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Evaluation of the MOVE Program on Weight Loss Among Veterans

William Justin Allen

University of Kentucky

April 15, 2015

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Dedication

I would like to dedicate my final capstone to my family and friends who have supported and encouraged me throughout my doctoral education.

Acknowledgements

I would like to acknowledge Dr. Sharon Lock who has served as my committee chair, as well as my advisor over the course of my doctoral studies. Her immeasurable guidance and support has been vital to my success as a student and future Family Nurse Practitioner. I would also like to thank Dr. Kathy Wheeler for taking time from her busy schedule to serve as a committee member and playing an active role in my capstone process and preparation for practice. I would also like to thank Dr. Cynthia Baxter who served as my clinical mentor and assisted me at the VA throughout the capstone process. Lastly, I would thank Amanda Wiggins at UK for assisting in the statistical analysis of my capstone project and Becky Schlueter RD at the VA for her logistical guidance.

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Capstone Report Introduction

William Justin Allen

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Introduction

Obesity has become an epidemic in the United States. Currently, more than one third of the American adult population is considered obese (Centers for Disease Control [CDC], 2011). Obesity and obesity-related conditions are certain to be encountered by Family Nurse Practitioners (FNPs) on a daily basis. FNPs must be appropriately educated on the most up to date goals, guidelines, and management plans so they are equipped to provide quality care to their patients.

The latest guidelines recommend an individualized, comprehensive treatment plan to combat obesity. This plan should include a diet plan, exercise plan, and behavioral modification (Jenson et al., 2013). The MOVE program is an example of this comprehensive plan and was designed and implemented in the Veteran's Health System. It has shown promise in obesity treatment in a population where prevalence rates have been estimated even higher than the normal American population.

This practice inquiry project has been constructed in accordance with guidelines set forth by the University of Kentucky's Doctorate of Nursing program. It is a collection of three manuscripts which, collectively, address obesity and its management. The first manuscript is a Health Problem Paper, which addresses the Healthy People 2020 goals and the treatment of obesity through the use of nursing theory and guidelines. The second manuscript is a critical analysis of AHA/ACC/TOS Guideline for the Management of Overweight and Obesity in Adults (2013) using a modified version of the Appraisal of Guidelines for Research and Evaluation (AGREE) Instrument (2001). The third and final manuscript details a Practice Inquiry Project, which evaluated the MOVE

program at the Lexington VA on weight loss in veterans. It also discusses some implications for practice, as well as future research.

Manuscript I Abstract

William Justin Allen

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Health Problem Paper: Obesity Abstract

The most current estimations from the CDC classify more than one third of the American population as obese (2011). Billions of dollars are spent annually on obesity and obesity related conditions. Perhaps this is what led the U.S. Department of Health and Human Services (HHS) to select Nutrition, Physical Activity, and Obesity as a Leading Health Indicator in Healthy People 2020. Interventions for obesity should be aimed at meeting the objectives set forth by the HHS.

The use of the Transtheoretical Model (TTM) and it's constructs can assist throughout the assessment, treatment, and evaluation of this condition. Used in conjunction with obesity guidelines, the provider can personalize treatment to individual patients. Treatment includes an individualized diet plan, physical activity plan, and behavioral therapy tactics, as well as a platform for maintenance. This comprehensive plan, recommended by obesity guidelines, is targeted at meeting the Healthy People 2020 goals.

Health Problem Paper: Obesity

William Justin Allen

University of Kentucky

Health Problem Paper: Obesity

Purpose Statement

Clinical Obesity is defined by a body mass index (BMI) greater than or equal to 30 (NIH, 1998). Obesity has become a catastrophic health problem in the United States, and continues to contribute to a number of chronic diseases including diabetes and heart disease, both associated with high morbidity and mortality (NIH, 1998). Currently, more than one third of the American adult population can be considered obese (CDC, 2011). In 2011, the self reported prevalence rates for obesity in Kentucky were 30.4%, placing the state in the top 12 in the country (CDC).

The impact of these common problems on expenditures of the health care dollar is extensive. The Center for Disease Control (CDC) reports that estimated medical costs in 2008 in the U.S. for obesity and obesity related conditions were \$147 billion (2011). This has led health care professionals to seek out ways to prevent and treat this precursor to potentially deadly conditions.

Lack of exercise has been shown to be one of the contributing causes of obesity, among others (Smith, Griffin, and Fitzpatrick, 2011). In 2008, more than 25% of the country was reported as inactive (CDC, 2011). The CDC recently reported that Kentucky is one of five states to have 70% of counties report a majority of leisure-time physical inactivity (2011). These statistics are shocking, as so many benefits of physical activity and weight control have been clearly established. Studies have shown that physical activity can decrease the risk of cardiovascular disease, Type 2 Diabetes Mellitus, metabolic syndrome, some cancers, and early mortality, as well as, improve mental health and prevent falls (CDC, 2011). This is certainly pertinent to Advanced Practice

Registered Nurses (APRNs), in particular, Family Nurse Practitioners (FNPs), who will be at the forefront of fighting and improving the health of Kentucky, as well as the nation.

Healthy People 2020

The Healthy People Program was established in 1979, with a goal of improving the health of Americans (Healthy People, 2012). The purpose of the Healthy People Program is to encourage collaboration in communities, empower individuals to make informed health decisions, and measure the efficacy of prevention activities (Healthy People, 2012). To accomplish these goals, the program sets 10-year benchmarks and monitors progress over time. The latest set of goals, Healthy People 2020, was established in 2010, and consists of 42 topics with nearly 600 objectives (Healthy People, 2012). The U.S. Department of Health and Human Services (HHS) selected Leading Health Indicators. These Leading Health Indicators make up a smaller set of priority objectives, which is composed of 12 topics and 26 indicators (HHS, 2011).

The Leading Health Indicator of Nutrition, Physical Activity, and Obesity, as outlined in the Healthy People 2020 initiative provides a clear goal for the treatment of obesity in the adult population. Objective NWS-8 recommends that the number of adults, 20 years or older, maintaining a healthy weight are increased by 10% (Healthy People, 2012). The CDC reports that only 30.8% of people in the adult age group are at a healthy weight and that 33.9% of the age group is considered obese (2012). As obesity has become a problem in all age groups, interventions targeted at the adult population can create habits, which are passed to children of patients. These habits will provide a foundation for a healthier lifestyle and continue into old age.

Objective NWS-8 can be found under the broad category of nutrition and weight status (HHS, 2011). Objectives in this category are aimed at increasing healthier food access, increasing diagnosis and treatment of obesity, decreasing food insecurity, encourage better nutrition, and reduce iron deficiency (HHS, 2011). Although a number of these objectives are applicable to increasing physical activity in the adult population, for reasons of simplicity, focus will be placed on objective NWS-8.

Theoretical Framework

The Transtheoretical Model (TTM) and its five stages of change, as outlined by Prochaska, Redding, and Evers (2008) is a useful theoretical framework to assist in assessment and management of obesity. The major variables in this theory are self-efficacy, decisional balance, and the Stages of Change. The Stages of Change construct is a 5 level progression that individuals move through on their way towards making a behavioral change. The stages are pre-contemplation, contemplation, preparation, action, and maintenance (Prochaska et al., 2008). These stages will be discussed in more detail later. Decisional Balance refers to the idea of the balancing of “pros” and “cons” during decision-making (Prochaska et al., 2008). This theory says that as one progresses through the stages, pros should outweigh the cons. Self-efficacy is a concept that the TTM borrows from Bandura’s self-efficacy theory (1977). This construct describes the individual’s self-confidence in changing a specific behavior. As one progresses through the stages of change, self-efficacy should increase.

Pre-contemplation is the first of the five stages. This stage is for individuals who are not thinking about making a change or starting a healthy habit in the near future (Prochaska et al., 2008). It will be reserved for those patients who are not planning on

starting an exercise program in the next 6 months. Many people in this category may have a knowledge deficit of risks/benefits and may lack motivation. Interventions in this population could include general education, patient handout, identification of barriers, identification of pros and cons, and encouragement in weight maintenance (Seals, 2007).

The contemplation stage is the point at which an individual begins to desire a change in behavior but is not ready to take action (Prochaska et al., 2008). Weighing of pros and cons is important in this stage. Interventions at this stage could include reinforcing the pros over cons, helping to overcome barriers, providing appropriate education and resources, and encouraging a commitment to change (Seals, 2007).

An individual is in the preparation stage when they are intending on changing their behavior in the immediate future (Prochaska et al., 2008). This person is ready to begin an exercise regiment. Appropriate interventions could include encouragement to follow through with commitment, providing proper diet/exercise plan, involving friends and family in care for support, and patient appropriate education (Seals, 2007).

The action stage is the level attained when an individual has made behavioral changes within the last 6 months (Prochaska et al., 2008). This individual has just begun exercising regularly and interventions should be appropriate. Some of these interventions could be more detailed advice on diet and exercise, tips on advancing intensity, self-monitoring, goal setting, problem solving, continued social support, and continued encouragement (Seals, 2007).

The final level in the progression is the maintenance stage, where the individual has changed their behavior and sustained the change longer than 6 months (Prochaska et al., 2008). The main goal of this individual should be to prevent relapse. Interventions

could be aimed at continued encouragement, tips on how to incorporate new behavior into continued way of life, and program modification (Seals, 2007).

A number of studies have found this theory successful in assisting in the change process, including one study that applied the five stages of behavioral change to determine readiness to begin an exercise program (Smith et al., 2009). Patients were placed in one of the five categories depending on their likelihood of starting an exercise program: pre-contemplation, contemplation, preparation, action, and maintenance (Smith et al., 2009). Once a patient's readiness to change is assessed and identified, appropriate interventions can be targeted at the individual, making the process more efficient. Guidelines developed for the treatment of obesity support this idea, and will be discussed in a later section.

Screening Tool

Body Mass Index (BMI) is a direct calculation based on a patient's weight and height. It is calculated using the following equation: $BMI = \text{weight (kg)} / \text{height squared (m}^2\text{)}$. The result of the equation is placed in the simple BMI chart at the corresponding number, to determine if the individual is underweight (<18.5), normal (18.5-24.9), overweight (25-29.9), obese (30-39.9), or extreme obese (≥ 40) (NIH, 1998). BMI is the primary tool used to screen clients, age 20 and older, for obesity. BMI has been found to be the most accurate and practical tool for identifying obese patients, defined as BMI greater or equal to 30 (NIH, 1998). It is useful for males and females, however; there are some limitations with using the BMI. The most pertinent is that it can overestimate fat content in muscular people and it can underestimate fat content in individuals who have

lost significant muscle mass, like elderly people (NIH, 1998). It can also be inaccurate when used on individuals measuring less than five feet tall (NIH, 1998).

Waist circumference can also be used in patients with a BMI ranging between 25-34.9, to more accurately assess for risk factors (NIH, 1998). In men, a waist circumference of more than 40 inches would be considered high risk (NIH, 1998). Women with a waist circumference more than 35 inches would be placed in the same category (NIH, 1998). Waist circumference has also been shown to be the best measurement to track abdominal fat content during weight loss programs (NIH, 1998). To accurately measure waist circumference, the tape should be placed directly above the iliac crest. The tape should be snug but should not compress skin.

Those who have an elevated BMI, or are deemed high risk through the combination of BMI and increased waist circumference, should be screened for obesity-related disease. These include, but are not limited to, Type 2 diabetes, cardiovascular disease, hyperlipidemia, hypertension, and sleep apnea (NIH, 1998).

A normal office visit should include an accurate weight assessment. The patient should be wearing under garments only (NIH, 1998). Height should be obtained. Findings should be converted into the proper measurements and a BMI should be calculated. If the BMI is between 25 and 34.9, a waist circumference should be obtained, as described above. Based on findings and clinical judgment, related screens are performed. Now that the practitioner has a better picture of the patient category and risk, they can assess the patient's viewpoint. If the individual is out of normal range, the patient readiness screen is used.

Evidence Based Clinical Practice Guideline

In 1995, the National Heart, Lung, and Blood Institute's Obesity Education Initiative and the National Institute of Diabetes and Digestive and Kidney Diseases assembled an expert panel, with a goal to identify, evaluate, and treat overweight and obese individuals in the adult population (NIH, 1998). The panel based the guidelines on a systematic review of literature using MEDLINE. Approximately 394 random control trials (RCTs) made up the body of evidence considered by the board. The San Antonio Cochrane Center assisted the board through constructing organized tables with abstracts. Next, the panel determined the appropriateness of each article and assigned a level to each piece of evidence, A-D. Evidence in the A category is based on a rich body of data collected from RCTs. Evidence in the B category is based on a limited body of data collected from RCTs. Evidence in the C category is based on nonrandomized trials or observational studies. The experts placed evidence in the D category if it could not be placed in A-C, but they deemed it important by expert consensus (NIH, 1998).

These evidence-based guidelines created by the National Institute of Health (1998) will be used to manage this health problem. The NIH has outlined recommendations, backed by clinical evidence, from proper screening and assessing to effective treatment (1998). The recommendations include combined interventions targeted at behavioral therapy, nutritional intake, and physical activity to increase weight loss or maintain a healthy weight (NIH, 1998). As screening and assessment guidelines have been discussed, this section will provide guidelines to treat and manage obesity.

Management

Realistic weight loss goals should be developed, with the help of the patient. Generally, a 10% reduction in weight from the baseline is acceptable (NIH, 1998). Weight loss should occur at a safe rate of 1-2 pounds per week. This should be achieved using an individualized program, including dietary therapy, physical activity plan, and behavioral therapy (NIH, 1998). Pharmacotherapy and weight loss surgery will be briefly discussed, and are appropriate for select individuals.

Dietary therapy guidelines are aimed at decreasing daily calories and dietary fat (NIH, 1998). The individualized plan should decrease daily intake by 500-1000 kcal. This should put the patient on track to lose the recommended 1-2 pounds per week (NIH, 1998). It is also recommended that the initial weight loss plan last 6 months (NIH, 1998). This caloric modification, in conjunction with a physical activity program has been shown to yield the best results (NIH, 1998).

Physical activity recommendations are dependant upon the individual, and should be tailored to fit their lifestyle. The guidelines recommend that an initial goal of 30-45 minutes of moderate intensity workout 3-5 days per week is acceptable (NIH, 1998). The adult age group should be encouraged to strive toward 30 minutes of moderate intensity physical activity most or all days of the week (NIH, 1998). This is also in line with recommendations made by the CDC (2011). It is also acceptable to break the activity into smaller increments to fit into busy schedules or combat exhaustion in extremely sedentary patients (CDC, 2011). For more active individuals, a plan that involves high intensity exercise may be preferred. The equivalent of 30 minutes moderate intensity exercise is 15 minutes high intensity exercise (CDC, 2011).

Behavioral therapy is recommended for individuals in a weight loss or maintenance program (NIH, 1998). Practitioners should assess the patient's readiness to begin a plan, along with their motivation and barriers. One method to do so involves identifying the individual's stage of change, as discussed in the theoretical section of this paper. The NIH recommends routine behavioral therapy strategies to promote good diet and physical activity, as they will assist in weight loss and maintenance (1998). One example of this is to educate on self-monitoring of activity and caloric intake. This will increase the individual's self-efficacy, as well as highlight previously unrecognized behaviors (NIH, 1998). The guidelines also discuss stress management, stimulus control, problem solving, contingency management, cognitive restructuring, and social support (NIH, 1998).

Pharmacologic and surgical strategies should only be used secondary to lifestyle modifications (NIH, 1998). Weight loss drugs, approved by the FDA, could be useful in the population with a BMI ≥ 30 or ≥ 27 with concomitant risk factors or diseases. Pharmacologic therapy has changed recently based on side effects from long-term use of a number of the medications, including dexfenfluramine and fenfluramine (NIH, 1998). As the guidelines were compiled in 1998, there have been changes in the FDA's stance on other drugs, as well. At present, Belviq and Qsymia are the two FDA approved medications for long-term treatment of obesity (FDA, 2012). Again, these medications should only be used in conjunction with diet, exercise, and behavioral therapy, and their need should be continually reassessed (NIH, 1998). Surgical intervention should be seen as a last resort. This should be reserved for select patients who suffer severe obesity, and are unable to lose the weight traditionally (NIH, 1998). Candidates for surgery will have

a BMI ≥ 40 or ≥ 35 with co-morbid conditions (NIH, 1998). These select patients will be referred to a bariatric surgeon for evaluation and treatment.

Prevention/Maintenance

As discussed previously, guidelines recommend that initial weight-loss therapy should last 6 months (NIH, 1998). After successful weight loss, the guidelines recommend a plan of combined diet, exercise, and behavior therapy continue indefinitely (NIH, 1998). Continued long-term follow-up meetings with the care provider are also encouraged (NIH, 1998). This maintenance program can be led by the primary care provider, if they are knowledgeable, however; the use of a multi-disciplinary team is encouraged, if available (NIH, 1998).

Prevention and maintenance counseling should occur with all patients, regardless of their weight or stage of readiness. Individuals of healthy weights should be encouraged and positively reinforced. Individuals with a BMI out of normal range should be treated according to their stage of readiness. A patient in the pre-contemplation stage should be assessed for barriers to weight loss (Seals, 2007). They should be educated about benefits, as well as encouraged in weight maintenance (Seals, 2007). Benefits should be reinforced to a patient in the contemplation stage (Seals, 2007). This individual should also be coached on ways to overcome barriers (Seals, 2007). The patient who is prepared to begin therapy should be educated on diet, exercise, and behavioral strategies (Seals, 2007). Counseling to a patient in the action phase should be similar, except may be more detail oriented (Seals, 2007). Referrals to specialists could be beneficial at this stage (Seals, 2007). Patients in the maintenance

phase should be encouraged to continue healthy habits and follow-up with the care provider regularly (Seals, 2007).

Conclusion

Obesity is a multi-faceted problem that requires a multi-faceted solution. It is vital to the physical, mental, and financial health of this country that this dilemma be solved. The first step to any solution is recognition. This paper has clearly shown how to recognize this problem in afflicted patients through BMI screening. It has outlined a path to follow after recognition through the use of widely accepted, national guidelines. This pathway is comprehensive and individualized, attacking the problem of obesity from all angles. It includes a diet plan, physical activity plan, and behavioral therapy tactics, as well as a platform for maintenance. The treatment of obesity in the adult population has been built around a theoretical framework and assists in meeting goals set by Healthy People 2020. The idea of prevention is seen throughout the treatment plan, in all patients. As this problem is largely preventative, it falls on primary care providers to spearhead the attack to cure this country, through education and counseling of one patient at a time. As Family Nurse Practitioners (FNPs) will make up a considerable number of the primary care providers in the near future, new FNPs must be educated and prepared to take on this challenge.

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Manuscript II Abstract

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Analysis of Clinical Guideline: 2013 AHA/ACC/TOS Guideline for the Management of
Overweight and Obesity in Adults: A Report of the American College of
Cardiology/American Heart Association Task Force on Practice Guidelines and The
Obesity Society: Abstract

Obesity has become a catastrophic health problem in the United States. It continues to contribute to a number of chronic diseases including diabetes and heart disease, both associated with high morbidity and mortality (NHLBI, 1998). The NHLBI guidelines, based on clinical evidence, offer a blueprint to accurately screen for, diagnose, treat, and evaluate obesity. This valuable guideline was recently updated through collaboration with the American College of Cardiology (ACC) and numerous stakeholders.

Pieces of this guideline are useful to practice. The most beneficial parts are the comprehensive algorithm and the summary table of recommendations. It is clear and simple, backed by sufficient evidence, and accepted by numerous organizations. This guideline is very useful to assist in the treatment of obesity, however even in its entirety it is not comprehensive and should be used in conjunction with other guidelines and recommendations, as well as experience and clinical judgment.

Analysis of Clinical Guideline: 2013 AHA/ACC/TOS Guideline for the Management of
Overweight and Obesity in Adults: A Report of the American College of
Cardiology/American Heart Association Task Force on Practice Guidelines and The
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Introduction

Obesity has become a catastrophic health problem in the United States. It continues to contribute to a number of chronic diseases including diabetes and heart disease, both associated with high morbidity and mortality (NHLBI, 1998). Clinical Obesity is defined by a body mass index (BMI) greater than or equal to 30 (NHLBI, 1998). Currently, more than one third of the American adult population is considered obese (CDC, 2011). In 2011, the self reported prevalence rates for obesity in Kentucky were 30.4%, placing the state in the top 12 in the country (CDC). The impact of these common problems on expenditures of the health care dollar is hard to imagine. The Center for Disease Control (CDC) reports that estimated medical costs in 2008 in the U.S. for obesity and obesity related conditions were \$147 billion (2011).

Much has been done in an attempt to slow this upward trend, including the development of assessment and treatment guidelines by the National Heart, Lung, and Blood Institute (1998). The NHLBI guidelines, based on clinical evidence, offer a blueprint to accurately screen for, diagnose, treat, and evaluate obesity. Even with the availability of this valuable resource, prevalence rates continued to rise (CDC, 2011). In response to the Institute of Medicine's report on the need for most updated and trustworthy clinical guidelines (IOM, 2011), the NHLBI collaborated with the American Academy of Cardiology (ACC), along with other stakeholders and partnering organizations. This collaboration led to an updated evidence-based guideline to assist in the treatment of overweight and obesity in adults (Jenson et al., 2013).

Scope and Purpose

The objectives of the guidelines are to decrease cardiovascular disease and develop standards of care for optimal treatment and management. Clinical practice guidelines were created to address assessment of CV risk, lifestyle modifications for CV risk, cholesterol management, and adult overweight and obesity.

The purpose of this paper is to use the modified version of the Appraisal of Guidelines for Research and Evaluation (AGREE) Instrument (2001) to analyze the AHA/ACC/TOS guideline for management of overweight and obesity in adults (Jenson et al., 2013).

Stakeholder Involvement

This guideline arose through the collaboration of a number of organizations and stakeholders. The National Heart, Lung, and Blood Institute initiated the process in 2008 to update their original guidelines in 1998 through the convening of expert panels. There were 3 panels: obesity, high blood pressure, and high cholesterol, and 3 crosscutting work groups: risk-assessment, lifestyle, and implementation. These panels were comprised of expert individuals in the fields of psychology, nutrition, physical activity, bariatric surgery, epidemiology, internal medicine, and other specialties. In 2011, the National Program to Reduce Cardiovascular Risk (NPRCR) was established. This group was comprised of leaders in cardiovascular health, primary care, health services research, health informatics, and relevant Federal agencies. It was established to assist in implementation of the guideline through the many stakeholder organizations. In 2013, they began collaboration with the ACC, the American Heart Association (AHA), and the Obesity Society (Jenson et al., 2013).

The guideline is endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation, the American Pharmacists Association, the American Society for Nutrition, the American Society for Preventative Cardiology, the American Society of Hypertension, the Association of Black Cardiologists, the National Lipid Association, the Preventative Cardiovascular Nurse's Association, the Endocrine Society, and WomenHeart: the National Coalition for Women with Heart Disease (Jenson et al., 2013).

Rigor of Development

The first step of the updating process included the formulation of 5 clinical questions (CQs), which could guide the literature selection process. The NHLBI formed an expert guideline committee made up of chairpersons from multiple panels and work groups, which were formed based on specialties and expertise. Inclusion and exclusion criteria were selected for each CQ and a systematic electronic search was performed from January 1998 to December 2009. Some of the CQs contain data from studies beyond 2009, as recent as 2011. Thousands of abstracts were reviewed by two independent reviewers and included or excluded based on predetermined inclusion/exclusion criteria. Some of the specific criteria were not provided in the guideline document; however, some are discussed under each CQ, and more information is included in the full report. For CQ1 and CQ2, systematic reviews and meta-analyses published between January 2000 and October 2011 were used. For CQ3 and CQ4, evidence from the original search (1998-2009) was used, in addition to some major randomized controlled trials with more than 100 subjects in the treatment arm and published after 2009. For CQ5, evidence from

1998-2009 was used, in addition to some major studies that were published after 2009 (Jenson et al., 2013),

Two independent reviewers rated the quality of each study. High quality evidence consisted of well-designed RCTs that were representative of the population. Moderate quality evidence consisted of RCTs with minor limitations and well-designed non-random studies. Low quality evidence consisted of RCTs and non-randomized studies with major limitations and uncontrolled studies (Jenson et al., 2013).

Summary tables were formed to display support for each CQ and recommendations were made based on the quality of evidence for or against each. A table is provided that defines grading of evidence using NHLBI standards, as well as ACC/AHA standards. Recommendations are clearly graded on both scales. Using the NHLBI scale, recommendations were given a grade A (Strong Recommendation), B (Moderate Recommendation), C (Weak Recommendation), D (Recommendation Against), E (Expert Opinion), or N (No Recommendation) (Jenson et al., 2013). ACC/AHA grades are a little more complicated but a chart provides clear criteria needed for each level of recommendation. There are four classifications of recommendations; level I (should be performed), level IIa (it is reasonable to perform), IIb (may be considered), and level III (no benefit or harm). Then the recommendation is given a level based on the quality of evidence: A (multiple populations, RCTs and meta-analyses), B (limited populations, single RCT or nonrandomized), or C (very limited population, expert consensus, case studies, standard of care). Alignment of the recommendations is sometimes imperfect due to the differences in the two scales (Jenson et al., 2013).

The document was then reviewed by 10 expert reviewers associated with the NHLBI and representatives from a number of federal agencies. Then, 6 expert reviewers who were associated with the ACC, AHA, and the Obesity Society reviewed the guideline. The document has been approved by a number of governing bodies, including the previously mentioned. Many of the recommendations are graded strong/IA, lending support that recommendations are based on quality evidence. The plan for updating these guidelines is to begin in 2014 (Jenson et al., 2013). The actual procedure is not discussed in the document.

Clarity and Presentation

The recommendations in the guideline are clear and concise. A summary table is provided that shows the grade of each recommendation. Each recommendation is numbered to match its corresponding CQ. For example, recommendation 1a is to calculate BMI annually or more. This is an E recommendation under NHLBI standards and a IC recommendation by ACC/AHA standards. A IC recommendation implies that the evidence should be performed based on its benefit over risk profile. It is graded C because the evidence that supports the practice is very limited and is based, primarily on expert opinion. The E recommendation by the NHLBI is relatively congruent to the IC grade, as it is a grade given to practices that are recommended based on expert opinion. This recommendation provides support for CQ2, which discusses risk factors in relation to BMI, among other things. A relatively straightforward treatment algorithm is also provided for use in a primary care setting. While the summary table and the algorithm are clear, some of the discussion section is not so transparent. For example the table is organized differently than the question/evidence. If one was to look at CQ1 and see that

there is a 1a, 1b, and 1c question, they might be inclined to think that the table would show a recommendation 1a, 1b, and 1c, and be confused by the 1d. It appears that table is a more organized summary and easier to follow than the actual evidence section (Jenson et al., 2013).

Though slightly confusing, and very long, this guideline can prove very useful to the treatment of obesity in the adult population. The major recommendations and their respective grades are clearly shown in the table. Recommendations include using BMI as a risk identifier, recommending weight loss to decrease risks, decreasing caloric intake, comprehensive programs (those that include diet, exercise, and behavioral therapy), and high intensity comprehensive visits (≥ 14 group/individual sessions over 6 months, led by a trained interventionalist) are the most successful at weight loss/maintenance (Jenson et al., 2013). It also provides the algorithm, which incorporates evidence, and discusses that the algorithm and the recommendations are to be used as a tool, not to negate clinical judgment (Jenson et al., 2013).

Application

The NHLBI Implementation Work Group performed Guideline Implementability Appraisals to determine barriers to implementation; however, the actual barriers are not discussed in the actual guideline (Jenson et al., 2013). The full report does mention one challenge when adapting the guideline for use in primary care. It states that the recommendations in the guideline are based on a majority of population/epidemiological studies. These studies, by nature, do not usually focus on the individual. The challenge is to make recommendations made for a population suitable for an individual seen in practice (Jenson et al., 2013).

Another possible barrier could be provider acceptance. While this guideline is accepted by a number of organizations, some providers can still be hesitant to adopt practice changes. The length of the guideline could also hinder it, as many providers are more apt to adopt a short, simple guideline. The ability to find the guideline could also be a barrier, however this particular document appears to be widely publicized and published by multiple organizations.

Another limitation to the guideline is that it is not comprehensive. This is in direct relation to the construction process. As it only addresses 5 main questions, it cannot be expected to stand alone as a fully comprehensive guideline on the treatment of obesity. However, taken with the information from the previous guideline, a broader and more up-to-date picture of adult obesity management can be seen.

Cost implications are not discussed in the guideline. The most cost effective treatments for obesity was mentioned as an original CQ, however it was removed. Possible cost implications could include implementation of a system to record BMI (i.e. electronic charting); a program to provide phone-based interventions, and the hiring of a specialist such as a dietician to provide specialized counseling.

Editorial Independence

The process was sponsored by the NHLBI in collaboration with the ACC, AHA, and the Obesity Society. Authors and reviewers were required to be forthcoming and transparent with any relationships with relevant healthcare industries or entities. The relationships of each member are recorded on Appendix 1 and 2. Significant relationships could represent a conflict of interest. Members with relevant relationships were excused from voting on particular issues that could be influenced by their standing.

It appears that 1 author and 2 reviewers had significant relationships with outside entities. A significant relationship is defined as owning $\geq 5\%$ of voting stock in an entity, owning $\geq \$10,000$ of the market value of an entity, or if funds received from the entity are in excess to 5% of the individual's gross income for the previous year. The document provides a link to comprehensive policies on how these relationships are managed in detail (Jenson et al., 2013).

Recommendation

The U.S. Preventative Services Task Force also recommends the use of BMI for obesity screening (2012). They do not provide timing for screening, however they do recommend the use of intensive, comprehensive weight loss plans (USPSTF, 2012). Both guidelines provide evidence that weight loss leads to other desirable changes in physiology including glucose tolerance and cardiovascular risk factors (USPSTF, 2012). A guideline provided by the American Academy of Family Physicians also uses BMI in screening and uses the same cutoffs, as well as provide a similar but much less comprehensive treatment algorithm (Lyznicki, Young, Riggs, & Davis, 2001). The document should also be compared with its predecessor, the NIH guidelines of 1998. This 262-page guideline seemed to be more comprehensive, understandably with its size. It discussed more detail on exercise and pharmacotherapy, as well as behavioral therapy (NHLBI, 1998). While these are all mentioned and recommended in certain cases in the new guideline, more details and examples are provided in the earlier version. Even when looking at the massive 546 page full report of the newest guideline, it is difficult to extract more clinically relevant information. While there are fewer recommendations

discussed, the treatment algorithm in the new guideline is more comprehensive. The full report however, does, give more detail on the process of constructing the guidelines.

Pieces of this guideline are useful to practice. The most beneficial parts are the comprehensive algorithm and the summary table of recommendations. It is clear and simple, backed by sufficient evidence, and accepted by numerous organizations. It should be chosen over earlier guidelines because it is supported with newer research and provides evidence and details about each box in the treatment algorithm (Jenson et al., 2013). This guideline is very useful to assist in the treatment of obesity, however even in its 70-page entirety (546 pages in full report); it is not comprehensive and should be used in conjunction with other guidelines and recommendations, as well as experience and clinical judgment.

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Manuscript III Abstract

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Introduction

Obesity has become an epidemic in the United States. Currently, more than one third of the American adult population is considered obese (Centers for Disease Control [CDC], 2011). A comprehensive approach to the treatment of obesity is the most effective (Jensen et al., 2013). The MOVE Weight Management Program is one such program, built around national recommendations and provides a multifaceted tool to combat obesity in veterans. Studies have shown the MOVE program effective, supporting the need for a long-term weight management program in the primary care setting (Romanova et al., 2013).

Methods

This study was a retrospective chart review of overweight/obese patients who participated in the MOVE program at the Lexington, Ky. Veteran's Health Administration. The first objective was to calculate the average weight change of participating veterans over the course of the 5-week program. The second objective was to compare weight loss changes of the post-MOVE, 3-9 month, maintenance period in participants who opted for self-maintenance (Group 1), those who attended one or more maintenance classes only (Group 2), those who attended one or more one-on-one registered dietitian meetings only (Group 3), and those who attended both maintenance classes and one-on-one registered dietitian meetings (Group 4).

Results

The average participant lost 4.1 pounds and 1.6% of their total body weight over the 5-week program. The most effective post-MOVE maintenance course was to participate in MOVE maintenance classes. These participants, on average, lost an additional 11.1 pounds over the 3-9 month maintenance period. This is compared to an average of 2.8 pounds (RD visits), 5.4 pounds (RD visits and maintenance classes), and only 0.22 pounds for self-maintenance.

Conclusions

The MOVE program is a perfect example of a comprehensive and individualized treatment program that attacks the problem of obesity from all angles. The program is built on a foundation of evidence and has been shown effective through a number of studies. This is exactly the type of plan that clinical guidelines encourage and an invaluable resource to primary care providers at the VHA.

Evaluation of the MOVE Program on Weight Loss Among Veterans

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Evaluation of the MOVE Program on Weight Loss Among Veterans

Obesity has become an epidemic in the United States. Clinical obesity is defined by a body mass index (BMI) greater than or equal to 30 kg/m² (Jensen et al., 2013). Currently, more than one third of the American adult population is considered obese (Centers for Disease Control [CDC], 2011). In 2011, the self reported prevalence rates for obesity in Kentucky were 30.4%, placing the state twelfth in the country (CDC). The prevalence of obesity among veterans treated at the Veteran's Health Administration (VHA) is estimated to be as high as 35% (Kahwati, Lance, Jones, & Kinsinger, 2011). Obesity continues to contribute to a number of chronic diseases including diabetes and heart disease, both associated with high morbidity and mortality (Jensen et al., 2013). In 2006, the VA National Center for Health Promotion and Disease Prevention designed the MOVE Weight Management Program to decrease obesity in veterans. The purpose of this project was to evaluate the MOVE program in a VHA facility in the southern United States.

Background

The impact of these chronic problems on expenditures of the health care dollar is significant. The Centers for Disease Control (2011) report estimated medical costs in 2008 for obesity and obesity related conditions in the U.S. to be \$147 billion. This has led healthcare professionals to seek out ways to prevent and treat this precursor to potentially deadly conditions.

Much has been done in an attempt to slow the upward trend in obesity, including the development of assessment and treatment guidelines by the National Institute of Health (1998). The NIH guidelines offer an evidence-based blueprint to accurately

screen for, diagnose, treat, and evaluate obesity. Even with the availability of this valuable resource, prevalence rates of obesity have continued to rise (CDC, 2011). Numerous gaps are present and have been documented in research, including adherence to guidelines, intervention approaches, causes of obesity, body fat and disease risk, and assessment methods (NIH, 1998). The long awaited update to these guidelines finally arrived in 2013 (Jensen et al., 2013). This new guideline is widely accepted and makes this knowledge gap smaller.

A comprehensive approach to the treatment of obesity is the most effective management strategy (Jensen et al., 2013). This comprehensive treatment plan should include an individualized diet, exercise plan, and behavioral modification (Jensen et al., 2013). One such program (the MOVE Weight Management Program) has been implemented at the Veterans Affairs (VA) Medical Center in Lexington, Kentucky, as well as other VA's across the country. The MOVE program was built around these national recommendations for weight management and provides a multifaceted tool to combat obesity in veterans. The principles that guided the development of the program are to provide a comprehensive, tiered, population-approach, multi-disciplinary weight management program that is evidence based (Department of Veterans Affairs Veterans Health Administration, 2011).

Participation is free to all veterans and provides numerous resources dealing with diet, activity, and behavior change. The initial assessment determines the level of care for the client, based on their interests and health needs. The level of care qualifies the patient for assistance, from self-management support to group sessions and/or individual specialty consultation. Some MOVE facilities offer weight loss medications, brief

residential treatment, and bariatric surgery (National Center for Health Promotion [NCHP], 2006). At the Lexington VA, the initial MOVE program consists of 5 group classes that cover nutrition, physical activity, decision-making, goal setting, and dealing with emotional eating/changing unhealthy learned behaviors. A registered dietician (RD), a recreational therapist, and a health behavior psychologist lead the classes. Participants attend 5 consecutive classes on a weekly basis that last for approximately an hour and 45 minutes each. At each class, they are weighed and educated on different aspects of weight management. After the 5 weeks, they have the option of continued maintenance classes, individual appointments with a RD or health behavioral psychologist, or continued self-maintenance.

Maintenance classes are 1-hour classes that take place once a month. The topic for each class varies on the opinions and needs of the participating veterans. The RD, recreational therapist, and health behavior psychologist rotate leadership of the classes and topics range from healthy eating, to barriers, to exercise, to success stories. They also cover particular topics depending on the time of year. For example, in November/December the leaders may cover healthy eating habits over the holidays. Participants are given an opportunity to meet with a board-certified RD individually for a one-hour session to discuss nutrition, healthy eating, and decision-making. RDs are trained in motivational interviewing and use behavior change counseling in their meetings with veterans. Veterans who complete MOVE are encouraged to participate in maintenance classes and/or RD counseling; however, they may opt out and choose to maintain their weight by their own means.

One study of the MOVE program in Los Angeles showed veterans who had gained 1.4 kg/year prior to participation in the program, lost 2.2 kg/year after enrollment, supporting the need for a long-term weight management program in the primary care setting (Romanova, Liang, Deng, Li, & Heber, 2013). Another study of a MOVE program in Illinois showed an average loss of about 2 pounds over an 8-week period (Taft, Payvar, & Wool, 2011). Yet another study of a 10 week Miami VA MOVE program showed a 2 kg/year weight gain in veterans before participation and an approximate average 1.6 kg/year loss after enrollment (Dahn et al., 2010).

An evaluation of the MOVE program by Kahwati and her colleagues provides support for continued intervention in this maintenance period (2011). The results of this study showed that the patients in the “intensive” MOVE program, who had 8 or more visits, lost an average of 8.2 pounds over 6 months. This is compared to a 3.6-pound loss by the regular MOVE patients, and a 1-pound loss by the control group of untreated patients (Kahwati et al., 2011).

While there are mixed results on the effectiveness of weight loss interventions in a primary care setting, a number of trials have shown promise with intensive multi-disciplinary interventions provided by RDs, behavioral psychologists, and exercise specialists (Haire-Joshu & Klein, 2011). The MOVE program is a perfect example of this multi-disciplinary approach. One study cites provider knowledge of and referral to the program as one of the characteristics influencing participant retention in the MOVE program (Locatelli, Sohn, Spring, Hadi, & Weaver, 2012). This is certainly pertinent to Advanced Practice Nurses (APNs), in particular, Family Nurse Practitioners (FNPs), who will be at the forefront of fighting this nation-wide obesity issue. FNPs can assist in

dietary/exercise counseling and reinforce learned behaviors (Shay, Shobert, Seibert, & Thomas, 2009), as well as play an integral role through educating patients about the MOVE program and assisting them in self-referral.

Retrospective Chart Review

Objectives

There were 2 main objectives for the study. Objective 1 was to evaluate weight loss changes in veterans who have completed the MOVE program by comparing their weight at class 1 to their weight at class 5 and calculating the percentage of weight lost or gained. Objective 2 was to compare weight loss changes of the post-MOVE maintenance period in participants who have opted for self-maintenance (Group 1), those who have attended one or more maintenance classes only (Group 2), those who have attended one or more one-on-one registered dietitian meetings only (Group 3), and those who have attended both maintenance classes and one-on-one registered dietitian meetings (Group 4) (Table 1).

Methods

Design and data collection. The design of this study was a retrospective chart review. After obtaining approval from the Institutional Review Board (IRB) at the VA, the VA electronic medical record was accessed to retrieve the study sample. The records of all patients who participated in the MOVE program from January 1, 2012 to January 1, 2014 were reviewed as possible candidates in the study.

The final sample included the patients who had completed the 5-class MOVE program. The patients were divided into 4 mutually exclusive groups: those who opted for self-maintenance after the MOVE program (Group 1; see Table 1), those who

attended 1 or more maintenance classes (Group 2), those who attended 1 or more individual registered dietitian counseling sessions (Group 3), and those who attended both individual registered dietitian counseling and maintenance classes (Group 4).

Data collected from each patient included: age, sex, race, height, pre-MOVE program weight (class 1), post MOVE program weight (class 5), course of maintenance (self-maintenance, one or more maintenance classes, one or more RD meetings, one or more maintenance classes and RD meetings), the number of maintenance visits (number of RD visits, number of maintenance classes), and the post-MOVE program maintenance weight taken at 6 months (± 3 months, as some participants may not have a recorded weight exactly 6 months after MOVE completion). The EMR at the VA has recorded weights from all visits to the VA system, so the place of actual weight measurement varies across participants. All data were entered into a Microsoft Excel Spreadsheet. A blank example is provided (Appendix A). All data were retrieved and entered by the primary investigator. Sample participants were linked to their social security numbers (SSNs) on a separate code sheet in case data needed to be reviewed at a later date. The VA uses SSNs in place of medical record numbers. The code sheet and the study were kept in separate files on the secure research S-Drive and were password protected. All protected health information remained in electronic form and was stored securely.

Inclusion and exclusion criteria. Candidates for the study were excluded for 3 major reasons. They were excluded if they did not finish the entire series of the 5 MOVE classes. Those without a recorded weight in the post maintenance period of the given 3-9 months were excluded. Candidates were also excluded if they started or completed the 5 MOVE class series out of the reviewed date range of January 1, 2012 to January 1, 2014.

Prior to 2 years ago, the MOVE Program was structured differently and samples taken before this could have influenced the results of the study. The population included were overweight/obese veterans, over the age of 18, who completed the 5-class MOVE program in the given 2-year period.

There were 288 patients at the VA who had documented MOVE visits during the given period of time that could serve as potential candidates for the study. Of this number, 116 were excluded: 95 had not completed the 5 MOVE classes, 8 did not have a weight measurement in the given 3-9 month period after MOVE completion, and 13 started or finished the original 5 MOVE classes before January 1, 2012. This narrowed the study sample to 172 participants.

Data analysis.

Descriptive statistics, including means and standard deviations and frequency distributions, as appropriate, were used to summarize demographic and clinical characteristics of the study sample.

A paired-t test was used to compare average weight loss change after the completion of the MOVE program. One-way analysis of variance (ANOVA) compared weight loss between the four post MOVE groups. Post-hoc analysis was used to determine which groups significantly differed in weight loss, using Fisher's LSD pairwise comparison method. Average percent bodyweight loss was reported in addition to average absolute weight loss (lbs) because guidelines suggest a 5-10% change in weight as a reasonable initial goal for weight loss over a 6-month period (Jensen et al., 2013).

Results

Demographics The mean age in the sample was 61.9 years old ($SD = 9.6$; see Table 2). The oldest participant was 85 and the youngest was 24. The sample was predominantly male (85.5%) and Caucasian (83.1%; see table 3). The average BMI of the sample was 37.1 ($SD = 5.9$). The lowest BMI was 25.9 and the highest was 57.1 (See Table 2).

Weight changes. The expected results of the study were to show an effective weight loss after completion of the MOVE program (Objective 1) and to reveal the most effective path of maintenance after completion of the MOVE program (Objective 2).

Objective 1 was met because the study showed that there was a statistically significant weight loss for those who completed the 5-class MOVE program. The average weight of participants dropped from 256.3 pounds to 252.2 pounds, a loss of 4.1 pounds ($t = 9.6, p < .001$). On average, participants lost 1.6% ($SD = 2.1\%$) of their total bodyweight over the course of the 5 classes.

When looking at Objective 2, the participants were divided into four groups depending on their maintenance choices 3-9 months following completion of the MOVE program. Results from the one-way ANOVA showed a significant difference in weight loss between the four groups ($F = 3.7, p = .01$; see Table 5); on average, Group 1 (self-maintenance) lost 0.22 additional pounds. Group 2 (maintenance classes) lost the most weight at 11.1 additional pounds. Group 3 (RD visits) lost 2.8 additional pounds and Group 4 (maintenance classes and RD visits) lost 5.4 additional pounds. A post-hoc analysis was performed to determine significant difference between specific groups.

Pairwise comparisons led to significant p values ($p < .05$) when comparing Group 1 and 2, as well as Groups 2 and 3 (See Table 6). These results imply that attending maintenance classes is the most effective way to continue weight loss.

When looking at results from the perspective of percent weight loss over the maintenance period, group 1 (self-maintenance) lost an average of 0.2%. The group that attended maintenance classes (group 2) lost the highest percentage at an average of 4.4%. Group 3 (RD visits) had the second best results, losing an average of 2.1% of their body weight during the maintenance period. The group that attended both RD visits and maintenance classes (Group 4), surprisingly, only lost 0.9% of their total bodyweight.

Discussion

The findings from this study are comparable to earlier published findings. This study showed an average weight loss of 4.1 pounds (1.9 kilograms [kg]) over the 5 week MOVE program. Other studies have shown a 2.2-kg (4.8-pound) loss over a year (Romanova et al., 2013), a 2-pound (0.9-kg) loss over 8 weeks (Taft, Payvar, & Wool, 2011), a 1.6-kg (3.5-pound) loss over a year (Dahn et al., 2010), and a 3.6-pound (1.6-kg) loss over 6 months (Kahwati et al., 2011). This study provides continued support for intervention after completion of the MOVE program, as it showed higher weight losses in intervention groups than in the self-maintenance group; however, not all of the group differences were statistically significant. These results can be compared to the study that showed an almost double weight loss in the group that participated in the *intensive* MOVE program (Kahwati et al., 2011). Participants who completed the MOVE program and as well as some post intervention lost an average of 2.5-6% of their total body

weight. This can be compared with the reasonable 5-10% initial goal of weight loss over 6 months recommended by clinical guidelines (Jensen et al., 2013).

Limitations

The most significant limitation in the study was related to the design. The retrospective nature limits the study in a number of ways. All of the data were previously collected, so the investigator had no control over the multiple extraneous variables that play a role in weight fluctuations, such as cancer, congestive heart failure, and hemodialysis. The investigator had no control over when the patients were weighed, so a large gap of 3-9 months post-MOVE was needed in order to include as many patients as possible. This is a large range and could contribute to bias estimates of weight loss, as some individuals may have had a longer time frame between weight measurements, therefore increased opportunity to lose (or gain) weight. The sample size is also relatively small, especially in the maintenance group that went to maintenance classes only. This could also be contributed to the design of the study. The investigator had no control over the sample number in each group. The study involved reviewing charts and transferring numbers to a spreadsheet so there is also a possibility of human error as well.

A number of other factors could have influenced the results in the study. Some participants could have been prematurely excluded if it was not clear that they had completed all 5 of the MOVE classes. If the investigator could not find the 5 visits in the weight section of the chart, it was necessary to go to progress notes. With some patients, it was unclear if they had a makeup session or if they only attended 4 MOVE classes. A number of patients were excluded who showed positive weight loss over 4 MOVE classes but it was unclear if they completed a fifth class. The fact that some participants

had a makeup session also stretched out their MOVE program. These participants were unable to attend 5 consecutive classes, so their 5 classes may have occurred over 2-3 months, instead of 5 weeks. This longer gap gives much more opportunity for positive or negative weight changes. A number of participants also had positive results but had no follow-up weight within the 9-month cutoff.

It should also be noted that many of the patients met with the RD before their first MOVE class. A number of them started losing weight at that point. At least 2 of these patients have had a 50-pound plus weight loss and attended maintenance classes regularly but had to be excluded from the study because they started the program before the data collection time frame began. A number of participants also lost during MOVE then went to 1 RD visit or maintenance class directly after. They continued to lose but then stopped maintenance classes/RD visits and had a sharp increase in weight by the time they were measured at 3-9 months. Lastly, other interventions may have occurred in the post MOVE maintenance period. Some of these interventions provided by the VA could influence the changes in weight. They include, but are not limited to, behavioral interventionalist meetings, TeleMOVE participation, and gastric bypass surgery.

Implications for Research

Future research can be targeted at improving the design of the study. A prospective design could yield more accurate information, as the investigator would be able to control for confounding variables. The TeleMOVE program, as well as the behavioral interventionalist meetings should also be evaluated. As the largest number of participants were excluded due to not finishing the program, a study that looks at barriers

to completion of the program could prove helpful. A study on how often providers are recommending the program to obese patients could also be useful.

Implications for Practice

This study has implications for practice at the VA as well as primary care, in general. At the VA, this study bolsters support for the MOVE program and its efficacy. Providers at the VA should feel confident when they encourage their patients to participate in the MOVE program, knowing that their patients will be part of a program that is supported by evidence. It also provides support for continued intervention after patients complete the 5-week MOVE program. When looking at the sample in this study, 101/172 (59%) of the participants who completed the 5-class MOVE program, decided to maintain their own weight after completion, as opposed to taking advantage of valuable maintenance classes and RD counseling. Weight maintenance is a life-long process and this study provides more support that continued interventions lead to increased success.

Results of the study also have implications for providers outside of the VA. This study supports guideline recommendations of comprehensive weight loss programs. This should encourage providers to research community resources and work with patients to find comprehensive weight loss programs to increase their patients' chances for successful weight loss. If no such programs exist in the community, then providers, as educated health care professionals, have a unique opportunity to play a leadership role in creating a program with professional collaboration from other specialties.

Conclusion

Obesity is a multi-faceted problem that requires a multi-faceted solution. With prevalence rates on the rise, especially in the population of veterans, it is imperative that

primary care providers recognize obesity and help patients gain the skills and tools needed to treat it. The MOVE program is a perfect example of a comprehensive and individualized treatment program that attacks the problem of obesity from all angles. It includes a diet plan, physical activity plan, and behavioral therapy tactics, as well as a platform for maintenance. The program is built on a foundation of evidence and has been shown effective through a number of studies. This is exactly the type of plan that clinical guidelines encourage.

As the problem of obesity is largely preventative, it falls on primary care providers to spearhead the attack to cure this country through educating and counseling one patient at a time. As Family Nurse Practitioners (FNPs) will make up a considerable number of the primary care providers in the near future, new FNPs must be educated and prepared to accept this challenge. The MOVE program in the VHA system, as well as comparable programs outside of the VA prove to be invaluable resources for patients and should be supported and encouraged by primary care providers.

Graphics

Table 1. Study Groups

Groups	Post-Move Maintenance Course
Group 1	Participants who chose to maintain their own weight after completing the 5 week MOVE program (self-maintenance)
Group 2	Participants who attended 1 or more maintenance classes to maintain their weight after completing the 5 week MOVE program
Group 3	Participants who attended 1 or more meeting with a Registered Dietician to maintain their weight after completing the 5 week MOVE program
Group 4	Participants who attended 1 or more maintenance class and 1 or more RD meeting to maintain their weight after completing the 5 week MOVE program

Table 2. Means, standard deviations and ranges for selected continuous variables: MOVE study participants (N =172).

Variable	Mean	Standard Deviation	Minimum	Maximum
Age	61.9	9.6	24	85
BMI	37.1	5.9	25.9	57.1

Table 3. Frequency distributions for selected categorical variables: MOVE study participants (N = 172).

Variable	Frequency	Percent (%)
<u>Race</u>	143	83.1%
Caucasian		
African-American	23	13.4%
Other/Unspecified	6	3.5%
<u>Gender</u>	147	85.5%
Male		
Female	25	14.5%

Table 4. Weight Changes Over 5 class MOVE program: MOVE study participants (N=172)

Pre-MOVE average wt.	Post-MOVE average wt.	df	t-statistic	p-value
256.3 lb.	252.2 lb.	171	9.6	<.001

Note: p from paired t-test

Table 5. Weight Changes in Post Move Maintenance Period: MOVE study participants (N=172)

Group	Frequency	Mean absolute weight loss, lbs (SD)	Mean % body weight loss
1 self-maintenance	101	0.2 (12.2)	0.2%
2 maintenance classes	12	11.1 (12.0)	4.4%
3 RD visits	36	2.8 (10.9)	2.1%
4 maintenance classes and RD visits	23	5.4 (12.5)	0.9%
		<i>F</i> = 3.7	
		<i>p</i> -value = .013	

Note: p from one-way analysis of variance

Table 6. Post-hoc maintenance group comparisons ($N=172$)

Groups	p -value
Self-maintenance vs. maintenance classes	.003
Self-maintenance Vs. RD visits	.28
Self-maintenance Vs. Both (RD classes & maintenance classes)	.062
Maintenance Classes Vs. RD visits	.038
Maintenance Classes Vs. Both	.19
RD visits Vs. Both (RD classes & maintenance classes)	.41

Note: Post-hoc comparisons performed using Fisher's LSD method

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Capstone Report Conclusion

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Conclusion

As obesity prevalence continues to rise in this country, healthcare costs will follow. The country will continue to spend billions of dollars each year to treat problems that are most often preventable. The majority of this country is destined to suffer from co-morbidities that arise from obesity if it continues on this path. It is everyone's own responsibility to themselves, as well as society, to care for their own health. This is the premise of primary care, to prevent disease and complications through health promotion. There is no magic pill to fix this problem, only hard work and dedication.

The problem is clear, as well as the repercussions for leaving the problem unsolved. Healthy People 2020 have outlined specific, achievable goals. These goals are within the grasp of the country if it follows a very simple formula. A treatment plan consisting of diet, exercise, and behavioral interventions leads to the greatest success (Jenson et al., 2013).

This recommendation is reinforced in the newest obesity guidelines. These guidelines, along with older guidelines, experience, and expertise can assist healthcare providers in guiding patients back to the path of success. While the actual treatment of obesity ultimately depends on the individual, it is the provider's job and responsibility to provide the most updated and accurate information. The guideline analyzed in this capstone is based on the latest obesity-related research and if it could be boiled down to one main point, it would call for an individualized, comprehensive weight loss plan.

The MOVE program at the VA is a perfect example of this idea. The program is built on a foundation of evidence and has been shown effective through a number of studies, including the study described in Manuscript 3. The study presented also gave

continued evidence that weight loss is a continuing process and maintenance is just as important as initial weight loss. These findings apply to the MOVE program, as well as primary care providers outside of the VA system. Primary care providers cannot fix obesity alone. While they play an important role in the process, they must utilize the specialized knowledge and expertise found in a multi-disciplinary team. Providers must be the experts in recognizing the problem of obesity and recognizing the patient's readiness to treat themselves. They play an integral role in connecting the ready patient with the comprehensive treatment team, as well as provide encouragement along the continuum from obesity to weight maintenance.

Appendix A: Data Collection Sheet Example									
I D #	A g e	S e x	R a c e	H e i g h t	Pre- MOVE Wt. (kg)	Post- MOVE Wt. (kg)	# Maintenance Classes Attended	# RD Meetings Attended	Wt. at 6 months (+3 months) maintenanc e period (kg)

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