

Motivational Interviewing Education for Nurse Practitioners Providing Obesity Management

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Abstract

Purpose: This project examined the effectiveness of an online educational module on basic Motivational Interviewing (MI) techniques for Nurse Practitioners (NPs) providing obesity management to middle-aged women.

Background: Middle-aged women experience distinct physiological and psychosocial factors that contribute to weight gain and make obesity management especially challenging. The evidence supports the use of motivational interviewing (MI) interventions as a highly effective approach to obesity management in combination with standard medical weight loss programs. Educating NPs that provide medical weight loss on basic MI counseling techniques is necessary to facilitate the use of this intervention.

Methods: NP providers at a group of seven medical weight loss clinics in the southwestern United States completed an online MI educational module that was developed for this project. The module content covered basic MI counseling techniques. MI knowledge was assessed using a 6-item pre/post-test. Participants completed an 8-item course evaluation to provide additional feedback.

Results: Ten of the 13 NPs eligible participated in the project. The overall response to the project was positive as demonstrated by high scores on the course evaluation. The average post-test knowledge scores increased after completion of the module, however no statistical significance was noted.

Conclusions: The basic MI education module was beneficial for NPs providing obesity management and future research should focus on developing standardized MI weight loss interventions.

Keywords: obesity, motivational interviewing, women, weight loss, females, middle-aged women

Background and Significance

Problem

Obesity is a major public health concern in the United States. The Healthy People 2020 initiative identified obesity as a significant national issue and has established multiple goals that specifically address reducing obesity (HealthyPeople.gov, 2014). In the United States, approximately 35% of adults are obese with a body mass index (BMI) of ≥ 30 , the prevalence is highest in middle-aged adults (Ogden, Carroll, Kit & Flegal, 2014). In Arizona, approximately 35% are overweight with BMI 25-29.9 and 27% are obese with a BMI of ≥ 30 (Centers for Disease Control and Prevention [CDC], 2014). Middle-aged women, approximately 35-60 years of age, have distinct physiological, psychosocial, and cultural factors that contribute to weight gain and make obesity management especially challenging (Hicken et al., 2013; Kiernan et al., 2012; Sutin & Zonderman, 2012; Williams, Hollis, Collins & Morgan, 2014). Physiological factors include estrogen deficiencies, higher resting cortisol levels and increased cortisol stress responses, all which contribute to weight gain (Sutin & Zonderman, 2012; Williams et al., 2014). Psychosocial stressors include increased family demands, work commitments, social pressures, and societal stigmas (Hicken et al., 2013; Kiernan et al., 2012; Pan et al., 2011). Obesity management in middle-aged women is multifaceted and there is a significant need for holistic, patient-centered weight loss interventions that specifically focus on this population (Linde et al., 2011; Safari et al., 2014; West et al., 2011; Williams et al., 2014).

Rationale

Motivational Interviewing (MI) appears to be an effective intervention for obesity management in middle-aged obese women. MI based weight loss intervention offers benefits for all the stakeholders involved, including the patients, medical providers, local clinics and the

healthcare system (Armstrong et al., 2011; Low et al., 2013; Saffari et al., 2014). When women are unsuccessful in weight loss programs, they may become discouraged, dissatisfied and are challenging patients for the healthcare team. MI interventions can be used to empower women to effectively deal with motivational and behavioral barriers that impede their weight loss goals (Newham-Kanas, Morrow & Irwin, 2011; Miller et al., 2014). The use of MI counseling strategies is useful for medical providers because patient-centered, time effective, evidence-based practice approach (Armstrong et al, 2011; Lundahl, Kunz, Brownell, Tollefson, & Burke, 2010). The benefits for the medical clinics and healthcare in general include improved quality of obesity care, increased patient satisfaction and adherence to weight loss programs, all which contribute to improved patient outcomes (Armstrong et al, 2011; Lundahl et al., 2010; Saffari et al., 2014).

External Evidence

Middle-aged women are more likely to enroll in medical weight loss programs and have the least success with obesity management compared to any other group (Linde et al, 2011; Teixeira et al., 2010). Across the lifespan women tend to gain more weight compared to men with the majority of the weight gain occurring in middle age (Pan et al., 2011; Sutin & Zonderman, 2012). Compared to men, middle-aged women are more likely to experience depressive symptoms, which result in the use antidepressant medications, increased overeating, fatigue and these symptoms may exacerbate weight gain (Pan et al., 2011; Sutin & Zonderman 2012). Middle-aged women have higher rates of depression and are more likely to engage in binge eating and emotionally triggered eating (Tucker & Earl, 2010; Yilmaz, 2011). Social barriers often reported by middle-aged women include lack of family support and increased levels of diet sabotage by friends (Kiernan et al., 2012). Stress and coping mechanisms, social norms and views on healthy body shape vary among women of different cultural and ethnic

backgrounds, and can make obesity management challenging (Hickens et al, 2013; Kiernan et al, 2012; Pan et al, 2011). Middle-aged women have unique contributing factors, which impact their ability to maintain a normal BMI and weight loss interventions should be customized to meet their individual needs.

The use of behavioral approaches for obesity management, in particular MI, appears to be a highly effective intervention for weight loss. A landmark meta-analysis of MI research over past 25 years showed that MI interventions had significant positive outcomes with addictive problems and general health-promoting behaviors including obesity management (Lundahl et al., 2010). Motivational interviewing was also found to be time effective, increased the patient's engagement in the treatment process, and boosted patient's confidence in their ability to change (Lundahl et al., 2010). Armstrong et al. (2011) studied the effectiveness of MI interventions for obesity management found that MI improved patient compliance and retention, which resulted in better weight loss outcomes. Yilmaz (2011) conducted a pilot weight loss program that incorporated both cognitive behavioral therapy (CBT) and MI approaches and showed increased weight loss and patients expressed positive feedback including improved self-esteem and a better outlook towards weight loss as a long-term lifestyle change.

The core theoretical underpinnings of motivational interviewing are from trans-theoretical model, social cognitive theory, and self-determination theory. These theories all possess key concepts that are highly applicable for obese middle-aged women (Miller & Rollnick, 2013; Saffari et al., 2014; Teixeira et al., 2010; West et al., 2011). Fisher and Kridli (2013) found that obese middle-aged women showed low levels of intrinsic motivation and extrinsic motivation levels were slightly higher than normal. This suggests that this population lacks internal desire to lose weight and is greater motivated by external incentives (Fisher &

Kridli, 2013). Motivation levels decreased with rises in salaries and a positive relationship was seen between motivation and marital status (Fisher & Kridli, 2013). Teixeira et al., (2010) conducted a randomized control trial (RCT) of middle-aged obese women that evaluated mediators of weight loss and weight maintenance. Reducing emotional eating and increasing cognitive restraint was significant for short-term success. Increasing exercise self-efficacy and motivation were important for long-term success (Teixeria et al., 2010). Middle-aged obese women who participated in a qualitative MI weight loss study reported increased self-confidence, better coping life skills, improved emotional healing, more involvement in social networks, and ability to step outside their comfort zones (Kanas, Morrow, & Irwin, 2011). Motivational interviewing helps to facilitate behavior change by increasing self-efficacy and self-determination, which are needed for successful obesity management in women.

Multiple research studies have been conducted that use MI weight loss interventions in variety of patient populations. In obese cardiac patients, a MI weight loss intervention was shown to be significantly effective for weight loss in women when compared the standard weight loss program (Low et al., 2013). Medical nutrition therapy combined with a MI counseling was shown to be effective in obese African American women with type 2 diabetes for improving dietary and self-care confidence, engagement in the interventions, and for improving glycemic control (Miller et al., 2014) A randomized control trial (RCT) of normal weight and overweight middle-aged women that used MI intervention for obesity prevention showed MI to be effective for preventing weight gain, and also resulted in significant weight loss and decreases diastolic blood pressure in overweight participants (Williams et al., 2014). A RCT conducted by Saffari et al. (2014) studied a MI weight loss intervention with Iranian obese middle-aged women and found that the intervention group experienced significantly more weight loss then the control

group in the standard weight loss program. A RCT conducted by West et al, (2011) studied obese middle-aged women and compared a MI intervention to standard weight loss program for weight loss maintenance and found MI to be a successful approach for sustaining weight loss. Linde et al (2011) studied obese middle-aged women with depression assigned to either a behavioral weight loss intervention alone or combined with cognitive behavioral therapy. The behavioral weight loss intervention alone showed significant improvements in depression and weight loss equal to combined treatment group (Linde et al., 2011). The use of MI weight loss interventions have demonstrated improved outcomes in middle-aged obese women including better weight loss, adherence and retention in weight loss programs, and improved self-confidence and positive patient feedback.

Internal Evidence

In a group of medical weight loss clinics in the southwestern United States, a recent chart review and patient survey revealed that middle-aged female patients demonstrate less weight loss than younger female and male patients and, have increased difficulty maintaining weight loss. The clinic's patient population is primarily women ages 35-60 that are obese ($BMI \geq 30$) with many with comorbid conditions including type 2 diabetes, hypertension, hyperlipidemia, and depression. The majority of these women have tried and failed at multiple weight-loss interventions in the past, including bariatric surgery. These women report time constraints, significant life stressors related to having a full-time career and increased family demands as barriers to successful weight loss. This population has expressed a desire for additional motivational and behavioral strategies to assist them to achieve and maintain their optimal weight. Obesity management in middle-aged women is multifaceted and there is a significant need for holistic, patient-centered weight loss

interventions that specifically focus on this population (Linde et al., 2011; Safari et al., 2014; West et al., 2011; Williams et al., 2014).

Problem Statement

Obesity is a complex, multifactorial problem requiring an individualized patient-centered approach. Middle-aged women are uniquely affected by obesity and at higher risk of cardiac disease, depression, and social stigma compared to men. Traditional weight loss interventions have shown to be ineffective for optimal obesity management in middle-aged women.

Motivational interviewing (MI) is a psychological approach that has been effectively used to promote healthy behavior changes for a wide variety of problems. The use of MI appears to be a promising intervention for obesity management in middle-aged obese women.

PICOT

In obese (BMI ≥ 30) middle-aged women enrolled in a medically supervised weight loss program (**P**) how does using Motivational Interviewing (MI) with medical weight loss program (**I**) compare to standard weight loss program alone (**C**) affect weight loss and/or patient satisfaction (**O**) over a 3-6 month time frame? (**T**)

Search Sources and Process

Search Strategy

The exhaustive search consisted of a database search, grey literature, and hand ancestry methods. Database search included Cumulative Index to Nursing and Allied Health (CINAHL), COCHRANE Library, PubMed, PsycINFO, Dissertations & Theses Global, Google Scholar, and Academic Search Premier. The inclusion criteria had at least two aspects of the PICOT. The interventions in the studies had to be MI or similar behavioral weight loss interventions. The primary dependent variables were weight loss and psychological factors. The population was

limited to adults only with the primary focus on middle-aged women. The outcomes had to address weight loss and/or behavioral modifications. Articles were limited to original research, meta-analysis/systematic reviews and randomized control trials. The database search was initially limited to 10 years and further limited to five years. The search terms included were “obesity”, “motivational interviewing”, “women” with the connector “AND”, and key synonyms such as “weight loss”, “females”, and “middle-aged women”, which resulting in several thousand retrievals. Alternate terms, combinations, and limits were applied in order to have a more manageable and applicable yield.

Database Search

In CINAHL, the search mode “Boolean/Phrase” was used with no other limitations and this strategy yielded 136 articles. Using the terms “middle-aged women” AND “weight loss” AND “motivational interviewing” with the search mode “find all my terms” yielded 10 articles. Using the same search terms, PubMed yielded 166 articles with no limitations made. The PubMed link “titles with your search terms” was searched, which yielded 15 articles more specific to the search terms with few duplicate articles from CINAHL retrieved. Using the same search terms, PsycINFO yielded 87 results with no limitations. Then when limited to scholarly journals and to include ALL search terms and this search strategy yielded 59 results. Using the search terms “weight loss” and “motivational interviewing”, the Cochrane Library yielded 43 trials and one systematic review/ meta-analysis, which was the one landmark study that addressed all five elements of the PICOT. In Academic Premier, the same search terms were used and limited to academic journals, which yielded 151 articles and multiple duplicates from CINAHL and PsycINFO retrieved. In Google Scholar the search terms used were “middle-aged women” AND “weight loss” AND “motivational interviewing” and yielded 18,300 articles. In

Dissertations & Theses Global the same search terms were used and limited to “doctoral dissertations” and yielded 8224 results.

Grey Literature

The reference list of the quality articles found in the database search was utilized to identify other possible useful articles. The meta-analysis/ systemic reviews were the most helpful in this process, followed by the randomized control trials. A few of the case studies, while not original research in themselves, cited research articles that were relevant with high levels of evidence. The September 2014, semi-annual conference of American Society of Bariatric Physicians (ASBP), presenters’ lectures notes and reference lists were reviewed and few relevant studies noted. Reference materials from a motivational interviewing workshop were reviewed.

Final Yields

The 10 final studies included are six randomized control trials, two systematic reviews, one controlled cohort study, and one qualitative study (Appendix A). The studies are all published between January 2010-March 2015, English language and supported at least two elements of the PICOT question.

Critical Appraisal and Synthesis

The chosen studies were of high quality and provided good evidence overall. The two systemic reviews are level I evidence, six randomized control trials are level II, one controlled cohort study is level III and the one qualitative is level IIII (Melnyk & Fineout-Overholt, 2015). The theoretical framework of the studies included self-determination theory, transtheoretical model, social cognitive theory, and cognitive behavioral theory (Appendix B). The studies results had high validity, reliability, and limited bias overall. The landmark meta-

analysis/systemic review was limited to 11 studies, but review process was highly rigorous and only included the highest quality randomized control trials. The other systemic review included a large number of studies that used motivational interviewing as the primary intervention but they were not specific to weight loss. A few of the studies lacked allocation concealment and/or blinding, which may have introduced bias. Due to nature of MI being a behavioral counseling approach, blinding is challenging and is not possible for those delivering the intervention to be blinded. The qualitative study had only one person delivering the intervention, which increases likelihood of bias.

There were many MI weight loss interventions used in the studies, which caused a significant amount of methodological heterogeneity. The MI delivery, duration, and methods used varied widely in the studies. There was heterogeneity in the independent and dependent variables (Appendix A). Behavioral interventions including MI interventions were compared to standard weight loss programs either alone or adjunct to these programs. In the 10 final studies, homogeneity in sample participants was intentional to adequately address the PICOT.

Anthropometric measurements and a variety of behavioral scales were used including Weight Loss Stages of Change, Weight Management Efficacy Questionnaire, and Self Regulation Questionnaires (Appendix A). Findings were analyzed using multiple regression models, t-tests, and intention-to-treat analysis among other statistical methods. Data was reported noting confidence intervals, standard deviations, level of significance, mean values, and effect size (Appendix A).

Corroboration of External and Internal Evidence

The bariatric clinics discussed above currently do not use behavioral counseling methods such as Motivational Interviewing (MI) in any of their standard medical weight loss

programs. The medical providers, who are primarily family nurse practitioners (NPs), are not trained on MI counseling interventions are unlikely to currently use these techniques in practice. The literature supports the use of behavioral modification methods, in particular MI, as adjunct to medical weight loss programs as being the best evidence based practice (EBP) for effective obesity management in middle-aged women.

A second literature search was conducted to explore MI training for health care providers and several effective training methods were identified including workshops, video-feedback training, and web-based delivery options (Mitchell et al., 2011; Nesbitt, Murray & Mensink; Noordman, Weijden, & Dulmen, 2014; Sullivan et al., 2015; & Welch, 2014). The literature supports the use of online training methods for improving MI knowledge and skills in health care providers (Mitchell et al., 2011; Welch, 2014). Synthesis of the literature shows that an online MI training is a beneficial and viable option for health care providers because this delivery method is well accepted, flexible, and effective for the adult learner (Mitchell et al., 2011; Welch, 2014). Due to time constraints, varied staffing patterns, wide demographic spread of the bariatric clinics, an online MI training module would be the most effective method for teaching the NP provider at this group of clinics.

Conclusions

The evidence demonstrates that obesity in middle-aged women is a complex issue that affects women worldwide. The research reviewed supports behavioral weight loss interventions, including MI techniques, are an effective approach for weight loss and weight loss maintenance in this population. MI is especially useful because it incorporates multiple theoretical based behavioral strategies that could support a clinician's ability to provide optimal obesity

management. The evidence supports incorporating MI techniques into standard weight loss programs as an highly effective weight loss method for middle-aged women.

Purpose of Project

The purpose of this project is to create an online education module for NPs on MI basic principles and techniques for the use in obesity management. The intended outcome of the project is that the NPs' will demonstrate increased knowledge on MI principles and core skills after completing the online training. Another intended outcome is that the NPs' providers will recognize the value of MI counseling methods and will be facilitate the NPs to use MI techniques in practice with patients.

Study Questions

Questions guiding this inquiry include:

- Is an online MI training module an effective and preferable method for educating NPs working in bariatric medicine?
- Do NPs demonstrate an increased knowledge in MI techniques after a basic online MI training module?
- Do nurse practitioners working in bariatric medicine value learning MI as relevant to their practice?
- After the online training, will NPs be interested in having further MI training and implementing MI techniques into practice?

Evidence Based Practice Model

The Model for Evidence-Based Practice Change has been chosen to guide application of the synthesized data (Melnyk & Fineout-Overholt, 2015) This revised version of the Rosswurm and Larrabee's model (1999) provides a six-step framework to help guide health care practitioners through the process of developing and implementing evidence based changes into actual practice (Appendix C).

In Step 1, a need for change in practice was assessed by a thorough review of internal evidence. Stakeholders including the clinicians, administrators, and patients were interviewed and the issue of obesity management in middle-aged women was identified. In Step 2, the best evidence addressing this problem and possible interventions were located by conducting an exhaustive literature search. In Step 3, the evidence has been critically analyzed and synthesized and supports MI techniques as adjunct to current weight loss programs for middle-aged obese women. The risks, benefits, and feasibility of the practice change have been considered and have led to Step 4. In order for the practice change to occur the medical providers will need to be instructed on MI techniques. Therefore, Step 4 consists of training the medical providers on MI principles, techniques and benefits of practice change. An online MI training module has been developed as the project intervention using Soft Chalk software. The course objectives and course content were developed using best practice determined. MI training books, and online training resources and videos. A content expert was consulted to review the MI module for content validity. Step 5 includes the implementation of the online module with the NP participants and overall evaluation of the project. The results were analyzed using SPSS 23 software and conclusions were based on outcome objectives. Finally in Step 6,

recommendations for continue the use of MI educational module and for integrating MI techniques into the current medical weight loss programs are discussed.

Diffusion of Innovation Theory

Rogers' Diffusion of Innovation Theory (2003) has been chosen to guide the project plan. This theory was chosen because it provides a solid foundation for how new innovations are developed and implemented throughout a social system (Rogers, 2003; Welch, 2014). There are four main elements that influence the spread of innovation which include: the innovation itself, channels of communication, time, and the social system (Rogers, 2003). New innovations are diffused through the social system in a 5-step process (Appendix D). Knowledge acquisition occurs when an individual lacks information on innovation and is exposed to the new concept for the first time. The next step of persuasion occurs when the individual becomes interested in the innovation and actively seeks further information. The third step of decision occurs when individual weighs the advantages and disadvantages of using the innovation and decides whether to adopt or reject it (Rogers, 2003). If the individual decides to accept the innovation then the next step is implementation. When the innovation is implemented into practice the individual will determine the usefulness of the new intervention. Confirmation is the final stage and is when the individual finalizes his/her decision to continue using the innovation in practice (Rogers, 2003).

Rogers' Diffusion of Innovation Theory (2003) provided the theoretical underpinnings for the planning and implementation of the educational intervention. In the first step, knowledge acquisition occurred in the recruitment process when NPs were introduced to the project and the idea of using MI techniques in practice. The NPs did lack knowledge about MI techniques and liked the idea of learning new evidence-based strategies. The next step of persuasion occurred

when the NPs were given detailed project information and informed consent reviewing the potential benefits associated with project participation. The next step of decision has two possible pathways. The NPs will reflect on the benefits and possible negatives associated with using MI techniques and make an educated decision as to make the practice change or not. The goal is that the NPs will chose the pathway of acceptance and then proceed to the next step of implementing the MI techniques into practice. The project did overall receive positive feedback from the NP participants, however whether they accept these techniques into making a practice change will require further follow up, and likely additional training. The final step of this process is confirmation and occurs when NP participants deem this project as valuable and change patient encounters to include MI techniques learned from the module. Confirmation from the company's corporate team would also be needed in order for this project to be sustained at the current practice site.

Project Methods

Ethics: Protection of Human Subjects and Recruitment

Ethics approval was obtained through Institutional Review Board Office of Research and Integrity Assurance at Arizona State University (IRB protocol HRP-503A) on 8/14/2015 (Appendix E). An email was sent to the medical director, chief executive officer (CEO) and chief operating officer (COO) of the company that explain the project's purpose and potential benefits. Site approval for the interventions and measurement of outcomes was obtained from the CEO. The CEO also agreed to reimburse the NP who chose to participant for one hour of their hourly wage. The recruitment email was sent 13 NPs who were employed at the bariatric clinics explaining the project and advising them that further information would be mailed to their primary clinic site. Packets that included study project detailed information, consents, pre-test

and demographic surveys were mailed via United States Postal Service. There were a few packets that were later emailed using a secure email address to participants who had not received or lost the packets initially mailed to them through the postal service. Individual questions from participants were answered by email.

Setting

The project setting included a group of private, fee-for-service, outpatient medical weight loss clinics in the southwestern United States. There are eight clinics in total, which are owned and operated by board certified Bariatrician. The clinics provide non-surgical medical weight loss programs including prescription medications, nutritional supplements, dietary education, and guidance and customized weight loss plans. The clinics also provide medical spa and aesthetic services. Each clinic is staffed with front office clerks, medical assistants, aestheticians, manager and one or two nurse practitioners. The clinics do not contract with insurance companies and is based on a fee for service model. They accept cash, credit cards and care credit as forms of payments for services. The clinics see both male and female patients from adolescents to geriatric and varied ethnic groups. The primary patient demographic is women, obese (BMI \geq 30), ages 35-60, upper middle class, and Caucasian.

Organizational Culture

The mission of the organization is to help patients to safely lose weight using non-surgical medical interventions and provide a warm and supportive environment. The company's vision is that the patients will have an outstanding experience and get great results, which will make them want to refer friends and family to the practice. The company's written values include respect and kindness to patients, providing non-surgical medical options for weight loss and providing a luxurious spa-like setting. The culture of the company is direct pay, for-profit

business model. There is large cooperate team that includes marketing, sales, recruiting, accounting, and general management. There is no medical leadership team and owner oversees as medical director.

Participants

The inclusion criterion for the project was NPs employed at one of the organizations medical weight loss clinics. At the time of participant recruitment there were a total of 13 NPs employed in this bariatric practice. Ten out of the 13 eligible NPs participated in this study. All the participants were female and master-prepared NPs providers. The majority were married, Caucasian and of a healthy body weight. Detailed demographic data was collected, analyzed and will be discussed further in the results section.

Intervention

An online educational module was developed using SoftChalk software. A psychotherapist who is a certified MI trainer and has expertise in obesity management was consulted and reviewed the module to ensure accuracy and credibility of the content. The educational module covers basic MI concepts with the focus of using these techniques with middle-aged women. The module provides written material, illustrations, videos, case studies, interactive quizzes, handouts, and links to additional resources and is approximately 45 minutes in duration.

A recruitment email was sent to the NP employees that provided a brief explanation of the project and informed them that they would receive study packets in the postal mail at their primary clinic locations. Packets contained a consent form, demographic questionnaire, pre-module assessment, and a stamped returned envelope. Once the forms were returned, each NP was emailed a link to the module and asked to complete the module within in 14 days. After two

weeks the NPs were contacted via email asking if they had completed the module. If yes, then the NPs were mailed a course evaluation, post module assessment, and a return stamped envelope. If no, they were reminded to complete the module and send notification of completion via email once completed. Reminder emails were sent out every two weeks to participants who had not yet completed the module throughout the implementation phase. ASU's IRB was consulted during the implementation phase and approved the ability for forms to be scanned and emailed to participants who had lost forms or who preferred be emailed to them. Participants were assigned an ID number that put on each of their documents as for secure identification purposes. Only the company's secured email addresses were used, completed pre/post tests were placed in a locked file drawer and data was stored on password-protected computer. The data was coded using participant ID numbers and the names and the data were stored separately to protect anonymity.

Outcome Measurements

The project's main outcome measured was increased knowledge on MI counseling techniques by the participants after completion of the online training module. The outcome variable of knowledge was assessed using Spollen et al., (2010) Knowledge of Behavior Change Counseling Scale (Appendix F). This scale was used throughout the literature to study knowledge in health care providers' pre and post MI training interventions. It is a six-item multiple-choice test with moderate high reliability: pre-test (Kuder Richardson 21 Formula, KR-21.0.73) and post-test:(KR-21.0.45) (Spollen et al., 2010). Demographic data including age, ethnicity, gender, BMI, NP specialty, and number of years experience were assessed with a questionnaire created for this project (Appendix G). Overall course effectiveness and perceived

value of online MI training module was measured using an 8-item Likert scale course evaluation for that was developed for this project (Appendix H).

Data Collection and Analysis Plan

Data collection began with demographic questionnaire and Spollen et al., (2010) MI knowledge pre module assessment. Data collection continued after the NPs completed module and included the Knowledge posttest course evaluation form. The data was analyzed using IBM SPSS version 23 statistics software. An expert faculty statistician was consulted. Data validation was completed during the data entry phase. Descriptive statistics were used to analyze the demographic data, frequencies were obtained, and bar graphs were created. The course evaluation forms were scored numerically and total scores were calculated with 30/30 being the highest possible score and equaling a positive evaluation. Descriptive statistics including frequencies, total score evaluation, mean, median and standard deviation were used to analyze outcome variables of course evaluation data. Nonparametric inferential and descriptive statistics were used to analyze the knowledge pre/post-tests. The pre/post-tests were scored based on total percentage correct and then frequencies and the Wilcoxon test was used to analyze the data to compare means for statistical significance between pre/post-test scores.

Proposed Budget

Costs associated with implementation of this project include Soft Chalk Software (\$150.00), Motivational Interviewing textbooks (\$100.00), printing fees (\$15.00) and posting fees (\$40.00) (Appendix I). This module was completed after work hours so it did not impact patient flow, NP productivity, or the clinics' revenue. The NPs have the option to be compensated for their participation up to one hour of their normal hourly wage from funds that have already been allocated for NP provider continuing education credits. NP hourly wages vary

among individual NP provider and per company policy are not disclosed and not to be discussed amongst one another. The printing fees for the forms were minimal and done at one of the local clinics. There has been approximately \$40 in postal expenses associated with mailing the forms and stamped return envelopes before and after the training module. Using secured emails for sending forms and as the primary method of communication limited costs.

Project Results

A total of 10 out of the 13 NPs that met inclusion criterion participated in the project (n=10). Demographic data showed all 10 participants were female and were master-prepared (Appendix J). Nine of the participants were family NPs and one was an Adult NP. Experience as an NP experience ranged from one with <1 year, five with 1-5 years, one 6-10 years, and three with 11-20 years. The predominate ethnicity reported was Caucasian (9) with one Hispanic, eight were 30-49 years old, two were 50-64 years old, and eight were of a healthy BMI, and two had BMIs above 30. MI prior knowledge was minimal in nine of the participants and moderate in one. All 10 participants completed the course evaluation form (Appendix K). The highest possible score was 30 meaning that the participants “strongly agreed” to all six questions. The average evaluation score was 28.8 (SD=2.49) and the scores ranged from 22 to 30. A Wilcoxon test examined the results of the pre/post Knowledge scale scores and no significant difference was found in the results ($z=-1.784$, $p=0.074$). Descriptive analysis of the pre/post knowledge scores showed the average pre-test score of 61.8 (SD=13.82) and an average post-test score of 75.0 (SD=13.99). Although there was not a statistically significant improvement in post-test scores, there is a clinical significance because average post-test score was higher (Appendix L).

Discussion

Overall, this project was successful because it fulfilled the purpose of teaching basic MI concepts to a group of NPs that provide obesity management to middle-aged women. Ten out of 13 NPs providers completed the online MI educational module. The total scores of course evaluation were favorable with a median score 30, which suggests that participants perceived this project to be beneficial. While there was no statistically significant increase in knowledge scores, the average post-test knowledge score was 13.2% higher than the pre-test knowledge score suggesting that the NPs' knowledge did improve after completion of the MI module.

Strengths and Limitations

A main strength of this project is the online delivery method of the module because it was easily accessible and could be done at the participant's convenience. This likely increased the number of participants since the providers live throughout Arizona and driving to one location for 45 minute training would have not been feasible for many of them. The corporate team also approved the project because the flexibility of the online module allowed for it to be completed after normal clinic hours. The educational module was proposed and developed as part of a DNP project and required no additional resources from the project site. The Soft Chalk software used to create the online module worked effectively and consulting the MI expert trainer to ensure validity on the project was valuable. Another strength was that the inclusion criterion was limited to a select, small group NPs employed at a specific medical weight loss company, which allowed for examination on how this select population would benefit from the project. However, the participants represented a small, homogenous sample was also a limitation in the project because based on these results it is difficult to determine how effective this project would be with a large group more diverse group of NPs. The small sample size also impacted the statistical

significance of the pre/post knowledge scores. Another initial limitation of the project was the mailing of the recruitment packets, which included the consent, demographic data, and pre-test. These packets were mailed to the participants' clinics, however several of the providers misplaced the packets, never received the packets, or mailed the forms back incomplete. After multiple reminder emails and mailing forms out again, the requests was made from the participants to email the forms. IRB approval was obtained for this method mid-implementation phase and it worked well. The project forms were then emailed to a secure work email and the participants scanned and email forms back to the author.

Results Supported by Literature

The results of this project are consistent with the literature, which supports online methods as being effective for basic MI training for healthcare providers. The NP providers agreed with the evidence in the literature and felt that learning MI techniques was valuable and would benefit patient care. Although the corporate stakeholders did not see an immediate value as a result of the project, they did review the evidence presented and acknowledged the need for additional behavioral weight loss interventions. The project used educational methods supported by the literature including written material, case studies, videos, illustrations, and handouts, which appeared to be effective in this module. The literature does discuss that MI proficiency is a process that develops over time with advance training and experience. This basic online module did not train these NPs to be fully proficient in MI techniques as supported by the literature but it was a good starting point from which these skills can further develop. The total impact that this project will have on use of motivational interviewing counseling techniques during clinics visits and as a result, improved patient outcomes will take additional time, training and more patient encounters to be apparent.

Conclusion

This project was developed using The Model for Evidence Based Practice Change and the Diffusion of Innovation Theory. The setting was a group of private medical weight loss clinics with a high profit, sales, and marketing organizational culture. NP providers employed at these clinics participated in an evidence-based DNP project on the subject of motivational interviewing for weight loss. The project's intervention was an online educational module that provided content on MI basic principles and skills. The focus was on how to apply MI techniques to a medical weight loss program for obese middle-aged women. The main purpose of this project was to increase the NP participant's knowledge about motivational interviewing. Another project aim was to examine the overall effectiveness of an online module for teaching basic MI techniques. The results of the pre/post MI knowledge test score show no statistical significant increases in knowledge. However, descriptive statistical results show an increase in post-test knowledge scores suggesting clinical significance. The course evaluation scores were high was indicating a good course review and informal feedback from participants was overwhelming positive.

Project Impact

The impact of this project at the practice site will be discussed and cost/benefit analysis will be presented. The impact of current health policy including the Affordable Care Act (ACA) on sustaining this project in the future will be examined. The leader and innovator roles that guided in the successful development and implementation of this project will be discussed as well as barriers that had to be negotiated. The sustainability plan will be presented. Further implications for application of this project will be reviewed and the gaps identified during this project will be discussed as well.

Project Impact at Practice Site

This project did have both direct and indirect positive impacts at the practice site. The project provided education specifically for the NPs employed at medical weight loss clinics on basic MI techniques to help manage obesity in middle-aged women. Positive course evaluations and the personal feedback from participants suggests that many of these NPs will incorporate basic MI counseling skills learned in the module into their daily patient encounters. Although this project will not directly change the protocol at the practice site, it has potential made a positive impact by increasing the knowledge on MI counseling strategies and communication skills to the NP providers employed there. This project did not directly impact the administrative team based on the feedback received and there is low likelihood that they will adopt this training and protocol into practice. The medical director and corporate team prefer to have the NP providers focus on the company's current medical weight loss program and do not feel that it is necessary to incorporate MI techniques into those visits. The implementation of this project did indirectly impact this practice site because it brought awareness to the corporate stakeholders that there is a need for behavioral weight loss interventions. The company has

chosen to address this need by hiring a psychotherapist who specializes in obesity to join the practice. At present this psychotherapist is not seeing patients but is writing a motivational blog on the company's website and providing handouts for the NP providers to give to patients.

Cost/Benefits Analysis

The total cost of this project was approximately \$305. The module was completed after work by the NPs and did not affect provider productivity, patient flow, or the clinics' revenue. Although the NPs had the option of using up to one of their continuing medical education compensation, many did not ask for that reimbursement. The basic MI techniques taught in module provided the NP participants with evidence based counseling strategies to use in patient encounters to enhance the patient's own motivation to lose weight. When patients are self-motivated to engage in weight loss it more likely to have improved patient outcomes, increased patient satisfaction, adherence, and retention to the clinics' weight loss programs.

Current Health Policy

The practice site in which this project took place is a group of fee-for-service, cash only private weight loss clinics that do not contract with any private or public insurance companies for reimbursement. Since these clinics do not accept insurance, current obesity-related health policies do not directly impact the practice and would likely have minimal impact on the implementation of this project. However, current health policy in the United States could help to sustain or further develop this project in at another practice setting including both private and public sectors. In the past few decades, the obesity rates have more than doubled in United States, causing a significant health and economic burden (Sebelius, 2010). This has created the need for obesity-related health policy reform and has gained the attention of both federal and state legislators who are now more actively supporting obesity related programs and policies

(Yang and Nichols, 2011). Private sectors are also impacted by the rising cost of medical expenditures related to obesity, which has subsequently, transferred to employers and employees through higher premiums, copayments and deductibles for medical services (Yang & Nichols, 2011). Since MI is evidence-based and effective for obesity management, it is probable that this project could be sustained, expanded upon, and funded through both private and public entities.

There have been specific health policy reforms that have made great advancements in obesity management and could further support this project and MI weight loss interventions in the future. In 2011, The Centers for Medicare & Medicaid Services (CMS) recognized the need for obesity management in Medicare beneficiaries and made the decision to cover obesity intensive behavior therapy (IBT) in the primary care setting (Centers for Medicare & Medicaid Services [CMS], 2012). Although at present, this policy does have multiple limitations, it does have the potential to be amended to support reimbursement for MI based interventions in the future (Obesity Action Collation [OAC], 2013). The Affordable Care Act (ACA) contains provisions that may be useful in improving obesity management in the United States (Yang & Nichols, 2011). The ACA has mandated that health plans must cover health services that are divided into to comprehensive categories known as the Essential Health Benefits (EHB) package (Healthcare.gov, 2014). However, the EHB package does not specifically cover obesity services and many states have chosen plans that exclude obesity treatments (Gallagher, 2013). Arizona has chosen to have a state-administrated health Marketplace with an EHB package that covers bariatric surgery but not weight-loss program Obesity Society, 2013). This may create a barrier to implementation of this project at state level but also may provide opportunities for this project to modified and used in collaboration with bariatric surgery.

Leader and Innovator Role

Having a well-defined leader and innovator roles was necessary for the successful development and implementation of this project. The personal leadership philosophy that this project based on is that DNP leader has that clear vision, guides others to accomplish shared goals, recognizes individual talents and contributions and inspires other to reach their full potential (Helmrich, 2015). During the development and implementation phase of this project it was important to have NP participant feedback to ensure that this project had clear purpose, met shared goals, and could build off the talents of the individual participants. DNP leader characteristics that helped shape this project's success were competency, honesty, assertiveness and desire to achieve and advance (Porter-O'Grady & Malloch, 2015). Innovation is truly about creating new ideas and implementing these ideas into action with energy, imagination, hard work, and perseverance (Kelley, 2005). The Anthropologist role (Kelley, 2005) was used as the main innovator role to help guided the development and implementation of this project. The Anthropologist is a learning role in which individuals seek out new sources of information to gain knowledge and grow (Kelley, 2005). This concept lead to the development of an online module that allows providers to seek and learn new information and counseling skills to use in practice to promote obesity management.

Barriers

Having a well-defined leader and innovator role helped to negotiate the barriers that were encounter during this project. One main barrier to the project was related to the organizational culture at the project site. The company has a large cooperate team that puts the primary focus on marketing and sales of the current highly profitable weight loss programs. The medical leadership style is authoritative with no medical leadership team and no shared decision-making.

The implementation on this project created a personal awareness of this organizational culture, which resulted in some tension and uneasiness. Having a developed a strong leader and innovator role helped to overcome the obstacle of an organizational culture that was in dissonance with the goals of this project goals. Being a good role model as a DNP leader and innovator also helped overcome most of the NPs reluctance to participate in the project.

Sustainability Plan

The project overall had positive outcomes and could be sustained if the company's culture supported further MI training for the NPs providers. The educational module is already created and with minimal revisions could be implemented as part of the new hire orientation without any additional costs. However, basic MI training is not enough to sustain the use of these techniques in practice. The NPs would require further training, likely at certified MI training workshops to become fully proficient. MI techniques would also need to be adopted into the current medical programs, which would require a standardized MI intervention protocol that all the providers use. At present, this group of bariatric clinics is extremely successful with high profits and has expressed no interest in changing their medical weight loss programs to include MI interventions. The positive feedback received by the NP participants does suggest that this project would be positively received by NPs in variety of settings that provide obesity management for women. This project may have increased likelihood of sustainability if conducted at project site that focuses on EBP and has nurses in leadership positions.

Implications for Further Application

There are multiple implications for further application of this project. One would be further revising and modifying this module based on feedback from the NP participants. It would be useful do a follow-up with participants to see what if any techniques taught in the

module have useful in actual patient encounters and what would they like further education on. Future work on this project may include revising the MI module to meet criteria for continuing education units (CEUs). If this project was made eligible for CEUs it could be used for educational purposes with a larger, more diverse group of NP and NP students. This project would do well if implemented in another setting since the content of the MI educational module is applicable to any NP or graduate nursing student that discusses obesity management with middle-aged female patients. If this project were implemented in another setting, it would be advisable to use this module for only for education on basic MI techniques for obesity management. It would be recommended, to conduct an in-person training as well that would allow for learners to practice MI techniques in a role-playing activities and games. Implications for further clinic practice would to expand on basic MI education taught in this module and create a MI based intervention that could be used in combination with the current medical weight loss program.

Gaps in the Literature

There were few gaps identified during this project. There is a need for an updated more comprehensive knowledge assessment tool to assess basic MI knowledge in healthcare providers. In the literature, there was also a lack of a standardized MI intervention used to for obesity management. The MI interventions used for weight loss varied in length, duration, intensity, technique and proficiency of the interviewer. Future studies may focus on developing a standardized MI intervention that can be used specifically for obesity management to in combination with medical weight loss treatments. There was a lack of evidence in the literature regarding MI education for NPs that work in medical weight loss.

Conclusion

The purpose of this project was to study the effectiveness of using an online educational module to increase NPs' knowledge on basic MI techniques for use in obesity management with the specific focus on the middle-aged female population. This population has specific physiological and psychosocial factors that create barriers to successful weight loss and/or weight loss maintenance. The literature supports MI counseling strategies in combination with standard medical weight loss programs as being optimal for obesity management in middle-aged women. NP providers employed at medical weight loss clinics had not received training on MI counseling techniques and therefore were not using this approach with patients. An online module was developed for this project to educate the NP providers on basic MI techniques in order to increase knowledge and facilitate their use of this counseling approach in patient office visits.

Ten out of the 13 NPs eligible participated. A pre/post-test was used to assess MI knowledge and a course evaluation form was used to assess for overall course effectiveness. There was no statistical significance noted in the pre/post test knowledge tests likely due to the small sample size. There was clinical significance because average post-test scores had increased and the overall course feedback on the evaluation forms was positive. This project did offer insight on the benefits of educating NPs on MI techniques and suggests that basic MI education is beneficial. Further programs that provide basic to advanced MI education specifically for NPs providing obesity management may be useful. The project provides a good foundation from which further MI interventions and educational modules can be built upon. Future research is needed to develop a standardized MI weight loss intervention that can be used in combination with medical management of obesity.

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Appendix A
Evaluation Table

Citation	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Level/Quality of Evidence; Decision for practice/ application to practice
<p>Armstrong, M. (2011) Motivational interviewing to improve weight loss in overweight and/or obese patients: a systematic review and meta-analysis of randomized controlled trials.</p> <p>FA: Canadian Health Outcomes in Research in Diabetes</p> <p>C/B: None</p>	TTM	<p>Design: SR/MA</p> <p>Method: Multiple databases were systematically reviewed and a MA was done of RCTs that evaluated multiple MWLI in overweight and/or obese adults</p> <p>Purpose: To systematically review RCTs that studied the effectiveness of MI for weight loss in</p>	<p>N= 3048 studies yielded from search N=101 potential N=11 eligible studies included for MA</p> <p>D: Women with DM2, AA women, adults w htn or hld, firefighters, inactive adults</p> <p>IC: MI as primary intervention, adults with BMI>=25,</p> <p>EC: Age <18, MI used in</p>	<p>IV1: MWLI IV2: SWLP DV: BW, BMI</p>	<p>Cohen’s kappa statistic (k)</p> <p>Validated MI treatment coding scale</p> <p>Validated 5 point scale</p>	<p>Stata, version 11.0</p> <p>SMD of body mass or BMI from baseline to end of follow up</p> <p>Forest plots and calculated Q and I2 statistics</p> <p>DerSimonian and Laird random effects model used if</p>	<p>MI greater reduction in body mass compared to control (SMD=-0.51 [95% CI -1.04, 0.01]).</p> <p>Significant reduction in body weight in intervention group compared to control group (WMD=-1.47kg [95% CI-2.05, -0;88]).</p> <p>BMI outcome WMD was -0.25 kgm-2 (95% CI -0.50, 0.01).</p>	<p>Level 1</p> <p>Strengths: Only MA/SR to review effectiveness of MI for WL</p> <p>WE: Heterogeneity of dose, delivery and duration of MWLI. Half of the studies lack blinding and/or allocation concealment. Less than 50 participants in treatment group in 6 studies Only 11 studies included in this MA</p> <p>CO: Studies support effectiveness of MI for WL. Probably more</p>

AA-African American; BMI-body mass index; BP- blood pressure; BW- body weight (kg); BWLI- behavioral weight loss interventions; C/B-conflict/bias; CBT- cognitive behavioral theory; CBTI- cognitive behavior therapy intervention; CI- confidence interval; CO- conclusions; CS- clinical significance; D-demographics; DV- dependent variable; DV2- dependent variable 2; EC- exclusion criteria; FA-Funding Agency; IC- inclusion criteria; IV-independent variable; IV2- independent variable 2; IV3-independent variable 3; MA- meta-analysis; MFMP- motivation-focused weight maintenance program; MI-motivational interviewing; MWLI-motivational interviewing weight loss intervention; N- sample size; NIH-National Institute of Health; RCT- randomized controlled trial; SBMP- skill-based maintenance program; SDI- self-directed intervention; SDT-self-determination theory; SCT-social cognitive theory; SD- standard deviation; SMD: standardized mean difference; SR- systemic review; SWLP-standard weight loss program; TTM-Transtheoretical model; WE- weaknesses; WL-weight loss; WLM- weight loss maintenance; WMD- weighted mean difference.

Country: Canada		overweight/obese adults	combination with other interventions Setting: Outpatient			heterogeneity noted WMD, funnel plots, univariate meta-regression		effective if MI is used with BWLP. Additional research and standardize MWLI needed. Unclear if men and ethnic minorities would benefit CS: MIWI shows significant benefit alongside BWLI in women.
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AA-African American; BMI-body mass index; BP- blood pressure; BW- body weight (kg); BWLI- behavioral weight loss interventions; C/B-conflict/bias; CBT- cognitive behavioral theory; CBTI- cognitive behavior therapy intervention; CI- confidence interval; CO- conclusions; CS- clinical significance; D-demographics; DV- dependent variable; DV2- dependent variable 2; EC- exclusion criteria; FA-Funding Agency; IC- inclusion criteria; IV-independent variable; IV2- independent variable 2; IV3-independent variable 3; MA- meta-analysis; MFMP- motivation-focused weight maintenance program; MI-motivational interviewing; MWLI-motivational interviewing weight loss intervention; N- sample size; NIH-National Institute of Health; RCT- randomized controlled trial; SBMP- skill-based maintenance program; SDI- self-directed intervention; SDT-self-determination theory; SCT-social cognitive theory; SD- standard deviation; SMD- standardized mean difference; SR- systemic review; SWLP-standard weight loss program; TTM-Transtheoretical model; WE- weaknesses; WL-weight loss; WLM- weight loss maintenance; WMD- weighted mean difference.

Citation	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Level/Quality of Evidence; Decision for practice/ application to practice
<p>Kiernan, M. (2011). Social support for healthy behaviors: scale psychometrics and predication of weight loss among women in a behavioral program.</p> <p>FA: Public Health Service Grant from NIH</p> <p>C/B: None</p> <p>Country: USA</p>	SDT	<p>Design: RCT</p> <p>Methods: Online questionnaires given to participants in a randomized BWLI at baseline, 6, 12, and 18 months</p> <p>Purpose: To evaluate perceived social support and sabotage effect on WL in obese women</p>	<p>N= 267</p> <p>D=women, ages 21-75 (mean 48.4+-10.8), 67% college degree, 67% white, 69% married or living w someone, healthy, BMI ≥ 27 (mean 32.1+-3.5).</p> <p>IC: age 21 or older, free of chronic conditions, free of binge eating disorders, access to Internet</p> <p>Setting: Outpatient</p>	<p>IV1: Support from friends but infrequent family support</p> <p>IV2: Frequent support from friends and family</p> <p>IV3: Infrequent friend support</p> <p>DV: BW</p>	<p>Anthropometric measurements</p> <p>Ball and Crawford 36-item scale</p> <p>4-point Likert scale</p>	<p>Cronbach's alpha</p> <p>Spearman correlations</p>	<p>Support from friends but infrequent family support 45.7% (16) lost ≥5% of initial weight at 6 months</p> <p>Frequent friend and family support 71.6% (73) lost ≥5% of initial weight at 6 months</p> <p>Infrequent friend support 80% (104) lost ≥5% initial weight at 6 months</p>	<p>Level 2</p> <p>Strengths: Excellent Psychometric scales used for support subscales</p> <p>WE: Sample limited to middle-aged women in BWLI. Ethnic variations small. Perceptions of support were self-reported.</p> <p>CO: Study provides innovative and useful toward the social context of weight loss. Future studies could focus breadth of social support, autonomous motivation on the social aspects of weight loss</p>

AA-African American; BMI-body mass index; BP- blood pressure; BW- body weight (kg); BWLI- behavioral weight loss interventions; C/B-conflict/bias; CBT- cognitive behavioral theory; CBTI- cognitive behavior therapy intervention; CI- confidence interval; CO- conclusions; CS- clinical significance; D-demographics; DV- dependent variable; DV2- dependent variable 2; EC- exclusion criteria; FA-Funding Agency; IC- inclusion criteria; IV-independent variable; IV2- independent variable 2; IV3-independent variable 3; MA- meta-analysis; MFMP- motivation-focused weight maintenance program; MI-motivational interviewing; MWLI-motivational interviewing weight loss intervention; N- sample size; NIH-National Institute of Health; RCT- randomized controlled trial; SBMP- skill-based maintenance program; SDI- self-directed intervention; SDT-self-determination theory; SCT-social cognitive theory; SD- standard deviation; SMD- standardized mean difference; SR- systemic review; SWLP-standard weight loss program; TTM-Transtheoretical model; WE- weaknesses; WL-weight loss; WLM- weight loss maintenance; WMD- weighted mean difference.

								CS: Shows that weight loss is uniquely affected by social influences in middle-aged women.
Citation	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Level/Quality of Evidence; Decision for practice/ application to practice
Linde, J. (2011). A randomized controlled trial of behavioral	CBT	Design: RCT Method: Study participants randomly	N= 203 102 BWLI group 101 BWLI combined with CBTI group	IV1: BWLI given by weight loss counselors, 90mins bi-weekly	Symptom checklist-20 (SCL-20)	SAS Version 9.1 Cohen's d statistic	Mean weight (kg) change at 12 months: BWLI group:	Level 2 Strengths: attendance did not differ among groups, large sample

AA-African American; BMI-body mass index; BP- blood pressure; BW- body weight (kg); BWLI- behavioral weight loss interventions; C/B-conflict/bias; CBT- cognitive behavioral theory; CBTI- cognitive behavior therapy intervention; CI- confidence interval; CO- conclusions; CS- clinical significance; D-demographics; DV- dependent variable; DV2- dependent variable 2; EC- exclusion criteria; FA-Funding Agency; IC- inclusion criteria; IV-independent variable; IV2- independent variable 2; IV3-independent variable 3; MA- meta-analysis; MFMP- motivation-focused weight maintenance program; MI-motivational interviewing; MWLI-motivational interviewing weight loss intervention; N- sample size; NIH-National Institute of Health; RCT- randomized controlled trial; SBMP- skill-based maintenance program; SDI- self-directed intervention; SDT-self-determination theory; SCT-social cognitive theory; SD- standard deviation; SMD- standardized mean difference; SR- systemic review; SWLP-standard weight loss program; TTM-Transtheoretical model; WE- weaknesses; WL-weight loss; WLM- weight loss maintenance; WMD- weighted mean difference.

<p>weight loss treatment versus combined weight loss/depression treatment among women with comorbid obesity and depression.</p> <p>FA: NIH Grant</p> <p>C/B: None</p> <p>Country: USA</p>		<p>assigned to BWLI or BWLI combined with CBTI</p> <p>Purpose: Examine effects on weight loss and depression in obese clinically depressed women</p>	<p>IV1: women ages 45-65, obese BMI >30, and depression with a PHQ-9 score of >=10</p> <p>Setting: Outpatient</p>	<p>IV2: IV1 combined with CBT for depression, given by psychologist trained in weight loss, 120 min, bi-weekly</p> <p>DV: Depression, BW</p>	<p>BMI</p> <p>Paffenbarger Activity Questionnaire (PAQ)</p>	<p>Chi-square tests for categorical variables</p> <p>t-test for continuous variables</p> <p>General linear regression models</p>	<p>-3.1, SD 8.9 (95% CI -4.8, -1.3), Combined group -2.3, SD 8.9 (95% CI -4.1, -0.6) p=0.55</p> <p>Mean depression symptoms (SCL-20 score) change at 12 months:</p> <p>BWLI group -0.53, SD 0.81 (95% CI -0.68, -0.37)</p> <p>Combined group -0.65, SD 0.80 (95% CI -0.81, -0.50) p=0.25</p>	<p>size, added useful info to understudied population, novel intervention, intensive behavioral program</p> <p>WE: demographic variability of sample, 75% on antidepressant meds, combined group received longer sessions, low participant attendance, only half attended 12 or more of the 25 sessions</p> <p>CO: Obese depressed women experienced weight loss and improved depression scores in both groups</p> <p>CS: BWLI alone is sufficient for weight loss and mood improvement in obese middle-aged women.</p>
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Citation	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Level/Quality of Evidence; Decision for practice/ application to practice
<p>Low, K (2013). Testing the effectiveness of motivational interviewing as a weight reduction strategy for obese cardiac patients: a pilot study.</p> <p>FA: none stated</p> <p>C/B: None</p> <p>Country: USA</p>	TMM	<p>Design: Controlled Cohort Study</p> <p>Methods: Participants assigned to either MWLI or SWLP</p> <p>Purpose: Study the effectiveness of MIWLI in a cardiac clinic compared to the standard nutritional counseling provided</p>	<p>N=56 26 female 30 male</p> <p>MWLI group: 14 females, 24 males SWLP group: 12 females, 6 males</p> <p>D: ages 33-78, obese, adult cardiac patients</p> <p>Setting: cardiac outpatient clinic</p>	<p>IV1: Gender IV2: MWLI IV3: SWLP</p> <p>DV: BW, BMI, BP, Lipid panel, glucose</p>	<p>Anthropometric measurements</p> <p>Weight Loss Stages of Change Scale</p> <p>Impact of Weight on Quality of Life Questionnaire-Lite version (IWQOL-Lite)</p>	<p>Intention-to-treat analysis</p> <p>ANOVA</p> <p>Cohen's D</p>	<p>Female MWLI WL =9.1 lbs (SD 2.9) SWLP WL=3.3 lbs (SD 6.5) t(8) =1.9, p=0.05 Cohen's D =2.1 Large effect Male MWLI 3.1 lbs (SD 8.9) Cohen's D 0.34 Small effect SWLP No significant WL</p>	<p>Level 3</p> <p>Strengths: studies gender differences for MWLIs.</p> <p>Undergraduates with little training can do MI delivery. TTM based scales important precursor to WL</p> <p>WE: small sample size, significant attrition both groups.</p> <p>Nonrandomization of participants but no differences in DV between groups.</p> <p>CO: MWLI effective in cardiac obese women for weight loss but not men. Does not require highly trained delivers</p> <p>CS: Supports MWLI</p>

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								for middle-aged older women with co-morbidities
Citation	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Level/Quality of Evidence; Decision for practice/ application to practice
Lundal, B (2010). A meta-analysis of motivational interviewing: twenty-five years of empirical studies. FA: Utah Criminal Justice Center C/B: None reported	TTM, SDT	Design: MA Methods: Screened articles in the bibliography of outcome research complied by Dr. William Miller, board literature search of 11 databases, and a cited reference search was done	N= 119 studies IC: MI intervention was isolated and clearly compared to another intervention EC: MI combined w another intervention and studies in Project MATCH Research Group	IV1: MI intervention with weak comparison group (non-specific control group, waitlist control, written material) IV2: MI intervention with strong comparison groups (specific control group or comparison intervention)	Studies independently coded for reliability by two graduate research assistants 18-point methodological quality scale	Hedge's g ANOVA Goodness of fit statistic Metaanalysis regression analysis	MI intervention with weak comparison group: significant positive effects in the small effect range (average g=0.28) MI intervention with strong comparison group: nonsignificant results (average g= 0.09)	Level 1 Strengths: robust literature review, provided direct comparison of MI intervention to other interventions, inclusion of 119 studies WE: Wide amount of variability of populations, outcomes, MI methods

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<p>B: Two authors affiliated w MINT group Country: USA</p>		<p>Purpose: To study the effectiveness of MI interventions alone compared to controls or other interventions</p>	<p>Setting: Outpatient</p>	<p>DV: Multiple-Improvement in healthy physical behaviors; emotional well-being; decrease substance abuse; BP, lipids, BMI, and BW</p>				<p>CO: MI interventions showed effectiveness for addictive behaviors and general-health promoting behaviors. More research need on exact MI mechanism that is effective CS: MI appears to be a promising intervention for obesity management since it has addictive and health promoting components.</p>
<p>Citation</p>	<p>Conceptual Framework</p>	<p>Design/ Method</p>	<p>Sample/ Setting</p>	<p>Major Variables & Definitions</p>	<p>Measurement</p>	<p>Data Analysis</p>	<p>Findings</p>	<p>Level/Quality of Evidence; Decision for practice/ application to practice</p>
<p>Newnham-Kanas, C. (2011). Participants' perceived utility of motivational interviewing</p>	<p>TTM, SDT</p>	<p>Design: Qualitative Methods: 18 MWLI given by a Certified Professional Co-Active</p>	<p>N=8 D: women, ages 35-55, obese BMI>=30 Setting: Outpatient</p>	<p>IV1: MWLI DV: Themes/ life factors pre and post</p>	<p>Transcripts from One-on-one interviews pre and post MWLI</p>	<p>Inductive content analysis</p>	<p>Findings Themes Pre-intervention: weight causing a barrier with relationships; no recognition of self;</p>	<p>Level 4 Strengths: single subject multiple base design. Provides insightful data on obese women's thoughts and behaviors</p>

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<p>using co-active life coaching skills on their struggle with obesity.</p> <p>FA: None stated</p> <p>C/B: None</p> <p>Country: Canada</p>		<p>Coach (CPPC) using MI over 6 months. Pre and post interviews done and focus group six months after last coaching session.</p> <p>Purpose: To study the qualitative experience of obese women enrolled in an MWLI</p>					<p>weight excuses, lack of control, desire to be healthy; and awareness of needed steps to lose weight</p> <p>Post-intervention: Improved self-confidence; increased life coping abilities, allowing to put self first: continued emotional healing; recognize importance of social networks; and starting to step outside of comfort zones</p>	<p>WE: small sample size, only one volunteer coach</p> <p>CO: Recommend larger sample size in the future, adding a SWLP alongside MWLI. The MWLI does appear to be effective method to help support obese women</p> <p>CS: Clinicians and researchers cannot solely focus on BMI and WL for effective obesity management. Need to understand behavioral factors that impeded weight loss</p>
<p>Citation</p>	<p>Conceptual Framework</p>	<p>Design/ Method</p>	<p>Sample/ Setting</p>	<p>Major Variables & Definitions</p>	<p>Measurement</p>	<p>Data Analysis</p>	<p>Findings</p>	<p>Level/Quality of Evidence; Decision for practice/ application to practice</p>

AA-African American; BMI-body mass index; BP- blood pressure; BW- body weight (kg); BWLI- behavioral weight loss interventions; C/B-conflict/bias; CBT- cognitive behavioral theory; CBTI- cognitive behavior therapy intervention; CI- confidence interval; CO- conclusions; CS- clinical significance; D-demographics; DV- dependent variable; DV2- dependent variable 2; EC- exclusion criteria; FA-Funding Agency; IC- inclusion criteria; IV-independent variable; IV2- independent variable 2; IV3-independent variable 3; MA- meta-analysis; MFMP- motivation-focused weight maintenance program; MI-motivational interviewing; MWLI-motivational interviewing weight loss intervention; N- sample size; NIH-National Institute of Health; RCT- randomized controlled trial; SBMP- skill-based maintenance program; SDI- self-directed intervention; SDT-self-determination theory; SCT-social cognitive theory; SD- standard deviation; SMD- standardized mean difference; SR- systemic review; SWLP-standard weight loss program; TTM-Transtheoretical model; WE- weaknesses; WL-weight loss; WLM- weight loss maintenance; WMD- weighted mean difference.

<p>Saffari, M. (2014). Long-term effect of motivational interviewing on dietary intake and weight loss in Iranian obese/overweight women.</p> <p>FA: Qazvin University of Medical Sciences</p> <p>CI: None</p> <p>Country: Iran</p>	<p>SDT, SCT</p>	<p>Design: RCT</p> <p>Method: Women were randomly recruited from 4 health centers and randomly assigned to SWLP or MWLI</p> <p>Purpose: to study the effectiveness of MWLI for long-term changes in body weight, dietary habits and metabolic markers in obese and overweight Iranian women</p>	<p>N=327 SWLP group: 157 MWLI group: 170</p> <p>D: BMI 25-35, Iranian women, mostly married, educated and housewives</p> <p>Setting: Outpatient Urban</p>	<p>IV1: SWLP combined with MWLI</p> <p>IV2: SWLP</p> <p>DV: BW</p>	<p>Food Frequency Questionnaire (FFQ)</p> <p>Anthropometric Assessments</p>	<p>Student t-test</p> <p>Stepwise Linear Regression</p>	<p>Significant increase in daily dietary fiber, whole grain product, fruits and vegetables in MI group (P<0.05)</p> <p>Significant reduction of consumption of meat product, total fat, carb, and total calorie intake in MI group (P<0.05).</p> <p>Significant reduction in BMI and body weight in intervention group compared to control group</p>	<p>Level 2</p> <p>Strengths: attrition rate was low. Adequate number of counseling sessions, similar counseling environments, large study size, no difference in drop outs between groups</p> <p>WE: No consultation of control group, not double-blinded. BMI and body weight only measurements done at one year follow-up</p> <p>CO: Increased compliancy and behavior change seen in MWLI</p> <p>CS: MWLI appear to effective strategy long-term behavior change and WL in women</p>
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Citation	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Level/Quality of Evidence; Decision for practice/ application to practices
Teixeira, P. (2010). Mediators of weight loss and weight loss maintenance in	SDT, CBT	Design: RCT Method: Participants randomly assigned to SWLP or	N=225 D: Women, ages 25-50 (mean 37.6 +-7), BMI 25-40 (mean 31.3 +-4.1),	IV1: SWLP IV2: BWLP DV: BW, BW maintenance,	Anthropometric Assessments Three-factor Eating	Intention-to-treat analysis and multiple mediation used	Treatment effects were observed for all putative mediators (effect size: 0.32-0.79, p<0.01 vs. controls).	Level 2 Strengths: 2 year follow up, identified psychological predictors from direct

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<p>middle-aged women.</p> <p>FA: Portuguese Science and Technology Foundation and the Calousate Gulbenkian Foundation</p> <p>C/B: None</p> <p>Country: Portugal</p>		<p>BWLP based on SDT</p> <p>Purpose: Identify mediators of weight loss maintenance in overweight and obese women enrolled in BWLI</p>	<p>healthy and mostly (67%) college educated</p> <p>Setting: Outpatient</p>	<p>Psychological factors</p>	<p>Questionnaire (TFEQ 22)</p> <p>Weight Management Efficacy Questionnaire</p> <p>Body Image Assessment Questionnaire</p>	<p>SWLP 12 month WL -1.7 +-5.0% 24 month WL -2.2 +-7.5%</p> <p>BWLI 12 month WL -7.3 +-5.9% 24 month-5.5 +-5.0%</p> <p>Psychological factors mediated WL 12 months: increased flexible cognitive restraint, fewer exercise barriers, and lower emotional eating (R2=0.31, p<0.001, effect 0.37) 24 months: flexible restraint and exercise self-efficacy (R2=0.17, p<0.001, effect 0.89)</p>	<p>randomized controlled study</p> <p>WE: Absence of 2 year psychosocial measures</p> <p>CO: There are long-term WL benefits of reducing emotional eating and promoting a flexible nondichotomous eating self-regulation and increasing intrinsic motivation and self-efficacy for exercise are important long term</p> <p>CS: WL and WLM in middle-aged women are influenced by psychological mediators which need to be included in SWLP</p>
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Citation	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Level/Quality of Evidence; Decision for practice/ application to practice
<p>West, DS. (2011) A motivation-focused weight loss maintenance program is an effective alternative to a skill-based approach.</p> <p>FA: National Institute of Diabetes and Kidney Diseases and Office of Research on Women’s Health</p> <p>C/B: None</p> <p>Country: USA</p>	SDT	<p>Design: RCT</p> <p>Method: Participants randomized to treatment or control program</p> <p>Treatment had 2 arms- SBMP or MFMP</p> <p>Control: SWLP</p> <p>Purpose: To evaluate the effectiveness of MFMP for WLM in overweight and obese women</p>	<p>N= 338</p> <p>Treatment: 226</p> <p>Control: 112</p> <p>D: Women, 19% AA, age 30 or older (mean age 53 +-10 years, BMI 25-50 (mean 36+-6), able to walk for exercise, h/o urinary incontinence, required to food and activity diary, healthy</p> <p>Setting: Outpatient</p>	<p>IV1: SWLP</p> <p>IV2: BWLI followed by SBMP</p> <p>IV3: BWLI followed by MFMP</p> <p>DV: BW</p> <p>DV2 BW maintenance</p>	<p>Anthropometric Assessments</p> <p>Self Regulation Questionnaire</p> <p>Exercise Identity Scale</p>	<p>SAS Version 9.1</p> <p>Wilcoxon tests</p> <p>Fishers exact tests</p> <p>Multiple regression models</p>	<p>% WLM at 18 months</p> <p>MFMP= -5.48</p> <p>SBMP=-5.55</p> <p>Control=-1.51</p>	<p>Level 2</p> <p>Strengths: first to evaluate a theory-based WLM program</p> <p>WE: included only obese or overweight women with urinary incontinence</p> <p>CO: MFMP was effective as the SBMP offers a viable, innovative evidence-based alternative approach for WL and WLM in women</p> <p>CS: MWLI for WL and WLM should be explored further</p>

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Citation	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement	Data Analysis	Findings	Level/Quality of Evidence; Decision for practice/ application to practice
<p>Williams, LT. (2014). Can a relatively low-intensity intervention by health professionals prevent weight gain in mid-age women? 12-month outcomes of the 40-Something randomized controlled trial.</p> <p>FA: University of Newcastle grants</p> <p>C/B: None</p> <p>Country: Australia</p>	TTM	<p>Design: RCT</p> <p>Method: Participants randomly assigned to SDI group or two MWLI groups</p> <p>Purpose: to test the effective of a MWLI for weight loss and prevention of weight gain in mid-aged women.</p>	<p>N=54</p> <p>28: Intervention</p> <p>26: Control</p> <p>D: women ages 44-50, BMI 18.5-29.99, menstruation within in prior 3 months, healthy with no chronic diseases</p> <p>Setting: Outpatient</p>	<p>IV1: SDI</p> <p>IV2: MI intervention</p> <p>IV3: overweight, normal weight</p> <p>DV: BW, BP, lipid panel, fasting glucose, fat mass</p>	<p>Anthropometric Assessments</p> <p>MI Integrity Tool (MITI)</p>	<p>SPSS Version 19.0</p> <p>Intention-to-treat</p> <p>Unpaired t-test</p> <p>x2 tests</p>	<p>WL at 12 months</p> <p>Normal BMI</p> <p>MWLI: (-2.6 kg; 95% CI: -3.9; -1.2)</p> <p>SDI (-0.1kg; 95% CI: -1.2; 1.0, p=0.002)</p> <p>Overweight MWLI (-3.5kg; 95% CI: -6.1, -1.0)</p> <p>SDI (-2.3; 95% CI:-4.1, -0.5, p=.0467)</p>	<p>Level 2</p> <p>Strengths: Addresses gap in the literature of RCTs, targets a group at high risk population, researchers blind, high translational potential</p> <p>WE: Did not address secondary outcomes, lack of n- treatment group, lack of attention control group</p> <p>CO: MWLI was effective in preventing weight gain in middle-aged women of normal weight. In overweight middle-aged women both SDI and MWLI were effective for WL</p> <p>CS: MWLI can effective be used for</p>

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								weight gain prevention not just for WL in middle-aged normal weight women. Overweight middle-aged women benefit from both MWLI and low intensity SDI. The intensity of MWLI needs to be better established.
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Appendix B
Synthesis Table

	Armstrong	Kiernan	Linde	Low	Lundal	Newnham	Saffari	Teixeira	West	Williams
Year	2011	2011	2011	2012	2010	2011	2014	2010	2011	2014
Study Design										
MA/SR	X				X					
RCT		X	X				X	X	X	X
CC Study				X						
Qualitative						X				
Country										
United States		X	X	X	X				X	
United Kingdom										
Australia										X
Iran							X			
Portugal								X		
Canada	X					X				
Theoretical Framework										
CBT			X					X		
SCT							X			
SDT		X			X	X	X	X	X	X
TTM	X			X	X	X				
Demographics										
Participants (N)	1878	267	203	56	119 (studies)	8	327	225	338	54
Gender % (M/F)	50/50	0/100	0/100	54/46	NR	0/100	0/100	0/100	0/100	0/100
Age (M)	41-62	48.4	52.1	61.6	>17 years old	47	34.6	37.6	53	47.3
BMI (M)	27.1-37.9	32.1	39.5	38.0	NR	≥30	35.1	31.1	36	25.1
IV										
MLWI	X			X	X	X				X

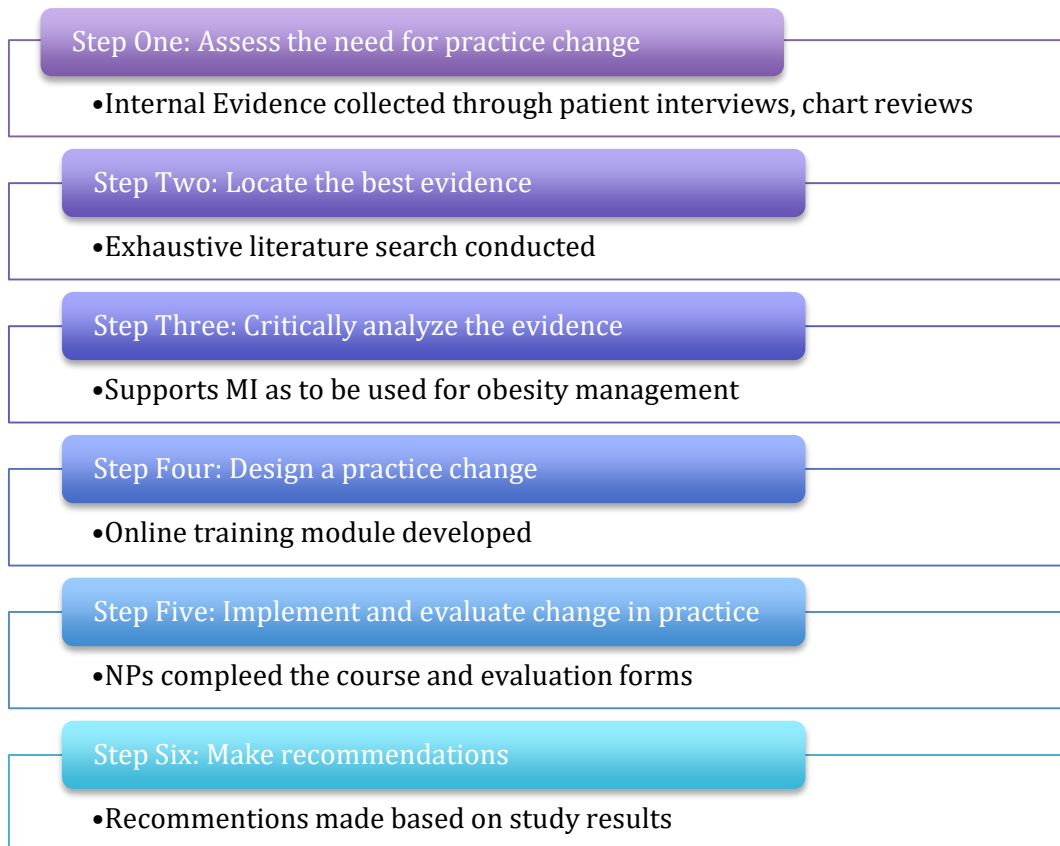
BMI-body mass index; **BW**-body weight (kg); **BWLI**- behavioral weight loss intervention; **BWM**- body weight maintenance **CBT**- cognitive behavior theory; **CC**- controlled cohort; **DV**-dependent variables; **GH**- general health; **IV**-independent variables; **NR**- not reported; **MWLI**- motivational interviewing weight loss intervention; **PSY**- psychological factors; **RCT**-randomized controlled trials; **SCT**- social cognitive theory; **SDT**-self determination theory; **SR/MA**-systemic review/ meta-analysis; **SWLP**- standard weight loss program; **TTM**- transtheoretical model; **WL**- weight loss; **WLM**-weight loss maintenance;

MLWI w SWLP	X						X		X	
SWLP	X			X			X	X	X	
BWLI		X	X					X	X	X
BWLI w CBT			X							
Social support		X								
Gender				X	X					
Weight Status										X
DV										
BMI	X			X	X		X			X
BW	X	X	X		X		X	X	X	X
BWM							X	X	X	
PSY Factors			X		X	X				
GH Factors				X	X		X	X		X
Intervention Outcomes										
WL	X	X	X	X	X	X	X	X	X	X
WLM							X	X	X	X
Improved PSY			X		X	X		X		
Improved GH				X	X		X			X

BMI-body mass index; **BW**-body weight (kg); **BWLI**- behavioral weight loss intervention; **BWM**- body weight maintenance **CBT**- cognitive behavior theory; **CC**- controlled cohort; **DV**-dependent variables; **GH**- general health; **IV**-independent variables; **NR**- not reported; **MWLI**- motivational interviewing weight loss intervention; **PSY**- psychological factors; **RCT**-randomized controlled trials; **SCT**- social cognitive theory; **SDT**-self determination theory; **SR/MA**-systemic review/ meta-analysis; **SWLP**- standard weight loss program; **TTM**- transtheoretical model; **WL**- weight loss; **WLM**-weight loss maintenance;

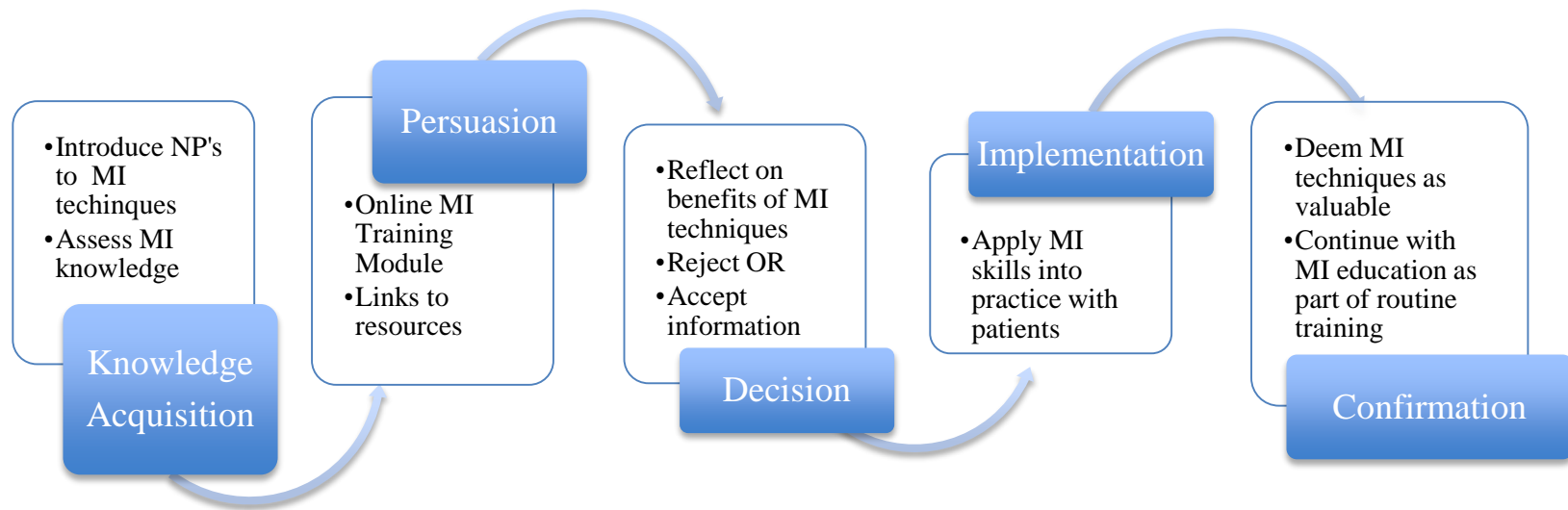
Appendix C

Rosswurm and Larrabee's Model for Evidence-Based Practice Change (1999)



Appendix D

Roger's Diffusion of Innovation Model (2003)



Appendix E

ASU's IRB approval Letter



EXEMPTION GRANTED

Lynda Root

CONHI - DNP

602/496-0810

Lynda.Root@asu.edu

Dear Lynda Root:

On 8/14/2015 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Motivational Interviewing Education for Nurse Practitioners Providing Obesity Management
Investigator:	Lynda Root
IRB ID:	STUDY00002934
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	<ul style="list-style-type: none"> • Abigail Marley, Category: Recruitment Materials; • Objectives/Outline of Project, Category: Other (to reflect anything not captured above); • IRB application-edited, Category: IRB Protocol; • Course Evaluation, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Pre/Post Test, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Marley Reference list, Category: Resource list; • Marley Site Approval letter, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc); • Consent-revised, Category: Consent Form; • Demographic survey , Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 8/14/2015.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Abigail Marley

Abigail Marley

Johannah Uriri-Glover

Appendix F

Motivational Interviewing Knowledge Pre/Post-Test by Spollen et al., (2004).

1. Which of the following strategies is most consistent with behavioral change counseling?
 - a. Providing expert information to guide the patient in forming an action plan
 - b. Labeling the diagnosis and problem behavior for the patient
 - c. Asking the patient to rate their confidence in enacting an action plan
 - d. Prescribing an action plan for the patient

2. Which of the following responses to resistance is most consistent with behavioral change counseling?
 - a. 'If your blood sugar doesn't improve, this can lead to serious problems for your eyes, kidneys, and heart'
 - b. 'So there's not really a problem in your blood sugar being high?'
 - c. 'I am worried about your blood sugar being so high, so let us go over the diet plan again'
 - d. 'Your blood sugar ought to be a lot lower if you want to feel better'

3. If a patient makes an inappropriate plan of action, which of the following responses would be most consistent with behavioral change counseling?
 - a. 'I think you're moving too quickly; you ought to consider taking smaller steps'
 - b. 'Sounds like you've come up with a plan. Would it be okay if we discussed some possible concerns?'
 - c. 'That sounds like a good plan for working on your weight, but we need to focus on your blood sugar first'
 - d. 'A lot of other people have not succeeded in taking those steps. Would you be willing to consider doing something else?'

4. Which of the following concepts is central to behavioral change counseling?
 - a. Presenting reasons for change
 - b. Challenging resistance to change
 - c. Enhancing motivation for change
 - d. Directing change efforts

5. Which of the following examples of feedback and advice to give to patients would be most consistent with behavioral change counseling?
 - a. 'You should probably stop smoking, and I recommend our smoking cessation group'
 - b. 'Other patients have said that our smoking cessation group was helpful, so that might be something to consider'
 - c. 'Experts have found that quitting smoking is best done in a structured program, so you should go to our smoking cessation group'
 - d. 'Would it be okay with you if I told you why our smoking cessation group would be good for you?'
 - e. 'Other patients have said that our smoking cessation group was helpful, so you ought to give it a try'

6. Which of the following is most consistent with behavior change counseling principles?
- a. Providing neutral feedback, such as ‘experts have found . . .’
 - b. Using clear diagnostic terms with patients, such as ‘alcohol dependence’
 - c. Encouraging the patient to follow his/her own plan, even if it doesn’t sound reasonable
 - d. Waiting for patients to ‘hit rock bottom’ before they are ready to change
 - e. Addressing patient resistance with confrontation of maladaptive behaviors

Appendix G

Demographic Questionnaire

1. Gender:
 - a) Male
 - b) Female

2. Age Range:
 - a) 18-29
 - b) 30-49
 - c) 50-64
 - d) 65 and older

3. Ethnicity:
 - a) White/ Caucasian
 - b) Black/African American
 - c) Asian/ Pacific Islander
 - d) American Indian or Alaskan Native
 - e) Hispanic/ Latino
 - f) Two of more ethnicities
 - g) Prefer not answer

4. Current BMI:
 - a) <19
 - b) 19-24.9
 - c) 25-29.9
 - d) 30-34.9
 - e) 35-39.9 f) 40- 49.9
 - g) 50 and above
 - h) Prefer not to answer

5. Number of years experience as a nurse practitioner:
 - a) Less than one year
 - b) 1-5 years
 - c) 6-10 years
 - d) 11-20 years
 - e) 21-35 years
 - f) Greater than 35 years

6. Nurse practitioner specialty:
 - a) Family
 - b) Adult
 - c) Women's Health
 - d) Acute Care
 - e) Psychiatric Mental Health

f) Other

7. Highest Degree Level:

- a) Masters
- b) Doctorate

8. Number of years working in bariatric medicine:

- a) None
- b) Less than one year
- c) 1-5 years
- d) 6-10 years
- e) 11-20 years
- f) 21-35 years
- g) Greater than 35 years

9. Describe your past experience with Motivational Interviewing:

- a) None
- b) Minimal- have heard of MI but never had formal training
- c) Moderate- read articles on MI, attending lectures/ workshops, comfortable with new MI skills
- d) Expert- advance training of MI and commonly use in practice

Appendix H

Course Evaluation Form

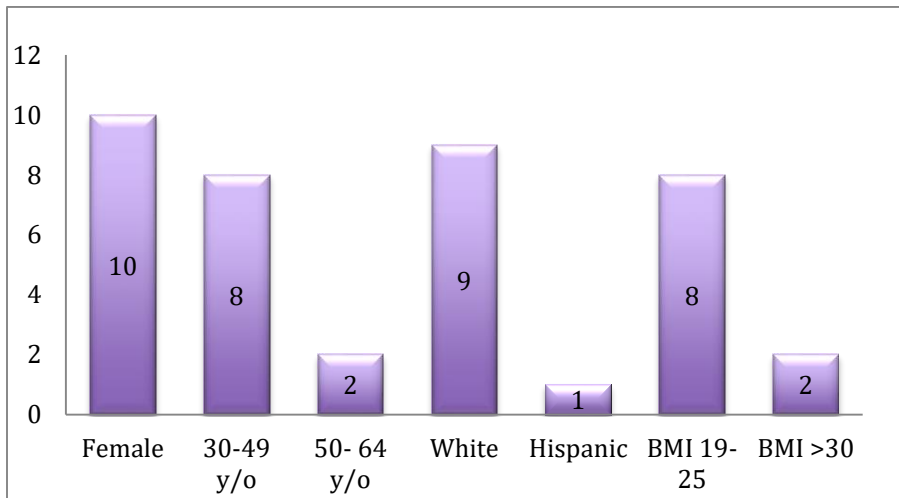
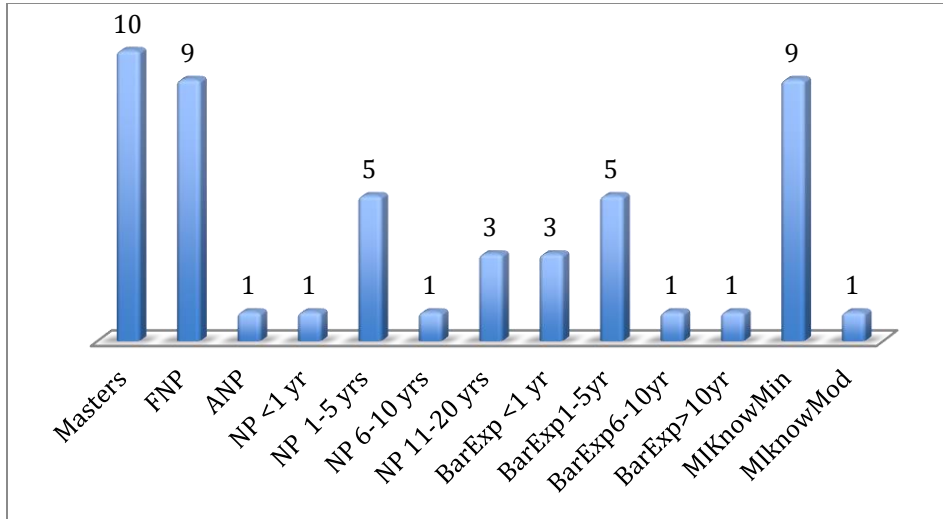
1. The training objectives for the course were identified and followed.
a) Strongly Disagree b) Disagree c) Neutral d) Agree e) Strongly Agree
2. The content was organized and easy to follow
a) Strongly Disagree b) Disagree c) Neutral d) Agree e) Strongly Agree
3. The length of the course is appropriate for the stated objectives.
a) Strongly Disagree b) Disagree c) Neutral d) Agree e) Strongly Agree
4. The online learning module was an effective way for me to learn this subject.
a) Strongly Disagree b) Disagree c) Neutral d) Agree e) Strongly Agree
5. My skills and/or knowledge increased as a result of this course.
a) Strongly Disagree b) Disagree c) Neutral d) Agree e) Strongly Agree
6. This skills and/or knowledge taught in course are relevant to my job.
a) Strongly Disagree b) Disagree c) Neutral d) Agree e) Strongly Agree
7. Overall I was satisfied with this course and would recommend it to a colleague.
a) Strongly Disagree b) Disagree c) Neutral d) Agree e) Strongly Agree
8. I would be interested in further training in Motivational Interviewing.
a) Strongly Disagree b) Disagree c) Neutral d) Agree e) Strongly Agree

Appendix I
DNP Project Budget

Item	Cost
Soft Chalk Software	\$150
Reference Material	\$100
Postal/ Printing Expenses	\$40
Participant Compensation	\$45-60 per participant. Taken out of company's allocated funds for continuing medical education

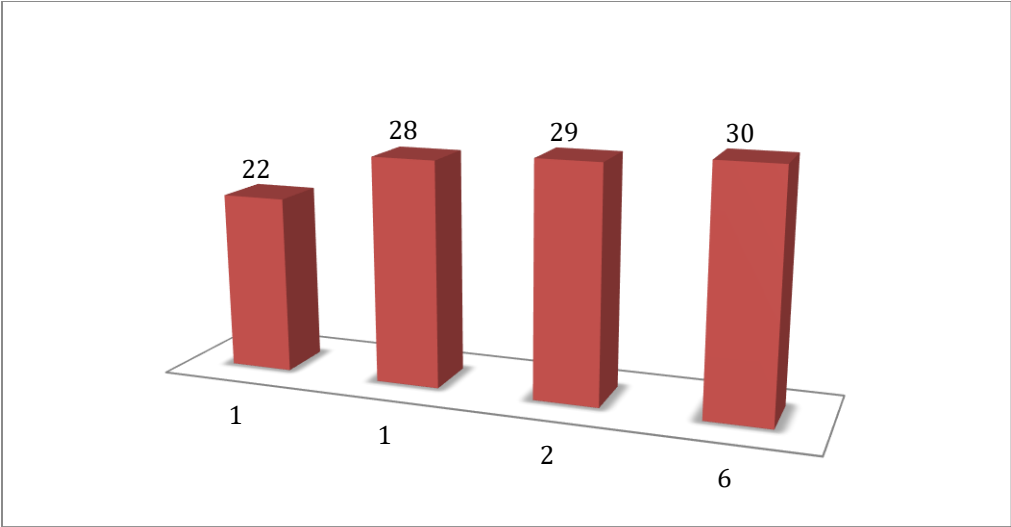
Appendix J

Demographic Descriptive Data Graphs



Appendix K

Course Evaluation Descriptive Data Scores



Appendix L

Knowledge Pre and Post Test Results

Ranks

		N	Mean Rank	Sum of Ranks
PostKNow - PreKnow	Negative Ranks	1 ^a	3.50	3.50
	Positive Ranks	6 ^b	4.08	24.50
	Ties	3 ^c		
	Total	10		

a. PostKNow < PreKnow

b. PostKNow > PreKnow

c. PostKNow = PreKnow

Test Statistics^a

	PostKNow - PreKnow
Z	-1.784 ^b
Asymp. Sig. (2-tailed)	.074

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
PreKnow	10	50.0	33.0	83.0	61.800	13.8227
PostKNow	10	50.0	50.0	100.0	75.000	13.9921
Valid N (listwise)	10					