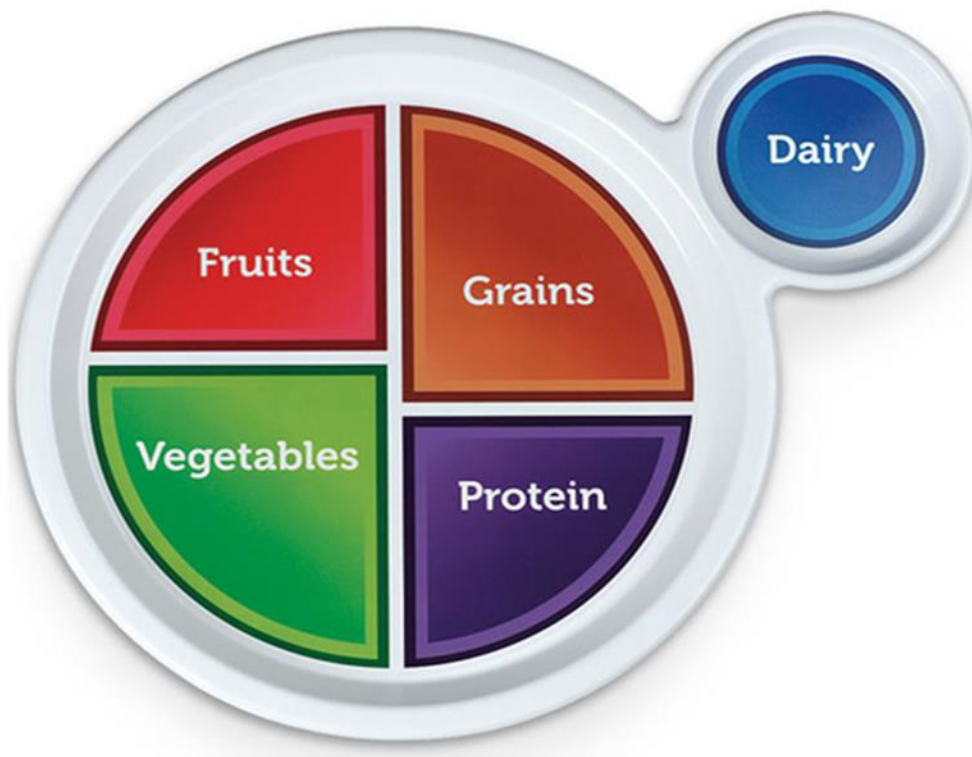
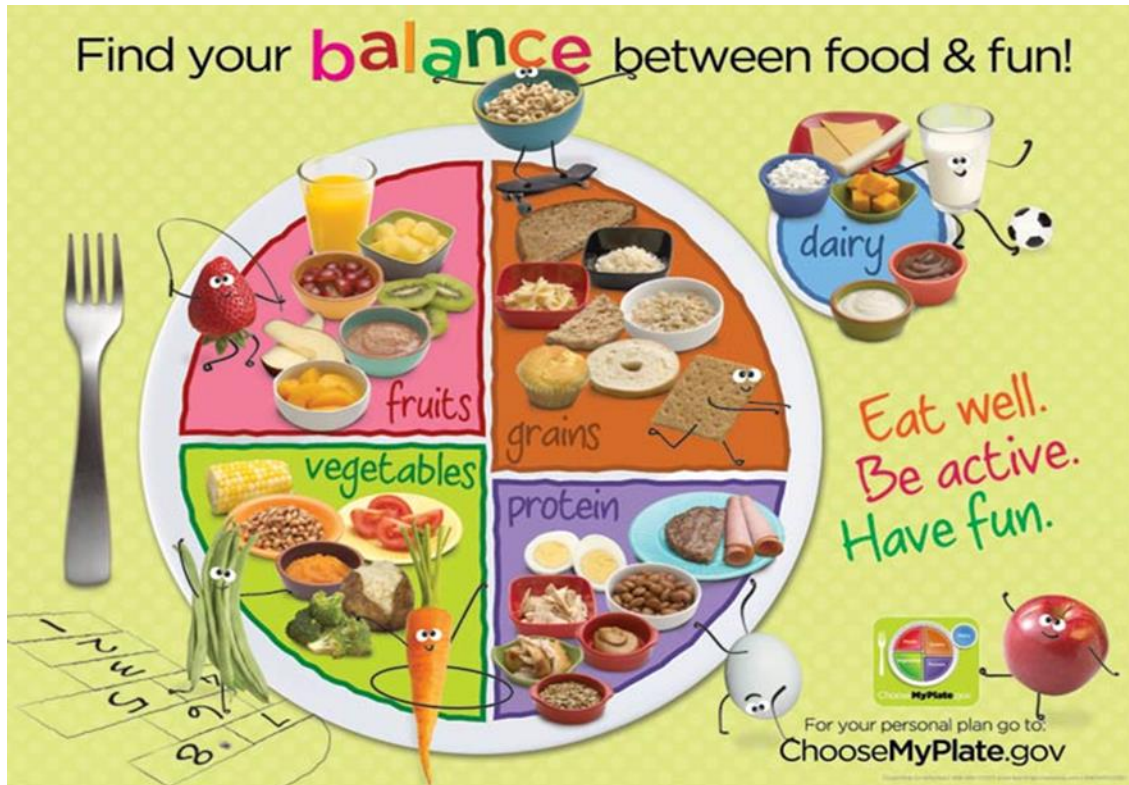




Document C 3

Childhood Obesity Resources





NUTRITION/ACTIVITY QUESTIONNAIRE

1. What is your favorite food/drink?
2. What did you eat for breakfast today?
3. What is your typical lunch and dinner?
4. Do you skip meals?
5. Do you spent more than 2 hours a day watching T.V or on the computer?
6. Do you feel lack of energy and time to participate in activities?

Appendix D

Evaluation Table

Citation	Conceptual Framework	Design/Method	Sample Setting	Variables Studied	Measurement of Major Variables	Data Analysis	Study Findings	Appraisal
MacDonell, K., Brogan, K., Naar-King, S., Ellis, D., & Marshall, S. (2012).		An experimental pilot study in an urban adolescent medicine clinic using MI targeting overweight or obese African American adolescents.	N= 62 adolescent-caregiver dyads aged 13 to 17 years were randomly assigned to half received MI intervention, the other half received nutrition counselling control.	-Food frequency -Physical activity -Health behavior	-Food frequency questionnaire -Self regulation questionnaires -Physical activity recall -Intrinsic motivation subscales -t-test	-SPSS 18.0 -Cronbach’s alpha	-Increase in intervention diet behavior	JHNEBP score 1B
Robbins, Pfeiffer, Maier, LaDrig & Berg-Smith, 2012		Nonexperimental design Treatment fidelity of MI delivered by school nurse. Two schools randomized, the intervention group received “Girls on the move” and the control group	N=37 sixth and seven graders from an urban middle school aged 10 to 14 years.	-MI spirit -Empathy -Direction -Behavioral	MITI code	SPSS V. 18	Improvement in adherence	JHNEBP score 3B
Tripp, Templeton, Romney, & Blood-Siegfried (2011)		A quality improvement study over 6 months that evaluated the effectiveness of using MI and Healthy Eating and Activity together (HEAT) program guidelines to treat childhood obesity in clinic settings. HEAT suggests guiding patients to move towards healthy behavior through motivational interviewing (MI).	N=47 Five to 18 years with BMI at 85th percentile or greater for their age were offered a chance to participate in Healthy Lifestyle in a private pediatric office in Dublin County, North Carolina.	-BMI -Blood pressure -Waist Circumference -Motivational score -Baseline fasting blood sugar, insulin level, c-peptide, liver function studies and lipid panel.	-Motivation readiness questionnaire -Dietary log		-Average BMI dropped from 26.6 to 26.1 in four visits for the six patients that completed the program -One child dropped from obese (>97th percentile to overweight (85-97th percentile) -Pediatric clinicians may use education and MI to enforce healthy lifestyles	JHNEBP Level 3A
Tucker et al., (2013)		Quasi-experimental study that evaluated practicability and planning of implementing an RN delivered MI intervention in well-childcare visits.	N=130 families. Control = 60 received SCC Intervention= 70 received SCC + MI integrated 5-2-1-0 intervention	BMI BMI percentile Healthy habits	-CDC growth BMI plot chart -BMI calculation via electronic medical record -Healthy habit survey	SAS software package	-Higher BMI decline in the intervention group. -A greater number of intervention group had a significant increase in number of fruits and vegetable intake. -The BMI percentile mean change was higher in the intervention group.	JHNEBP Level 2B

Citation	Conceptual Framework	Design/Method	Sample Setting	Variable Studied	Measurement of Major Variables	Data Analysis	Results	Appraisals
Vallabhan et al., (2017)	Kings Theory of Goal Attainment and Transaction Process	Cluster RCT Train PCP in use of MI FOR Youth behavior change	N=3 nurse practitioners N=1 Physician assistant	Proficiency Comfort	MI provider self-assessment survey	REDCap ANOVA SAS 2012	Significantly more comfort with MI	JHNEBP Level 1A
Wong, M. Y. E., & Cheng, M. M. H. (2013).		Pre-Post quasi-experimental study over 11 months regarding MI approach for childhood obesity.	N= 791 school children in 5 th and 6 th grades	-Weight change -Weight related behavior change -Weight related anthropometric measures	-Diet journal -Kathleen's diet planner -Exercise log -Calorie calculation from nutritional information reference -Anthropometric measurement	SPSS 19.0	Participants in the MI and MI+ groups showed significant improvement in their weight-related behavior with a decrease in their BMI.	JHNEBP Level 2B
Walpole, Dettmer, Morrongiello, McCrindle & Hamilton, (2013)		RCT Randomly assigned to control group (social skills training) and intervention (MI) group. MI to enhance self-efficacy and promote weight loss	N=40 participants aged 10-18 years over 6 months.	-BMI z-score -Waist circumference -Self -efficacy -Treatment attendance	-Self report questionnaire -Weight efficacy lifestyle	Fisher's exact chi-square	MI and social skills training may be beneficial	JHNEBP Level 3 B
Windham et al., (2014)		RCT To compare the impact of a 7-minute motivational DVD plus standard care (intervention) to standard care alone (control) on parental knowledge of obesity -related diseases in the adolescent clinic.	N=40 adolescents referred for weight management	-Readiness -Self-efficacy -Motivation to lose weight	-Self-report questionnaire	SPSS 17.0	DVD improved parents knowledge	JHNEBP Level 1A

Appendix E

Gap Analysis of Using MI techniques to address Childhood Obesity

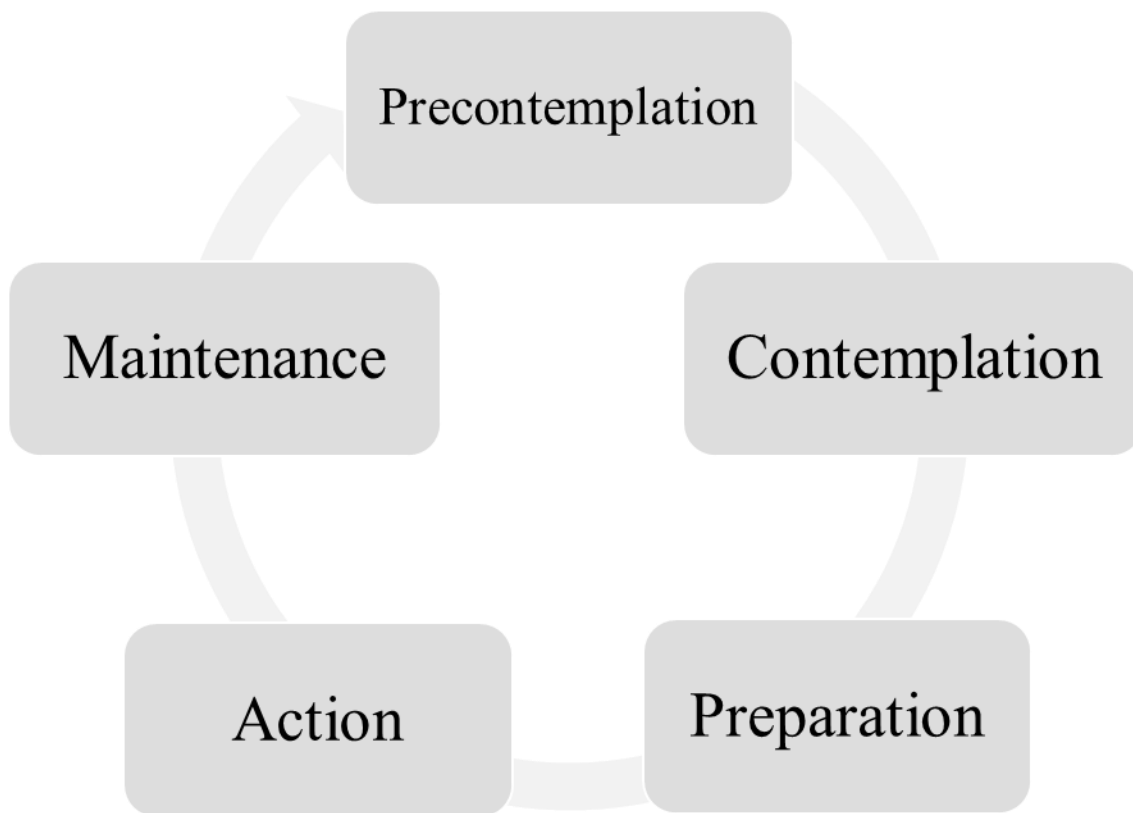
Gap Analysis					
Project Name	Efficacy of NP Students using Motivational Interviewing Techniques to Address at-risk and obese Adolescents on Childhood Obesity at the sports physical assessment Program Reedley, Fresno County: A Pilot Program				
Date	May 2019				
Project Aim	The overarching aim for this DNP project is to improve health outcomes among obese and at-risk adolescents from Reedley and Orange Cove High Schools of Kings Canyon Unified School District, Fresno County, using MI techniques to address readiness, and educate on prevention of childhood obesity, by the USF and SJSU FNP students, during the Sports physical assessment program.				
Project Objectives	Current Resources	Gaps Identified	Implications	Actions to Address Gaps	Timeline
Establish a partnership with the USF and the Reedley and Orange Cove High Schools by the end of April 2019.	Establish connections with the USF nursing faculty and KCUSD health coordinator.	-FNP students have not received education on the use of MI techniques and no obesity in program curriculum to address childhood obesity during any contact with at risk and obese children and use of childhood obesity screening guidelines. - No known obesity prevention education in KCUSD	-Potential for NP students limited knowledge. -Potential for knowledge gap in adolescent students obesity prevention.	-Develop and present a PowerPoint presentation on the use of MI techniques and obesity prevention resources.	Complete by end of April
Develop and implement a curriculum for the USF NP students that are involved in the sports physical assessment.	Access to several databases including PubMed, CINAHL Complete, Medline, PsychInfo, and Scopus	-Limited resources dealing with MI based studies. -Potential for limited time for NP students to review PowerPoint.	-Extra time needed to review individual article.	-Disseminate voice over PowerPoint to NP students via email -Introduce and educate FNP students on how to use MI techniques.	Complete by end of April
Collect data during the sports physical assessment from the adolescents an interview regarding knowledge of healthy eating and lifestyle habits	-Ability to know obesity prevention knowledge base of the adolescents	-Adolescents lack of knowledge in obesity prevention.	--Potential for adolescents not being interested in weight management	-NP students will use the nutrition and activity questionnaire to elicit knowledge	Complete in May during the program
Implement and measure the use of MI techniques and related intervention resource tool kits through pre and post surveys	- Measure NP participants' experience, and effectiveness of the implementation program and their confidence to use MI techniques in family care practice	-Establish measurement metrics -Choose analysis tool	-Potential for NP students incomplete evaluation surveys	-Make self-available to the NP students for questions -Debrief with NP students. -Work with NP students to ensure compliance	Complete by end of May

Appendix F

Theoretical Framework

Document F1

Stages of Change (Transtheoretical) Model



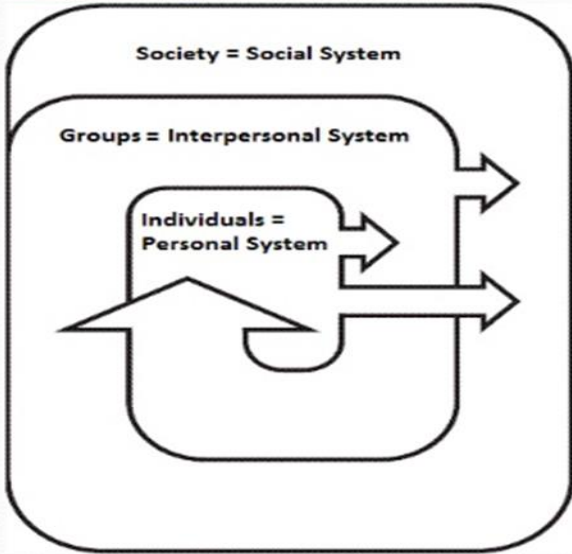
Document F2

Kings Theory of Goal Attainment

C. Use of Empirical Evidence

King used a “systems” approach in the development of her Dynamic Interacting Systems Framework and in her subsequent Goal-Attainment Theory.

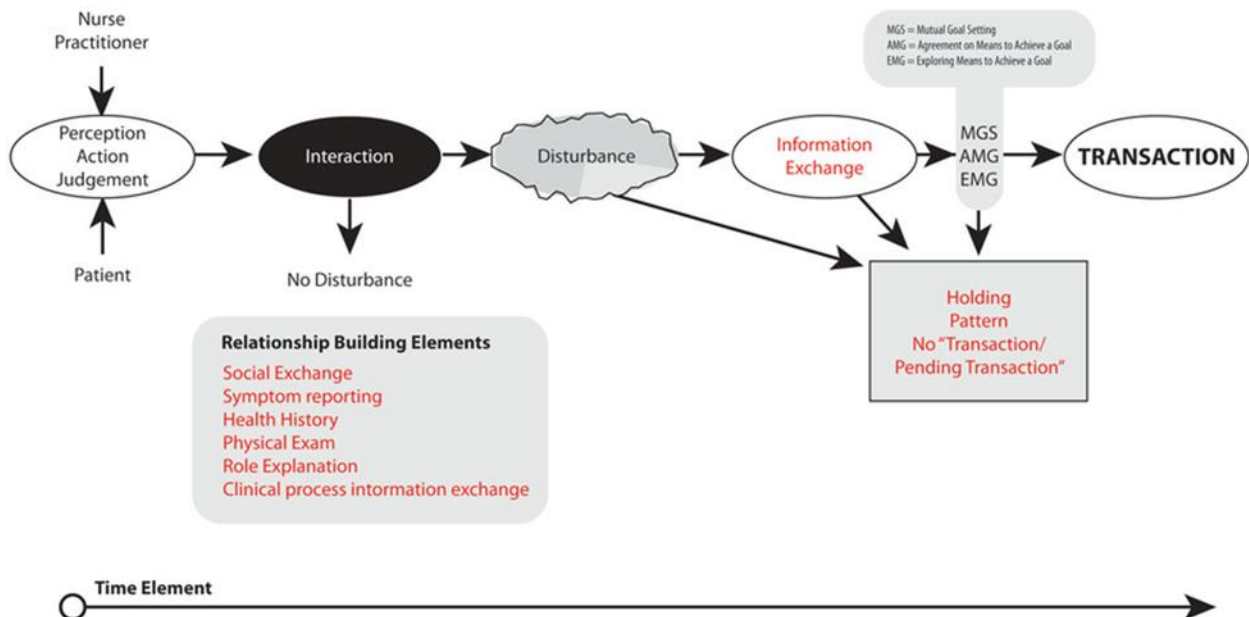
INTERACTING SYSTEMS FRAMEWORK



Three systems in the conceptual framework:

- Personal System** (the individual)
- Interpersonal System** (individuals interacting with one another)
- Social System** (groups of people in a community/society sharing common goals, interests, and values)

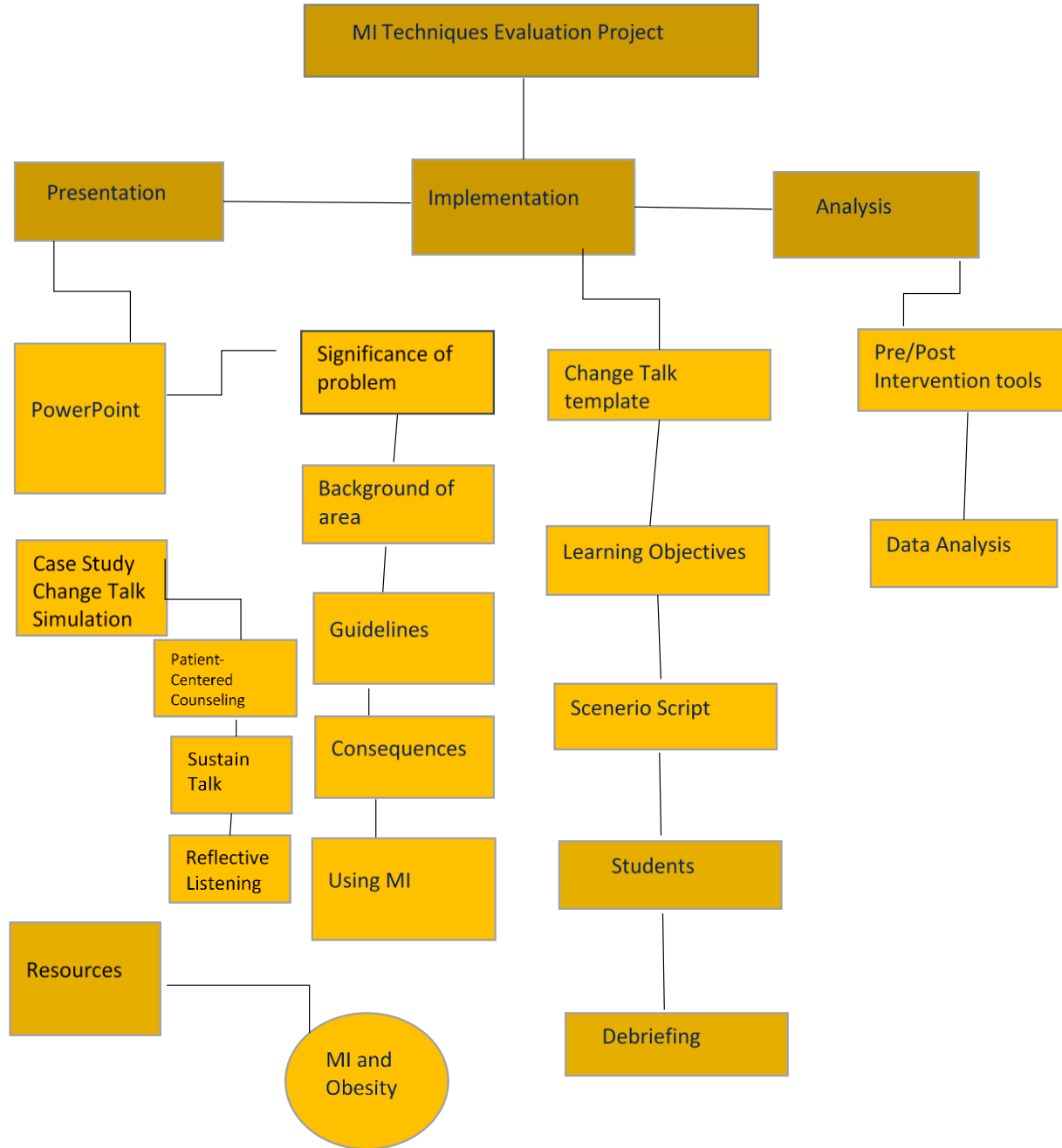
Study systems as a whole rather than as isolated parts of a system.



Task Name	Start Date	End Date	Duration
Planning			
Complete initial literature review	August 2018	November 2018	4 months
Write and submit DNP manuscript	November 2018	January 2019	3 months
Form DNP project committee	January 2019	January 2019	1 month
Submit DNP Statement Determination	January 2019	February 2019	2 months
Submit Specific Aim	January 2019	February 2019	2 months
Development			
Draft project plan proposal	February 2019	February 2019	1 month
Obtain Agency authorization	March 2019	May 2019	3 months
Write and submit DNP Project Prospectus	April 2019	July 2019	4 months
Develop PowerPoint Presentation and submit for approval	March 2019	April 2019	2 months
Implementation			
PowerPoint Presentation to FNP Students enrolled in NUR 718	May 2019	May 2019	2 days
PowerPoint presentation to NP students and provision of MI Technique resources	May 2019	May 2019	1 day
Pilot test MI use in assessment and education during the summer intensive program	May 2019	May 2019	1 week
Project data analysis	June 2019	July 2019	1 month
Write and Submit final project write up	July 2019	July 2019	1 month
DNP project Presentation	August 2019	August 2019	2 weeks

Appendix H

Work Breakdown Structure



Appendix I

Responsibility/Communication Matrix

	DNP Student	DNP Chair	DNP Committee	NUR 718 Faculty	PPT Demonstration	Reedley Coordinator	Presentation Assistants
Project Planning							
Literature Review	RA	C	I	NA	C	NA	NA
Manuscript	RA	C	I	NA	NA	NA	NA
Form DNP Committee	RA	AI	IA	NA	NA	NA	NA
Statement of Determination Form	RA	C	I	NA	NA	NA	NA
Specific Aim	RA	C	I	X	X	NA	NA
Development							
Project Plan Proposal	RA	C	I	I	RA	I	NA
Agency Authorization	RA	C	I	RCAI	RA	RCAI	NA
Project Prospectus	RA	C	I	I	I	I	NA
PowerPoint Presentation	RA	C	I	I	RA	I	NA
Implementati							
NUR 718/ SJSU Students	RA	C	I	I	RAI	I	NA
Pilot test Reedley Summer Intensive	RA	C	I	I	RAI	I	NA
Data Analysis							
Analyze Project Outcome	RA	C	I	NA	NA	NA	NA
DNP Project Write-up	RA	C	I	NA	NA	NA	NA
DNP Presentation	RA	CAI	CAI	NA	NA	NA	NA

Note: R= Responsible Person; A= Accountable Person; C= Consulted; I= Informed; NA= Not applicable

Appendix J

SWOT ANALYSIS

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • National directive to address the problem • Identified population that has the problem • Agricultural community • Evidence on the value of physical activity and proper nutrition in prevention of childhood obesity • Availability of farmers markets and corner street vendors for fruits and vegetables • Personal knowledge of USF organizational structure and institutional processes. • Support from USF Nursing faculty and students from USF and SJSU • Support from KCUSD medical and athletic departments. • Access to USF evidence-based resources for MI techniques to address childhood obesity 	<ul style="list-style-type: none"> • Poor socioeconomic status in the population • Cultural barriers • Poor parental involvement • Poor understanding of the consequences of childhood obesity • Obese parents not role models • Could not perform full presentation due to time constraints
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Implement clinical guidelines in prevention of obesity • For school district policy to change in physical activity and nutrition • Health education in schools provided for a large audience • Students making the right choices • Billable reimbursement for PCP's addressing childhood obesity. 	<ul style="list-style-type: none"> • Students and parents participation and cooperation • Existence of childhood obesity awareness • Influx of fast food restaurants • Healthy foods are costly • Inadequate school policy on exercise and food. • Inaccessible transportation to healthy supermarkets • Lack of trust from the students due to short time period in developing a trusting relationship • Potential lack of sustainability

Appendix K

BUDGET

DIRECT EXPENSES	PROJECTED	ACTUAL
Travel Gas: To and from Reedley and Orange Cove High Schools	\$100	\$150
Printing, copying and laminating MI and Childhood obesity tools	\$0	\$450
Printing and copying pre and post tests	\$20	\$30
Plastic big folder for holding resources	\$10	\$25
Subtotal Direct Expenses	\$30	\$655
INDIRECT EXPENSES		
FNP students Time to listen to PowerPoint presentation (estimate)	\$0	\$0
FNP students' wages at \$64.32* per hour <small>*Obtained from United States Department of Labor (2018)</small>	\$43,416	\$0
Subtotal Indirect Expenses	\$43,446	\$0
Total Project Expenses	\$43,446	\$655

Appendix L

Cost Avoidance/Benefit Analysis

	DNP Project	CLINIC	NATIONAL
Costs			
Project Costs			
• Out of Pocket Costs	\$555		
• Total hourly wages (NP student participation)*	\$0.00		
• Total Expenses *Estimated	\$555.00		
Potential Cost Revenue/Cost	Per Visit	100 visits	1000 screened
Potential Revenue Sources			
• Estimated Medical Pediatric well visit*	\$23.77	\$2,377.00	\$23,700.00
• Estimated Medical Initial Preventive Physical Exam*	\$34.17	\$3,417.00	\$34,170.00
• Total Potential Medical Revenue	\$57.94	\$5,794.00	\$57,940.00
<small>*Retrieved from California Government Department of Health Care Services, Medi-Cal</small>			
Potential Cost Avoidance		100 visits	1000 visits
• Estimated annual medical costs per obese child*	\$ 19,000	\$1.9 million	\$19 billion
• Total Potential Cost Avoidance *Duke Global Health Institute, 2014	+\$ 19,000	+\$1.9 million	+\$19 billion
Estimated Breakdown Analysis/Net Cost Avoidance	Breakeven		
Potential Breakdown Analysis Breakdown point for Medi-Cal Screening Visits (\$ 19,000 /\$57.94)	328 visits		
Net Cost Avoidance	\$18,445		\$13.2 billion

Appendix M

Return On Investment

	ROI
Community/Nation	<ul style="list-style-type: none"> • Decreased national economic burden • Reduces the cost to \$12,900 per obese child (DGHI, 2014) • \$549 billion saved if obesity declines or remains same (NLC, 2017)
USF/SJSU	<ul style="list-style-type: none"> • Adding MI techniques in curriculum • Supports and promotes NP professional growth
PCP	<ul style="list-style-type: none"> • Increased knowledge in the use of MI techniques to address childhood obesity in family practice • Improved reimbursement rates • Improved patient satisfaction • Compliance with guidelines for childhood obesity prevention
Individual Benefits	<ul style="list-style-type: none"> • Improved well-being and quality of life • Decreased hospital visits and personal medical expenses • Avoidance of potential diseases that could lead to increased mortality and morbidity rates.

Appendix N

CQI Method and Data Collection Tools

Measures	Definition	Data Source	Outcome Goal
Outcome Measures		Likert scale	
Aware of guidelines	Pre implementation survey #1 Post implementation survey #	1=0 2=4 3=5 4=4 5=2 1=0 2=0 3=0 4=3 5=12	Mean = 3.27 Mean= 4.60
PPT presentation improved knowledge of MI	Post presentation survey #1	1=1 2=0 3=1 4=7 5=6	Mean= 4.13
Confidence implementing MI during program	Pre implementation survey #1 Post implementation survey #	1=2 2=4 3=6 4=3 5=0 1=0 2=0 3=2 4=9 5=4	Mean= 2.67 Mean= 4.13
Essential to address issue of childhood obesity	Pre presentation survey #1	1=0 2=0 3=0 4=3 5=12	Mean= 4.60
Effective in addressing Client issues during program	Post presentation survey #1	1=0 2=0 3=4 4=10 5=1	Mean= 4.20
Confidence in using MI in primary care practice	Post presentation survey #1	1=0 2=0 3=2 4=9 5=4	Mean= 4.13
FNP Students' Experience			
FNP Challenges		Question #10	Identify challenges in addressing childhood obesity with MI techniques
Process Measures			
Number of Educational Intervention Conducted	Number of educational interventional sessions completed	Project Timeline	1 Interactive Simulation 1 ppt
Number of Tests Returned	Pre/post implementation surveys	Pre/post test Confidence level	15 13

MI = MI Knowledge Evaluation Tool ; FNP = Family Nurse Practitioners; PPT= PowerPoint Presentation

Appendix O

Evaluation Tools

Document O1

KNOWLEDGE OF MI TECHNIQUES IN PREVENTION OF CHILDHOOD OBESITY SURVEY

Please circle answer and rate the following questions accordingly

1. **Before** the presentation, I was aware of clinical guidelines for the prevention of childhood obesity.

5	4	3	2	1
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

2. **After** the presentation, I was aware of clinical guidelines for the prevention of childhood obesity.

5	4	3	2	1
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

3. **Before** the presentation, I had **confidence** in using motivational interviewing in childhood obesity prevention.

5	4	3	2	1
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

4. **After** the presentation, I had confidence in using motivational interviewing in childhood obesity prevention.

5	4	3	2	1
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

5. The **PowerPoint presentation** improved my knowledge of using motivational intervention.

5	4	3	2	1
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

6. It is **essential** for me to address the issue of childhood obesity.

5	4	3	2	1
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

7. **During** the program, my primary roles in addressing childhood obesity during this program. (Please circle all that apply)

Informed child/parent of BMI status	Discussed nutrition recommendations	Discussed physical activity importance	Discussed barriers to behavior change	Referred to outside clinics
Resources given	Resources given	Resources given	Resources given	Resources given

8. I was **effective** in addressing patients' issues.

5	4	3	2	1
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

9. **After** the presentation, I felt **confident** in using motivational intervention and related tools in primary care practice.

5	4	3	2	1
Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree

10. What **challenges** did I encounter in using motivational interviewing techniques? (Please enter comments below)

Comments:

11. What **changes** to this presentation would help me streamline my ability to conduct motivational interviewing in prevention of childhood obesity? (Please enter comments below)

Comments

CONFIDENCE LEVEL DURING IMPLEMENTATION

1. I am _____ self-confident in my ability to use motivational interviewing and listen carefully to what the client tells me about his or her health problem.

Self-confident 1 2 3 4 5

2. I am _____ self-confident in my ability to assess the client’s nonverbal cues.

Self-confident 1 2 3 4 5

3. I am _____ self-confident in my ability to recognize a possible client problem by reading the client’s chart.

Self-confident 1 2 3 4 5

4. I am _____ self-confident in my ability to ask the client’s significant others/family questions to gather information about the current problem.

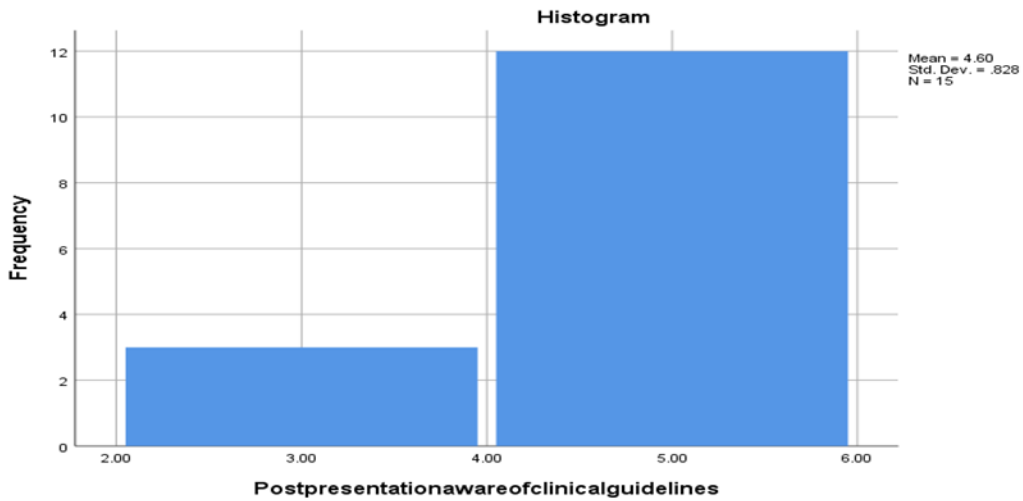
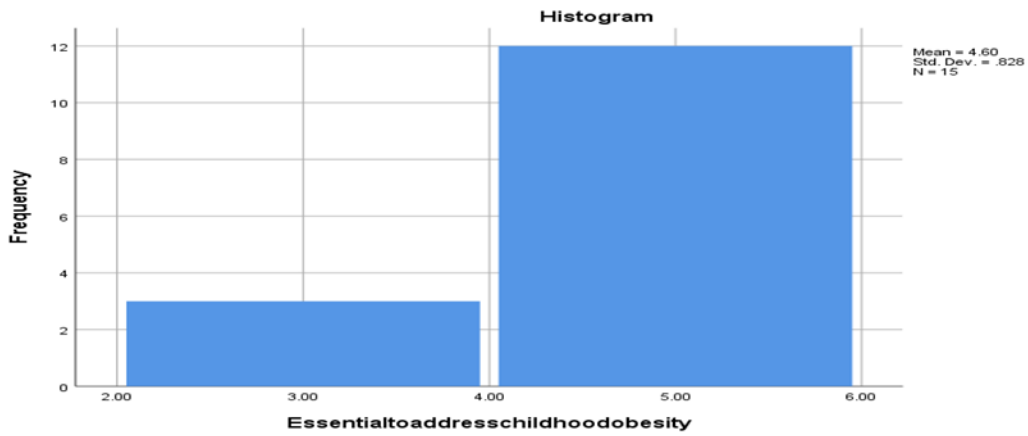
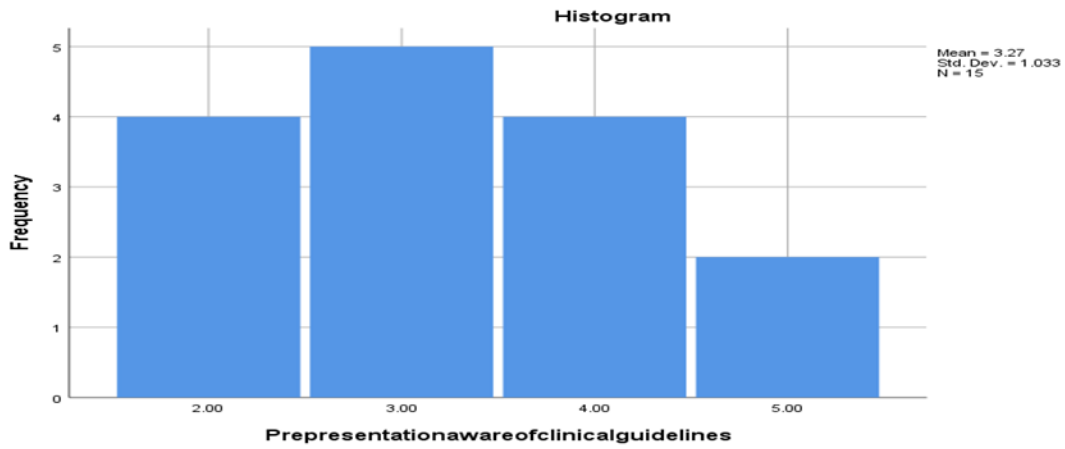
Self-confident 1 2 3 4 5

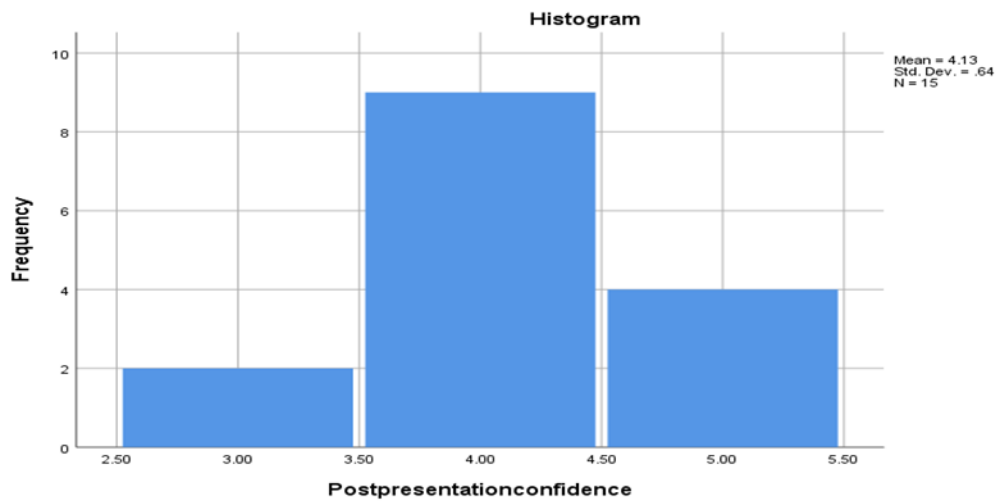
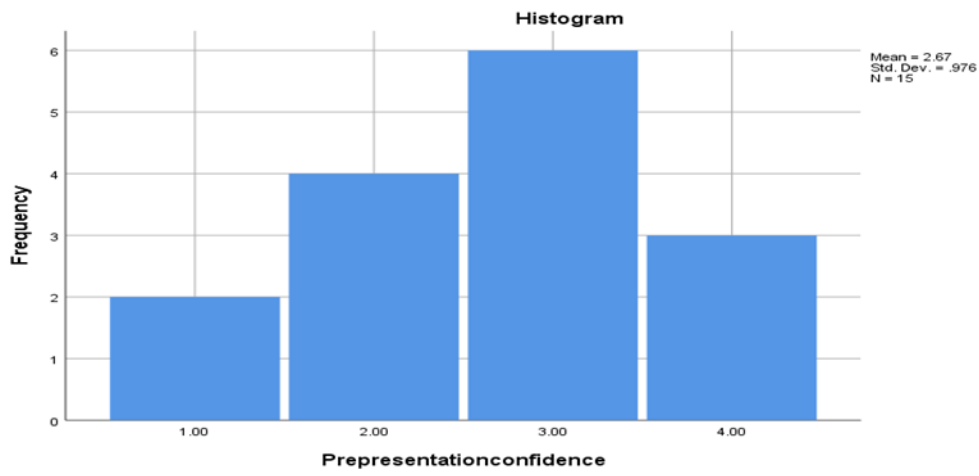
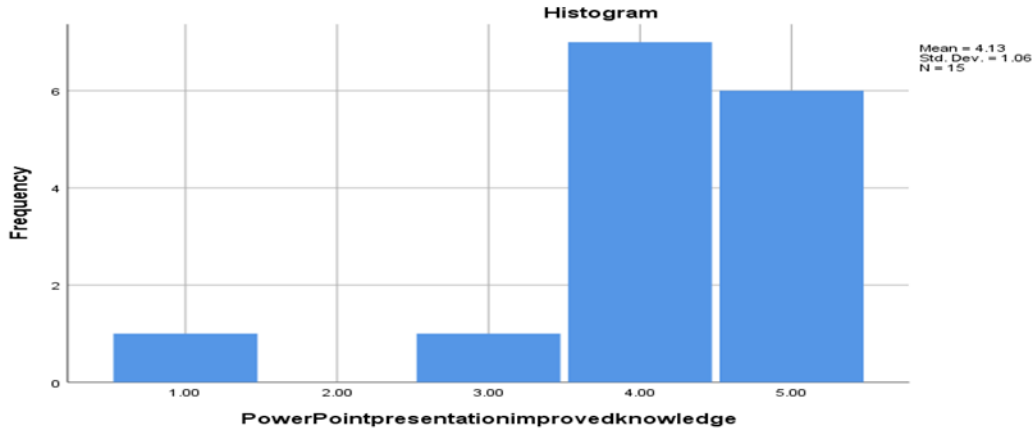
Measures	Definition	Data Source					Outcome goal
Outcome Measures		Likert Scale					
Self-confident in my ability to use motivational interviewing and listen actively to what the client tells me about his or her health problem.	During implementation survey #1	1= 0	2= 1	3= 5	4= 3	5= 4	Mean = 4.38
Self-confident in my ability to assess the client’s nonverbal cues.	During implementation survey #2	1= 0	2= 2	3= 2	4= 6	5= 3	Mean = 3.31
Self-confident in my ability to recognize a possible client problem by reading the client’s chart.	During implementation survey #3	1= 0	2= 1	3= 2	4= 6	5= 4	Mean = 3.69
Self-confident in my ability to ask the client’s significant others/family questions to gather information about the current problem.	During implementation survey #4	1= 1	2= 1	3= 2	4= 3	5= 6	Mean = 3.92

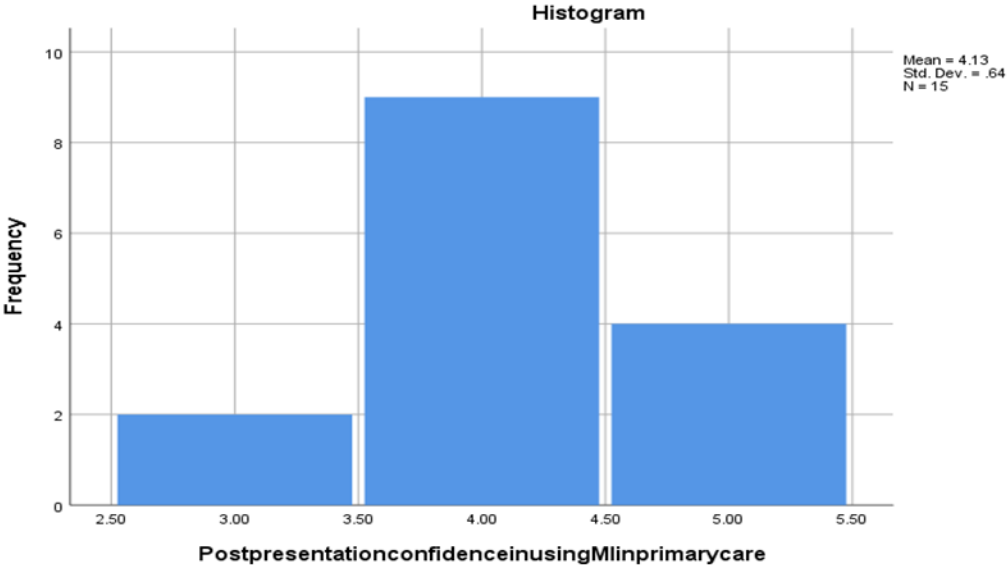
NP primary roles in addressing childhood obesity during implementation		
Roles played	Discussed	Resources given
Informed child/parent of BMI status	13	10
Discussed nutrition recommendations	14	10
Discussed physical activity importance	15	11
Discussed barriers to behavior change	9	7
Referred to outside clinics	6	7

Document O 2

Results Quantitative Analysis



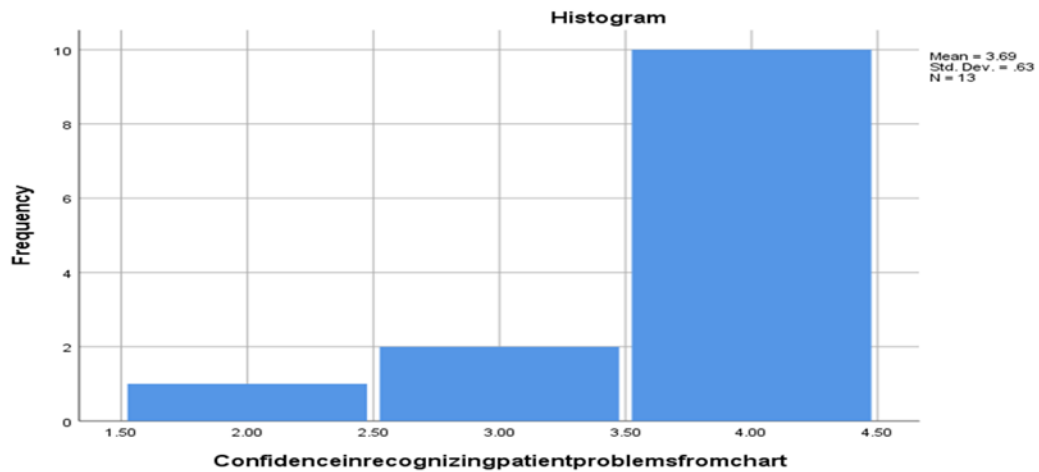
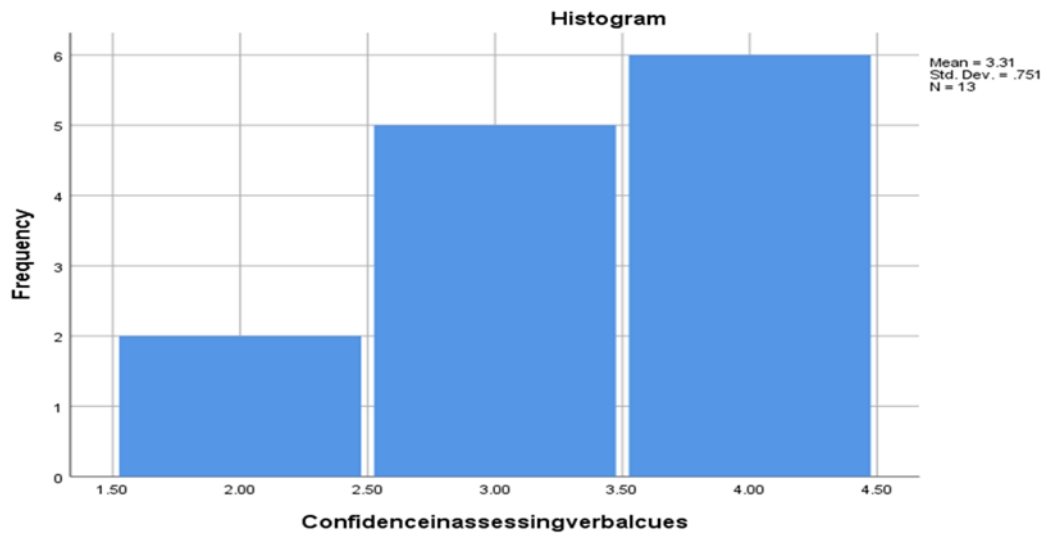
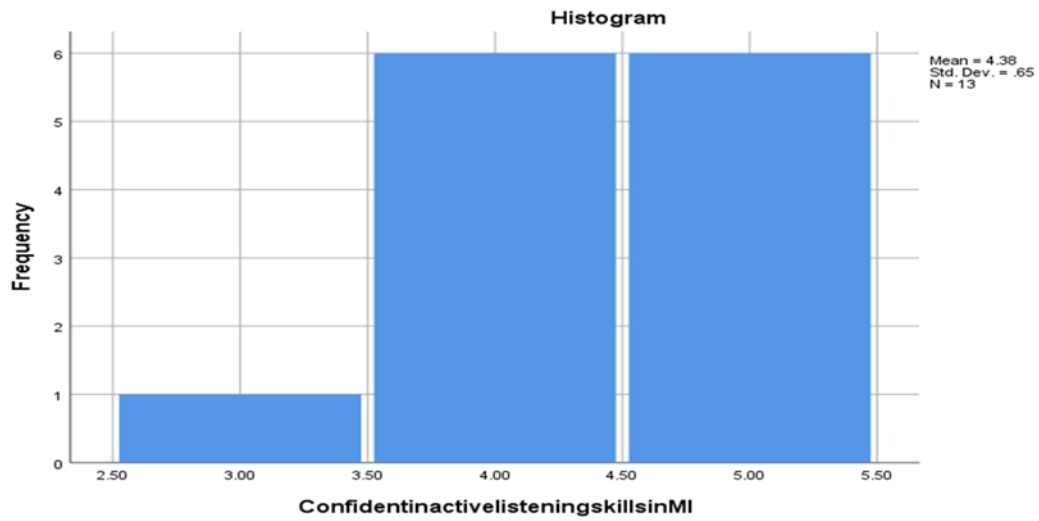


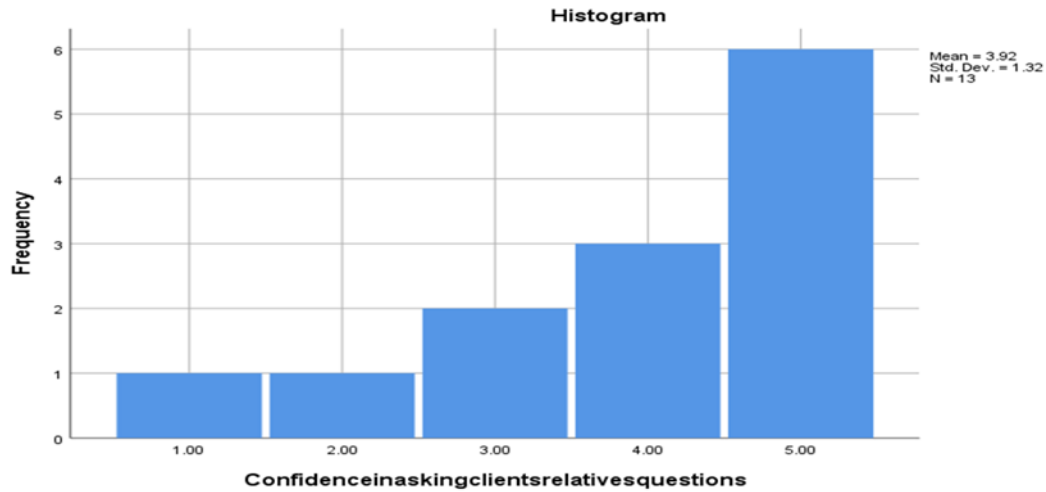


One-Sample Test

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Prepresentationawareofclinic alguidelines	1.000	14	.334	.26667	-.3053	.8386
Essentialtoaddresschildhood besity	7.483	14	.000	1.60000	1.1414	2.0586
Postpresentationawareofclinic alguidelines	7.483	14	.000	1.60000	1.1414	2.0586
PowerPointpresentationimpro vedknowledge	4.141	14	.001	1.13333	.5463	1.7204
Prepresentationconfidence	-1.323	14	.207	-.33333	-.8738	.2071
Postpresentationconfidence	6.859	14	.000	1.13333	.7789	1.4877
Postpresentationconfidencein usingMlinprimarycare	6.859	14	.000	1.13333	.7789	1.4877

Confidence level during implementation of the project





One-Sample Test

	t	df	Sig. (2-tailed)	Test Value = 3		95% Confidence Interval of the Difference	
				Mean Difference		Lower	Upper
Confidence in active listening skill in MI	7.675	12	.000	1.38462		.9916	1.7777
Confidence in assessing verbal cues	1.477	12	.165	.30769		-.1462	.7616
Confidence in recognizing patient problems from chart	3.959	12	.002	.69231		.3113	1.0733
Confidence in asking clients relatives questions	2.521	12	.027	.92308		.1251	1.7210

Document O 3

Results Qualitative Analysis

Questions #10 and #11

COMMENTS	
Challenges/Barriers	What steps in the PPT helped streamline ability to conduct MI
<ul style="list-style-type: none"> - Getting teens to open up - Time constraints - Younger children require assistance/cooperation of their parents and parents rarely present - Some children were shy and did not verbalize much about their goals or readiness - Too many kids, too much noise and distraction - Adolescents are more sensitive to issue of weight than adults - Adolescents not wanting to change routine. - Not knowing how to address overweight/obese issues because of some sports that required increased weight. 	<ul style="list-style-type: none"> -Great presentation -Maybe perform the presentation right before the experience because we were busy with assignments and relegated the PPT on the last minute. Otherwise excellent PPT. -Useful resources provided: MI step to step guide -Thank you so much, this is really helping me. -The resources are great. Thanks a lot. -Developing rapport with the adolescents through common interest definitely helped set me up for effective MI use. -No case studies to help address exact issues -Presenters voice was not loud enough.