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OBESITY IN THE GERIATRIC POPULATION

By

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Bachelor of Science in Nursing

Minot State University, 2006

An Independent Study

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of the

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for the degree of

Master of Science

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PERMISSION

Title Obesity in the Geriatric Population

Department Nursing

Degree Master of Science

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Abstract

Obesity has been a focus of medical and public health attention for decades, however, a relative paucity of information exists regarding the management of obesity in the geriatric population. It is known that standard, young adult recommendations to manage weight cannot be applied directly to the older population due to the potential of adverse health outcomes, but the most effective strategies are controversial (Heintze et al., 2010). The goal of weight management is unique for this population and poses a challenge for health care providers when managing, treating, and counseling patients. With the current trends of obesity and its associated health consequences, health care professionals are unable to ignore this health epidemic. The purpose of this project is to identify best evidence and accepted clinical practice guidelines that differentiate some of the most effective strategies for managing obesity in the geriatric population.

The Health Belief Model (HBM) was the theoretical framework used in this study. This model was initiated to help examine why some people use preventive measures to keep themselves healthy, while others do not. By understanding the constructs of the HBM, health care professionals will be able to influence a person's health care decision based on how he or she views their health status.

A comprehensive literature review unveiled the magnitude and seriousness of the obesity epidemic. It clearly illustrates the complexity of obesity and it proves the idea that a multifaceted approach is essential to overcome the obesity epidemic. The literature review also provided the author an evaluation of weight management strategies for the obese geriatric population. This information will provide evidenced-based research that will educate individuals, communities, and health care professionals, about obesity and weight management strategies available to promote optimal health.

Obesity in the Geriatric Population

“Despite the widespread perceptions of the elderly as ‘tiny and frail’, obesity among older Americans is growing in prevalence, such that ‘big and frail’ is increasingly common” (Jensen, 2005, p. 678). In the United States, obesity influences the life of one out of two American adults both directly and indirectly, and it is the major cause of morbidity and mortality in the United States (U.S.) (Institute of Medicine, 2012). Obesity is defined as excessive fat accumulation that may impair health and is classified using the body mass index (BMI); in adults, obesity is defined as a BMI equal to or greater than 30 kg/m². Excess weight is often accompanied by high blood pressure, high blood cholesterol, type 2 diabetes, stroke, coronary heart disease, congestive heart failure, various cancers, osteoarthritis, sleep apnea and other health problems. The impact of obesity on chronic disease, health care costs, and the economic burden are challenges that have a direct impact on individuals, families, communities, and society as a whole.

Obesity has been a focus of medical and public health attention for decades, however, a relative paucity of information exists regarding the management of obesity in the geriatric population. It is known that standard, young adult recommendations to manage weight cannot be applied directly to the older population due to the potential of adverse health outcomes, but the most effective strategies are controversial (Heintze et al., 2010). The goal of weight management is unique for this population and poses a challenge for health care providers when managing, treating, and counseling patients. With the current trends of obesity and its associated health consequences, health care professionals are unable to ignore this health epidemic. It is important that health care professionals who work with this population are aware of safe, efficacious, and appropriate management methods specific to this age group. Thus, there is a need to answer the

question "What are some of the most effective weight management strategies for treating obesity in the geriatric population"?

Statement of the Purpose

The purpose of this project is to identify best evidence and accepted clinical practice guidelines that identify some of the most effective strategies for managing obesity in the geriatric population. The specific aims are as follows:

1. Examine the relationship of obesity to diabetes and heart disease.
2. Explore, through a comprehensive literature review, the relationship between socioeconomic, cultural variations, community resources, and the geographics related to the management of obesity in the older adult.
3. Analyze multiple strategies for weight management based on best evidence and accepted clinical practice guidelines for relevance and effectiveness for the older adult.
4. Develop a brochure with health promotion strategies that focuses on weight management.

This brochure will be available at Altru Clinic Lake Region, Devils Lake Community Clinic, Mercy Hospital, Ramsey County Public Health Unit, Devils Lake Senior Center, and Lake Region State College Nursing Program after peer reviews from nurse practitioners at Altru Clinic Lake Region.

5. Deliver an informational presentation to the elderly population at the Devils Lake Senior Center.

Significance of the Study

This independent study will educate health care professionals, individuals and communities about obesity and some of the most effective weight management strategies available to promote optimal health and good quality of life. As the incidence of obesity in the geriatric population continues to increase, health care professionals need to address weight

management at every patient encounter to effectively manage this epidemic. Evidence-based practice is the basis for management of all chronic medical conditions including obesity. The evidence-based research for this project has provided substantial support that includes strengths and limitations to weight management in the geriatric population.

A major strength of the evidence-based literature review is that it has provided guidance for weight management considerations for the geriatric population. In addition, studies emphasize the importance of weight maintenance as part of weight loss therapy. This approach will foster health and promote optimal outcomes for this unique population.

A major limitation of the evidence-based literature review is the paucity of evidence-based practice guidelines for weight loss in the elderly. There are clear and definite guidelines for weight management in the younger and middle age group, but there is little evidence about application of these guidelines in the elderly. Heiat, Vaccarino and Krumholz (2001) state, "Knowledge about the treatment of obesity in older adults is limited because clinical trials tend to exclude older persons; therefore, the appropriate nature of interventions have not been adequately evaluated in this age group" (p. 1195). The recommendations for weight management for all age groups include diet, exercise, behavioral therapy, pharmacotherapy, and surgery. These are merely recommendations and the risk-benefit ratio of treatment needs to be considered for each individual. Overall, it is important that health professionals who work with this population are aware of safe, efficacious, and appropriate management methods specific to this age group.

Theoretical Framework

The HBM will be used to provide the framework for this paper. In the 1950s, this model was designed to explain a person's health behavior and the lack of participation in preventative

health measures. This model provides an explanation of why some persons are motivated to utilize preventative measures to maintain health, while others are not. The basis of the HBM contains the following psychological constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (James, Pabee, Oxidine, Brown, & Joshi, 2012; Pender, Murdaugh & Parsons, 2006; Rawlett, 2011). By understanding the constructs of the HBM, health care professionals will be able to influence a person's health care decision based on how he or she views their health status.

According to Rawlett (2011), "The HBM was extrapolated from the more abstract theory of Kurt Lewin. Lewin's theory of goal setting has the individual existing in a life space composed of regions. The regions have positive, negative, and neutral values" (p. 17). This further implies the importance of positive influences within environments versus negative influences in relation to health outcomes (Pender et al., 2006). Essentially, it is how a person views his or her health condition with their own beliefs that will help them to sway to the negative aspects, the positive aspects or neutrality regarding his or her health.

In clinical practice, the HBM can be useful in identifying people who may or may not use preventive strategies. Prevention is a strategy used to avoid negativity. It can also propose interventions that could possibly help persuade individuals to use preventative measures. There are variables described that may affect the decision one may use to take action to avoid disease. They include:

- An apparent threat that he or she may be vulnerable to the disease or condition.
- The belief that taking action is going to have positive health outcomes.
- How an individual foresees dealing with the disease and its severity versus poor quality of life.

- Perceived benefits prevail over the barriers (Pender et al., 2006).

Demographic variables and sociopsychological variables are factors that indirectly play a part in modifying the actions taken and is based on one's perception of a threat or the potential significance of a health problem. Cues to action, described as immediate stimuli that is needed to generate a thought of the threat, or disease, also takes part to modify actions one may take toward a perceived illness. Perceived barriers may lend way to negative aspects of illness. Perceived barriers, along with the views of being susceptible to a disease, are two variables pertinent in research to help configure preventive interventions (James et al., 2012). Figure 1 by James et al. (2012, p. 665), illustrates the HBM as it is applied to weight management.

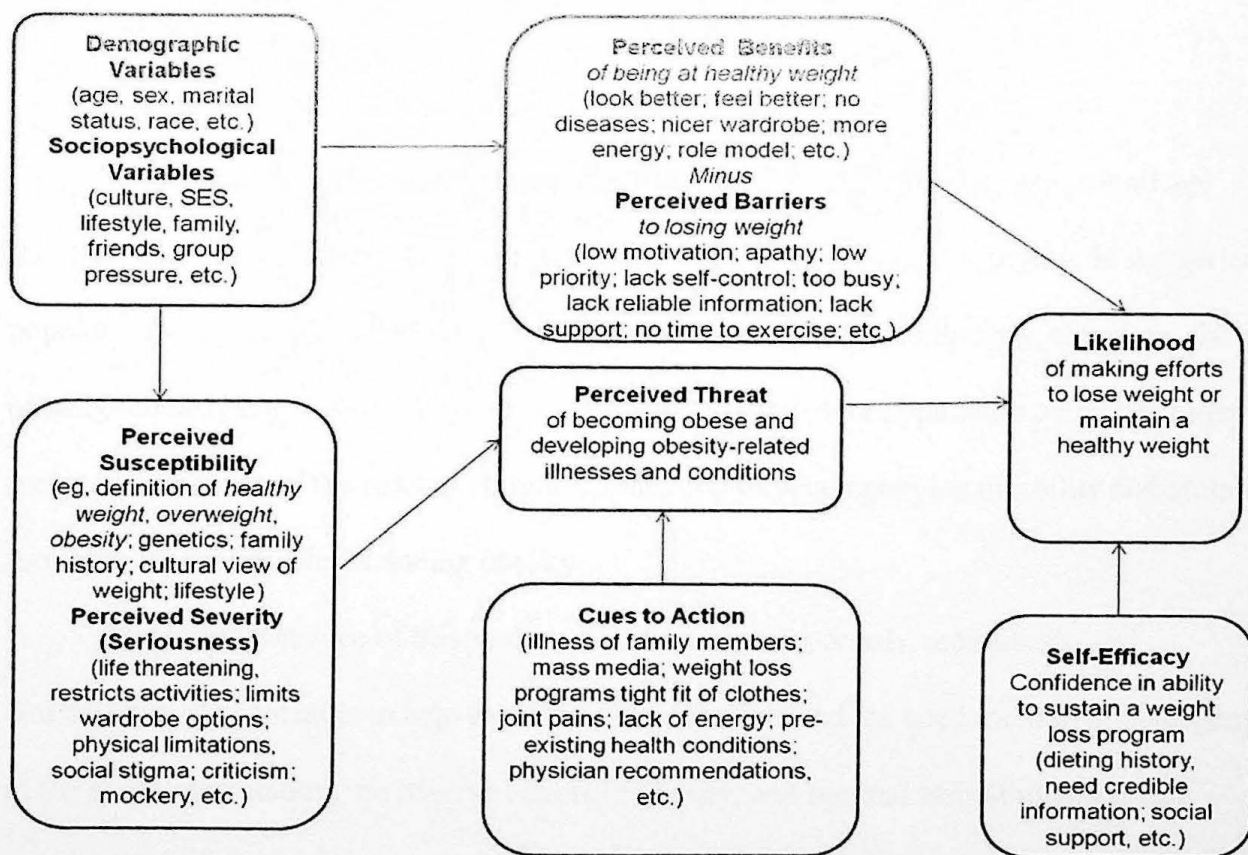


Figure 1. Health Belief Model theoretical framework applied to weight management. SES=socioeconomic status.

Definitions

For purpose of this project, the following terms are defined:

Geriatrics: A senior citizen (Mosby, 2002).

Senior Citizen: A person over the age of 65 years (Mosby, 2002).

Obesity: A condition in which excess body fat has accumulated to an extent that health may be negatively affected. It is commonly defined as a BMI of 30 kg/m^2 (Mosby, 2002).

Overweight: Having more body weight than what is considered healthy for a person's height, build, and weight. A BMI of $25\text{-}29.9 \text{ kg/m}^2$ in an adult (Mosby, 2002).

Body Mass Index (BMI): A mathematical formula used to evaluate patient's weight in relation to height. This number is calculated by dividing an individual's weight in kilograms by their height in meters squared.

Process

As previously mentioned, the recommendations for weight management for all age groups include diet, exercise, behavioral therapy, pharmacotherapy, and surgery. In the geriatric population standard young adult recommendations cannot be applied directly, therefore, the goal of weight management is unique for this population. As the older population continues to grow, we know that many of the risks of chronic disease and its accompanying disability and premature mortality are modifiable, including obesity.

The target audience of this study is health care professionals, individuals, and communities. The intent is to help these individuals understand the need for weight management in the elderly population, the adverse effects of obesity, and optimal weight management strategies.

A comprehensive literature review was performed utilizing several databases and many search terms. Databases included: PubMed, Cumulative Index to Nursing and Allied Health (CINAHL), and MedlinePlus. Search terms included: "obesity", "geriatric", "older adult", "elderly", "diabetes", "heart disease", "cardiovascular disease", "exercise", "physical activity", "diet", "behavioral therapy", "pharmacotherapy", "surgery", "socioeconomics", "geographics", "culture" and combinations of these modalities. The following criteria included journal articles from the past ten years, human subjects that were 65 years or older, randomized controlled studies were preferred for treatment efficacy.

An educational brochure with health promotion strategies that focuses on weight management has been developed based on the findings of the literature review (Appendix). This brochure will be available at Altru Clinic Lake Region, Devils Lake Community Clinic, Mercy Hospital, Ramsey County Public Health Unit, Devils Lake Senior Center, and Lake Region State College Nursing Program after peer reviews from nurse practitioners at Altru Clinic Lake Region.

In the future, an informational presentation will be conducted to the elderly population at the Devils Lake Senior Center. The presentation will include a discussion about obesity and the relation to diabetes and heart disease, the impact of socioeconomics, geographic influences, cultural considerations, and community resources, and weight management strategies. The presenter will be available for questions and answers.

After a comprehensive literature review, the author feels strongly that obesity is a major health concern for the aging population and wants to provide evidenced-based research that will educate professionals, individuals, and communities about the issue and the weight management

strategies available to promote optimal health. The author has consulted her advisor for expert recommendations on this topic.

Literature Review

The focus of weight management in the geriatric population has been based on the controversy of treatment for this population. Chau, Cho, Jani, and St. Jeor (2008) state, "Weight management in the elderly is very complex and challenging. It is quite different from adults in approach and recommendations" (p. 1363). Hence, a comprehensive review of evidence-based literature was conducted to identify health consequences of obesity and to determine best practices and clinical strategies to weight management in the geriatric population. The following areas will be identified: Diabetes and Heart Disease, Socioeconomic, Cultural and Geographic Variables, Community Resources, and Physical Activity, Nutrition, and Behavioral Therapy.

Diabetes and Heart Disease

The global dynamics are changing rapidly as the population grows older. The aging population is changing the face of medicine, as such; the cause of death has shifted from communicable disease to non-communicable disease. Coronary heart disease (CHD) is now the leading cause of death in industrialized countries (Heintze et al., 2010). McKeown, Logan, McKinley, Young, and Woodside state, "...the relationship between obesity and CHD is complex, in that obesity is known to increase the risk of developing type 2 diabetes, dyslipidemia, and hypertension, all of which are risk factors for CHD" (2010, p. 46).

A randomized control study by Villareal et al. (2006) states, "Both obesity and advanced age are associated with noninfectious inflammation. Moderate weight loss induced by diet and exercise therapy decreased serum markers of inflammation, c-reactive protein (CRP), and

interleukin 6 in our elderly subjects, as was found previously in younger adults" (p. 1322).

Lifestyle modification is recommended to reduce cardiovascular risk.

According to Anand et al. (2008), the INTERHEART study found that 90.4 percent of all myocardial infarcts were attributable to nine risk factors including: ApoB/apoA1, current smoking status, diabetes, hypertension, abdominal obesity, psychosocial variables, dietary consumption of fruits and vegetables, and exercise and alcohol intake. The results were consistent across the 52 countries included in the study, all ethnic groups considered, and both genders. The researchers found protective properties with daily intake of fruits and vegetables, a moderate to strenuous exercise regimen, and consumption of alcohol beverages less than or equal to three times per week.

A systemic review of evidence by McKeown et al. (2010) showed a causal link between dietary factors and coronary heart disease. The researchers found that current evidence only supports a valid association between a limited number of dietary factors; vegetable, nut and monounsaturated fatty acid (MUFA) intake, and trans-fatty acid and foods with a high glycemic index (positive association), and CHD. MUFA rich foods include: oils (olive, canola, safflower, sesame, soybean, walnut, flaxseed, peanut, sunflower), beans, nuts and seeds (sunflower seeds, pistachios, walnuts, almonds, pine nuts), and legumes. These food items should be included in every meal along with fruits, vegetables, and whole grains (low-glycemic index). Food items with a high-glycemic index include refined grains and should be consumed in moderation.

A study by Milsom, Ross Middleton, and Perri (2011) found significant benefit with weight reductions of only five percent of total body weight. The researchers recommended a decrease in total caloric intake by 500-1000 kcal per day to attain weight loss of one to two

pounds per week, total protein intake of 15 percent of total calories, and fats 25 to 30 percent of total daily calories.

Socioeconomic, Cultural, and Geographic Variables

An article by Drewnowski (2009) discussed the socioeconomic gradient of obesity and type 2 diabetes. Studies show that healthy food choices are more expensive than energy dense food choices. Individuals that are disadvantaged such as minorities or the poor, have a much greater challenge in purchasing healthy food items. It is proven that sweets and fats are less expensive and easier to obtain. Low-income neighborhoods attract more fast food chains and convenience stores versus grocery stores. Drewnowski suggests that obesity needs to be addressed at an individual level as well as an environmental level.

A cross-sectional study in Canada found that socioeconomic variables are dynamic and are less predictive of obesity in individuals in developed countries. Several studies report poorer health is associated with lower socioeconomic status (SES); however, this study found the rise in obesity over the past decade is greatest in individuals with the highest SES. The study found that individuals with highest SES eat outside the home due to busy schedules and time constraints, which increases their consumption of nutrient-dense food items. Their leisure time activity is influenced by their built environment; the accessibility to computers and other technologies that promote sedentary behaviors. These individuals are also motivated by smoking cessation campaigns, which could potentially result in weight gain (Kuhle & Veugelers, 2008).

A study that analyzed the differences in health between the United States and Japan found a staggering difference in obesity in these populations. Twenty-six percent of older men and women are overweight in the United States compared to 3.2 percent of older men and women in Japan. The researchers believe that Japan has fewer health disparities relative to their

weight. Despite the statistics, Japan has had an increase in weight too; therefore, the Japanese government requires employers to monitor the weight status of their employees. Some studies believe that the reason good health can be appreciated in Japan is their well-defined universal health care system (Reynolds et al., 2008).

The Baltimore Memory Study was a cohort study that investigated neighborhood psychosocial hazards (NPH) to analyze the effect of neighborhood safety on obesity. The 1,140 subjects selected were community members from one of 65 neighborhoods in Baltimore, MD. The following indicators were investigated:

- Indicators of social disorganization included the percent of single parent families, percent of adults without a high school degree or equivalent, and the percent of adults separated, divorced, or widowed.
- Indicators of public safety reflected the number of 911 calls per person per year and the number of violent crimes in the neighborhood.
- Indicators of physical disorder revealed the percent of vacant houses, the number of complaints about street conditions, and the number of liquor stores or off-site liquor licenses in the neighborhood.
- Indicators of economic deprivation showed per capita income, the index of working class, the percent of adults unemployed, and the percent of families living in poverty.

The researchers found that individuals living in areas with higher NPH values had a 52 to 90 percent increased risk for obesity. The researchers also found that individuals dwelling in these higher NPH locales had an average BMI of 3.7 points higher than their counterparts did in lower NPH locales. The study found that individuals who are routinely exposed to high stress environments have increased glucocorticoid production leading way to metabolic syndrome and

visceral adiposity. The researchers recommend a community-based approach to combat neighborhood deprivation and the impact on obesity through safer communities, economic change, and positive psychosocial interventions (Glass, Rasmussen, & Schwartz, 2006).

The question of whether a multimedia campaign positively affects the number of individuals that engage in walking exercise is addressed in a 2005 post-campaign study. A randomized telephone survey was completed in a midsize town of 84,909. A total of 297 adults, 18 years and older completed the interview. Wray, Jupka, and Ludwig-Bell (2005) found that a media campaign could promote positive walking behaviors. The media campaign was delivered via billboards, newspapers, radio, and poster. The greatest campaign exposure was gained through billboards and newspaper articles.

A study by Feinglass et al. (2011) found that daily weather patterns could have an impact on physical activity. The study analyzed the Chicago area and found that daylight hours, temperature, and rainfall had a cumulative effect on outdoor opportunities between June and November. The researchers estimate that the individuals from this geographical location have approximately three fewer hours per day for outdoor activity because of these variables. The researchers found, "even modest reductions in activity can have clinically serious consequences" (p. 934).

Community Resources

The obesity epidemic is consuming insurmountable health care resources. A study by Wilson et al. (2010) tested clinician-delivered health promotion strategies that utilized community resources for counseling patients identified as overweight. The researchers found that individuals who participate in group classes have the most significant outcome of lowering weight and BMI; 3.5 kg and 1.3 BMI units of measure respectively over four months.

Convenience was the number one reason that telephone counseling was the preferred method of delivery in the older population; the results in this subpopulation were 2.0 kg and 0.8 BMI units of measure. Usual care participants (UCP) did not have significant results in weight reduction or BMI. The UCP are those individuals that prefer provider-based counseling and those who have chosen not to participate in an intervention modality. A startling 35 percent of obese patients do not receive advice on weight loss from their primary care provider (Wilson et al., 2010).

A randomized control study in the United Kingdom, Germany, and Australia compared standard treatment in primary care versus community-based programs for obesity intervention. The researchers found that both groups lost a clinically significant amount of weight over a 12 month timeframe; however, the commercial group lost twice as much. Commercial group therapy includes support groups such as Weight Watchers. The individuals in the community-based group met two to three times each month versus the standard group, which met with their health care provider once a month. The difference in outcomes may be associated with the intensity of the commercial group, which includes: self-monitoring, goal setting, nutrition advice, exercise education, problem solving, motivation, social support, and other essential components (Jebb et al., 2011).

Additional resources that need to be considered for these patients with obesity are the increased number of clinic appointments that are devoted to the management of their comorbid conditions.

Physical Activity, Nutrition, and Behavior Therapy

The health benefits of physical activity have been well established in the literature. As well, the lack of physical activity for Americans is also well documented in the literature. A sedentary lifestyle is a strong risk factor for many chronic diseases, including obesity. Obesity is

the second leading cause of preventable death in the United States, and it is a major cause of morbidity and disability. Higher body weights are correlated to higher death rates. According to Johnson et al. (2011), "Between 2010 and 2050, the number of people age 65 years and older in the United States will more than double from 40 million to 88 million and older Americans will become more ethnically diverse" (p.35). These anticipated demographic changes will have a direct impact on food insecurity which is associated with obesity. Food insecurity occurs when individuals struggle to acquire nutritionally sound foods in socially acceptable ways, this leads to nutritional compromise. Thus, health care providers need awareness of evidence-based nutrition interventions in conjunction with physical activity guidelines.

A study of 24,281 Canadian older adults completed a multi-sectional health survey measuring the relationship between leisure time physical activity and chronic health conditions. 87 percent of the total participants surveyed had one or more chronic conditions, yet only 25 percent achieved the recommended minimum activity level of 1,000 kcal per week. The degree of impact is uncertain; however, the study shows that the physically active participants reported fewer debilitating effects such as mobility, pain, and emotional lability (Sawatzky, Liu-Ambrose, Miller, & Marra, 2007).

According to Elsayy and Higgins (2010), physical activity guidelines that promote exercise engagement in the older adult population as outlined in the 2008 Physical Activity Guidelines for Americans include:

- Engage in a variety of moderate to vigorous-intensity aerobic activities for at least 10 minutes on at least three days per week.
- Engage in strength training exercises a minimum of two days per week. Individuals should perform eight to 12 repetitions per activity or until muscle exhaustion is met.

- Engage in balance activity weekly such as heel to toe walking and walking backwards.
- Engage in stretching exercises a minimum of two days a week for ten minutes each session.

This article also recommends that individuals with a chronic health condition should consult their primary care provider for a pre-exercise evaluation; however, those without a preexisting health condition or symptoms can forego a pre-exercise evaluation. Management plans should be based on the pre-exercise evaluation and should include the type of activity to be performed; how, when, and where the activity should be performed, and should be progressive in nature (Elsawy & Higgins, 2010).

The World Health Organization (2011) recommends the following guidelines for all healthy adults aged 65 years and above:

- Older adults should perform 150 minutes of moderate-intensity, aerobic exercise, or 75 minutes of vigorous-intensity, aerobic exercise, or an equivalent combination each week. Each activity session should last at least 10 minutes.
- Older adults should perform balance exercises three or more days each week.
- Older adults should perform muscle-strengthening exercises on two or more days each week.

Manini et al. (2010) performed a secondary analysis of the Lifestyle Interventions and Independence for Elders-Pilot study (LIFE-P). The LIFE-P study was performed to examine the efficacy of a program of physical activity versus attention-control, on the incidence of major mobility disability. The researchers found that health benefits of physical activity might be optimized by weight loss in the older adult population versus physical activity alone. The researchers also suggest supervised, individualized training programs for optimizing adherence.

Other studies suggest health care providers recommend weight reduction on an individualized basis only after careful consideration of the risk-benefit ratio. For the individual that the risk outweighs the benefit, weight maintenance should be considered with a goal of maintaining functionality through physical activity (Johnson et al., 2011).

A randomized control study of 316 older adults with a mean body mass index of 34 kg/m² was conducted to determine the effects of intentional weight loss versus non-intentional weight loss on this population. The subjects included 159 participants randomized to the intentional weight loss group and 159 participants randomized to the non-intentional weight loss group. The study found the individuals that performed intentional weight loss interventions such as dietary restrictions and exercise, had a lower mortality rate than the respective exercise only and control groups. The goal of five percent weight loss was achieved and was associated with a 50 percent lower rate of mortality. These findings are supported by an analysis of type 2 diabetic patients that had a 58 percent mortality rate when non-intentional weight loss occurred versus a 17 percent mortality rate when intentional weight loss was engaged in (Shea et al., 2009).

In the United States, it is estimated that four million adults age 60 and older face food insecurity, and this is expected to continue to rise. Food insecurity is defined as "the limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways" (Johnson et al., 2011, p. 536).

A cross-sectional study of 179 older American adults of a rural Pennsylvania community found that rural older adults are exposed to nutritional inadequacies that may be linked to social and geographic variables, transportation, and access to nutritional services. The study strongly correlates obesity to inadequate consumption of appropriate nutrients. A potential strategy is to counsel patients to increase nutrient-dense foods into their diets (Ledikwe et al, 2003).

Hays and Roberts (2008) studied three eating behavior theories; disinhibition, restraint, and hunger. Disinhibited eating behavior is the tendency to overeat in response to stimuli and is broken down into three subgroups:

- Habitual - Habitual disinhibition occurs when individuals overeat in response to daily life circumstances.
- Emotional - Emotional disinhibition occurs when an individual consumes excessive calories as an emotional response.
- Situational - Situational disinhibition occurs in response to environmental cues such as social events.

The researchers found that habitual disinhibition was most often the reason for eating in those 55-65 years of age. These individuals consume calories in response to every day circumstances more often than in response to emotional situations or in response to environmental cues. The researchers recommend strategies such as group and/or individual behavior therapy and reduced availability of dietary variety to overcome habitual disinhibition.

The Weight Loss Maintenance (WLM) study was a two-phase trial that aimed to monitor individuals for a 30 month maintenance period after an initial six month weight loss phase.

During phase II, the 1,032 individuals were randomized into one of three subgroups:

- Self-Directed Weight Loss Maintenance Group
 - These individuals were given printed materials that included lifestyle guidelines and physical activity recommendations. They met with an interventionist after 12 months, otherwise had minimal intervention.
- Interactive-Technology Based Group

- These individuals had unlimited access to an interactive website. The website offered social support, goal setting and action plans, problem solving and motivation. There was no face-to-face counseling offered, however, if they did not login for one week they were contacted by email or by person to assess their status.
- Personal-Contact Intervention Group
 - These individuals did not have internet access; however, they met with an interventionist via telephone once a month for 5-15 minutes, and every fourth month they met face-to-face for 45 to 60 minutes to review their progress.

The participants were 37 percent male and 38 percent African American. The guidelines for the interactive technology based group and the personal contact intervention group included guidance to continue the Dietary Approaches to Stop Hypertension dietary pattern and increase moderate to vigorous exercise to 225 minutes a week from 150 minutes a week in phase I. The researchers found that all groups regained weight during the maintenance period; however, the groups with a guided maintenance approach regained at a lesser rate: the self-directed, weight loss maintenance group regained 5.5 kg, the interactive-technology weight loss maintenance group regained 5.2 kg, and the personal-contact weight loss maintenance group regained 4.0 kg. The researchers found that weight loss, even though small, was significant enough to have clinical benefit; 1 kg of weight loss decreases systolic blood pressure by 1.0 to 2.4 mmHg and decreases the incident of diabetes by 16 percent (Svetkey, et al., 2008).

Behavior therapy interventions must consider an individual's motivation and readiness to engage in a weight loss program. Some behavior therapy strategies include self-monitoring,

stimulus control, goal-setting, social support, problem solving, cognitive restructuring, reinforcement, relapse prevention, and strategies for dealing with weight regain.

The articles described above were extremely beneficial when completing this independent study project on obesity in the geriatric population. The findings from all the studies clearly illustrate the complexity of obesity and it proves the idea that a multifaceted approach is essential to overcome the obesity epidemic. The literature review also provided the author an evaluation of weight management strategies for the obese geriatric population. This information will provide evidenced-based research that will educate individuals, communities, and health care professionals, about obesity and weight management strategies available to promote optimal health.

Discussion

This section includes a discussion of the research findings. Additional content includes the outcome dissemination, implications for nursing practice, education, and policy, and concludes with recommendations for further research.

Interpretation

The anticipated outcome of this project is to promote awareness of strategies that guide weight management in the geriatric population. Obesity is a major health concern for this aging population and the author wants to provide evidenced-based research that will educate individuals, communities, and health care professionals about obesity and weight management strategies available to promote optimal health. The following areas will be discussed: Diabetes and Heart Disease, Socioeconomic, Cultural and Geographic Variables, Community Resources, and Physical Activity, Nutrition, and Behavioral Therapy.

Diabetes and heart disease are profoundly impacted by obesity. As well, there is strong and consistent evidence that show CHD and diabetes are directly linked, and both are impaired by obesity. Therefore, weight management strategies are essential for optimal health. Weight management strategies should include physical activity and nutrition guidelines, and behavioral therapy modification. Other strategies outside the scope of this literature review include pharmacotherapy and surgery. These options should only be considered after six months of behavioral modification have been attempted. Essentially, health care providers need to help individuals see the perceived threat of becoming obese or the ill effects of being obese. Next, they must evaluate each individual to determine their motivation and readiness to engage in the aforementioned strategies.

Socioeconomic, cultural, and geographic variables also contribute to obesity. According to the research, many studies support the idea that the socioeconomic gradient of obesity is largely influenced by individuals with lower SES. However, as the obesity epidemic continues to evolve, one study showed that most recently individuals with the highest SES had the greatest impact on the socioeconomic gradient. Hence, obesity is a diverse health care concern and is not segregated by SES. To outreach to these various societal groups, obesity, needs to be addressed at various levels. The Baltimore Memory Study identified NPH that influenced obesity (Glass et al., 2006). Therefore, communities need to implement measures that provide safer communities. When individuals feel threatened in their communities they are less likely to engage in activities outdoors; hence, less physical activity. Outdoor activity is impacted by weather patterns also; therefore, communities should have access to activity centers to meet daily physical activity requirements. This implicates a cost factor, which might not be feasible for some socioeconomic classes.

Obesity is a burden on the health care system and community resources. According to Jebb et al. (2011), several studies show that individuals who engage in community-based programs lose more weight and are more successful at keeping it off versus those that engage in provider-based counseling. Overall, community-based groups are more intense and require self-monitoring, goal-setting, nutritional advice, and exercise education. Health care providers need to be aware of community-based groups in their respective areas when counseling individuals and work in collaboration with these resources if they are unable to incorporate an intense weight management program into their practice.

All individuals should participate in a regular physical activity regimen that is progressive in nature. Activity types should include aerobic, strength, and balance exercises. Initially, participants should engage in a minimum of 150 minutes of moderate-to-vigorous activity weekly and strength training and balance exercises a minimum of two days weekly. All individuals should have a pre-exercise evaluation in consideration of the age of this population. In addition to exercise, patients need to be counseled to increase nutrient rich foods in their diets and evaluate their eating patterns for habitual disinhibition, which is common in this age group.

Outcome Dissemination

The author has established the following methods to distribute the research findings:

- Develop a brochure with health promotion strategies that focuses on weight management.

This brochure will be available at Altru Clinic Lake Region, Ramsey County Public Health Unit, Devils Lake Senior Center, Mercy Hospital, and Lake Region State College Nursing Program after peer reviews from nurse practitioners at Altru Clinic Lake Region (Appendix).

- Deliver an informational presentation to the elderly population at the Devils Lake Senior Center and to the nurse practitioners at Altru Clinic Lake Region.

The author will be present during the presentation for questions, comments, and discussion. The presentation will heighten awareness of obesity in the geriatric population, the adverse effects of obesity, and optimal weight management strategies. An evaluation form will be provided to the participants to assure the presentation objectives were understood.

Implications for Nursing

Practice

Health care providers lack time to address obesity and weight management issues within their practice. This needs to be met with intention during every patient encounter. The opportunity can take as little as three minutes, yet reap great health outcomes. In clinical practice, the key is to identifying individuals who may or may not use preventive strategies. A key to this strategy would be to use the HBM to identify an individual's health behavior and the lack of participation in preventative health measures (Pender, et al., 2006). By incorporating the constructs of the HBM, health care professionals will be able to influence a person's health care decision based on how he or she views their health status. Strategies that health care professionals can utilize to implement the HBM constructs include:

- Perceived Susceptibility
 - Assist individuals with defining their weight in terms of healthy weight, overweight, and obesity, and identify health risks and discuss their genetics and family history with them.

- Perceived Severity
 - Inquire about how the individual perceives their health and identify any social consequences that the individual has suffered related to their weight. Educate individuals about obesity and the health threat.
- Perceived Benefits
 - The health and social benefits of a healthy weight are great; stress the benefit of losing even a few pounds. Be empathetic when individuals express their negative social experiences.
- Perceived Barriers
 - Evaluate any external circumstances or negative connotations that may interfere with the individual's weight loss success. Emphasize the importance of setting realistic goals, and encourage family-centered activities and exercising with a buddy.
- Cues to Action
 - Inquire about an individual's motivation to lose weight. Discuss indicators of an unhealthy weight such as lack of energy and fatigue.
- Self-efficacy
 - Identify an individual's confidence in the ability to sustain a weight management program. Utilize positive reinforcement by acknowledging small behavior change and encourage group therapy for support.

Individuals need support and encouragement from their health care providers, family, friends, and colleagues so they can feel they will be successful at their weight management program (James et al., 2012).

Education

Unfortunately, obesity and weight management strategies in the geriatric population are only addressed on a relatively small scale in research. Rather, the focus is on the pathophysiology of a disease process, interventions after diagnosis, and the astounding relation that obesity contributes to the disease process. In addition, obesity is a multifactorial process and requires an in-depth understanding of many influencing variables. Further research is needed to identify optimal educational engagements for this unique population.

Policy

Despite the significant health and economic implications of obesity in the elderly, there is a lack of governing body for treatment and management of this obese population. Reversing current trends related to physical inactivity, dietary habits, and behavior modification, will require a multifaceted public health policy approach. This approach will require participation from individuals, communities, politicians, health care providers, dieticians, physiotherapist, health systems, the food and leisure industries, and local, state, and federal governing bodies (World Health Organization, 2012).

Recommendations for Further Research

Obesity influences the life of one out of two American adults both directly and indirectly, and it is the major cause of morbidity and mortality in the U.S. (IOM, 2012). Further research needs to be completed in the area of preventative health strategies to deter obesity in the geriatric population. As mentioned previously, there is a relative paucity of information that exists regarding the management of obesity in the geriatric population. Weight management guidelines are based on studies in younger populations; therefore, more research needs to be done to identify optimal weight management strategies in this unique population.

Weight management strategies must be tailored to the needs of specific patient populations that consider socioeconomic, cultural, and geographic variables. Hence, further research needs to be completed to understand the micro-essential components of each of these variables and how to tailor individual programs that match the diversity that these variables lend way to. As well, the rate of optimal progression of weight management in lieu of various comorbidities, such as diabetes and heart disease, needs to be identified and more clearly understood.

More research needs to be done to better understand energy balance between caloric intake, physical activity expenditure, and resting metabolic rate amongst diverse geriatric populations. This requires further research to be able to prescribe appropriate caloric intake. Again, comorbid conditions need to be considered in this strategy.

There is controversy in the literature regarding the method that is used to define obesity; BMI, waist circumference, or hip-to-waist ratio; however, BMI seems to be the most consistent anthropometric measure today. This needs further research to identify a consistent method of defining obesity.

Finally, studies indicate that obesity and or weight management strategies are not reviewed consistently within clinical practice. Health care facilities and health care providers should be studied to find out how they can most efficiently disseminate weight management information within their practices.

Conclusions

Weight management in the elderly population is quite different from younger adults, yet there is a paucity of information regarding optimal weight management strategies in this

population; therefore, treatment guidelines are widely based on studies conducted in younger populations.

Weight management interventions should be tailored on an individual basis. The risk-benefit health outcome ratio needs to be determined for each individual and interventions must be recommended accordingly. Physical activity guidelines should be recommended in a progressive nature, and patients should be counseled to consume nutrient rich foods. Health care providers need to be aware of community-based weight management programs within in their respective communities and should encourage individuals to participate in community-based programs for optimal weight loss management and maintenance.

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