

The Effects of a Health Promotion Program on Rural, West Virginia Adults

Amy E. Spurrier^{1*}, Catherine Suttle², Linda Matheson³ and Ann Baker-Watson⁴

¹Assistant Professor of Nursing, West Liberty University, USA.

²Faculty Mentor and Chair, Capella University, USA.

³Committee Member, Capella University, USA.

⁴Preceptor, USA.

*Corresponding author

Amy E. Spurrier, Assistant Professor of Nursing, West Liberty University, 320 SHANGRI LA RD Wellsburg, WV 26070 USA, E-Mail: amy.spurrier@westliberty.edu.

Submitted: 16 June 2017; Accepted: 23 June 2017; Published: 28 June 2017

Abstract

Purposes/Aims: To evaluate the effectiveness of a health promotion project designed to increase physical activity and nutritional eating and decrease BMI in adults living in a rural West Virginia community.

Rationale/Background: Evidence has shown that programs that partner with community institutions such as a faith-based organization are more successful in gaining acceptance, contacting target populations, and sustaining the program. This project will focus on the ongoing epidemic of weight, obesity, and inactivity that is plaguing the United States, more specifically West Virginia, and what influence a health promotion program could render. This project will answer the question: What are the effects of a 12-week health promotion program on the BMI, weight, physical activity, and nutritional choices of adults with a BMI of 25 or greater who live in a rural West Virginia community?

Undertaking/best practice/approach/methods/process: The DNP project coordinator will plan, implement, and evaluate a health promotion program in a rural West Virginia community. The intervention will be structured as a 12-week health promotion. The program will begin with a pre-assessment of participants' knowledge and understanding of health and a healthy lifestyle, including physical activity level and good nutrition. In addition, the following information will be collected from each participant: age, sex, height, weight, and BMI calculation.

The goals of this project are:

- To facilitate learning through wellness modules focusing on physical activity and nutrition
- To increase knowledge of healthy physical activity and nutrition
- To improve weight and BMI

Outcomes achieved/documentated: The statistical software program, Statistical Package for the Social Sciences (SPSS) will be used to organize and analyze the data. The data will then be analyzed to assess to what degree: learning took place, the program met expectations, participants' weight decreased, participants' activity increased, and participants' nutritional choices improved.

Descriptive statistics will be used to paint a picture of the program participants with regard to variables such as age, weight, and BMI. In addition to analyzing individuals' pre-and post-program measures through the use of paired t-tests, the project coordinator will compile the data to analyze pre- and post-program differences. The project coordinator will disaggregate the data by different demographic variables in order to look for patterns and outliers.

Conclusions: Finding are that most participants are health seeking and want to learn about weight loss, increase in activity, and/or nutritional eating. Other anticipated findings are that participants are overweight and have an unhealthy BMI. If participants make the changes suggested throughout the program, health may increase through a decrease of BMI, decreases in weight, increased physical activity, and healthier nutritional choices.

Introduction

Overweight, obesity, and inactivity are by no means a new concept. The United States has been making efforts to address

these epidemics for years, but despite efforts, they continue to rise [1]. According to Cromartie, Parker, Breneman, and Nulph, [2] Americans living in rural areas face significant challenges in

healthcare and could benefit from health promotion programs that focus on prevention, health, and lifestyle. The rural population in the U.S. is comprised of nearly 50 million citizens, 17 percent of the total population. *Healthy People 2020* places critical importance on creating social environments that promote health and healthy behaviors in a community setting [3].

Partnering with community institutions such as a faith-based organization for health promotion is more successful in gaining acceptance, contacting target populations, and sustaining the program [4]. This health promotion project focused on the ongoing epidemic of weight, obesity, and inactivity that is plaguing the United States, more specifically West Virginia, and what influence a health promotion program rendered. This project answers the question: In adults with a basal metabolic index (BMI) of 25 or greater who live in a rural West Virginia community, how does a health promotion program affect BMI, weight, physical activity, and nutritional choices as compared to their BMI, weight, physical activity, and nutritional choices prior to the health promotion program over a 12-week period?

Project Aims

The DNP Project encompassed an evidence based, structured, 12-week health promotion program. The program began and ended with an assessment of participants' knowledge and understanding of health and a healthy lifestyle, including physical activity level and good nutrition. In addition, age, sex, height, weight, and BMI calculations were collected from each participant. The goals of the project were to facilitate learning through wellness modules focusing on physical activity and nutrition, increase knowledge of healthy physical activity and nutrition, and to improve weight and BMI.

Project Overview

The population participating in this project was adults 25 years of age or older with a BMI of at least 25 who reside in a rural West Virginia community. The intervention was a 12-week health promotion program with the goals to facilitate learning and increase knowledge related to physical activity and nutrition. The program compared pre- and post-intervention measurements of participants' weight, BMI, exercise/eating logs, and response to the Patient-centered Assessment and Counseling for Exercise (PACE) and *Godin-Leisure Exercise Questionnaire*. With a goal to improve weight and BMI, the expected project outcome was a decrease in BMI and weight and an increase in physical activity and making nutritious choices among participants.

Relevance to Nursing

The need for community-based nursing continues to grow, as demonstrated by increases in the numbers of parish nurses and community and faith-based programs. The project served as an example of one way in which nurses can reach out to and collaborate with the leaders of faith-based institutions to plan, develop, implement, and evaluate health promotion programs.

Review of Literature

A comprehensive, systematic literature review was conducted on the effectiveness of health promotion programs for obese adults, focusing on physical activity and nutrition. The following databases were used to conduct the exhaustive systematic literature review: OVID, Medline (PubMed), Elton B. Stephens Company (EBSCO),

Pro Quest, and LexisNexis. Capella University's Summon system was used to search keywords to retrieve evidence-based studies. Keyword searches included: *obesity, West Virginia, health, programs, 12-week, faith-based facility, and promotion*. Search terms were then paired to search two to six word phrases to narrow the search to keep concepts for this project. Phrase pairing included: faith-based health promotion programs, obesity in West Virginia, health promotion programs, 12-week health promotion programs, health promotion in West Virginia, 12-week obesity health promotion programs, and faith-based obesity health promotion programs. With all searches there was a total of 6,252 matches. After analysis of all articles many were found to either be repeated or were not relevant. Articles were then critiqued for relevance, validity, evidence, method, and limitations. Articles selected were identified as fundamental to this project in decreasing weight and BMI while increasing physical activity and nutritional consumption over a 12-week period. After careful analysis, 13 articles met inclusion criteria.

Inclusion criteria applied to this exhaustive search included: peer-reviewed scholarly articles, clinical relevance, publication in or after 2010, adult studies, and health promotion programs based on obesity. Exclusion criteria applied to this exhaustive search included: non peer-reviewed scholarly articles, clinical irrelevance, publications before 2010, adolescent and child studies, and health promotion programs not based on obesity.

Synthesis of Literature

Problem and Treatment

Overweight and obesity are the most prevalent but preventable chronic disorders in the United States. Obesity has become the most prevalent risk factor for conditions such as cardiovascular disease, diabetes, and cancer. It also has become a risk factor for comorbidities of sleep apnea, osteoarthritis, and a decrease in the quality of life. Obesity may be the cause of as many as 300,000 deaths each year in the United States [5]. The World Health Organization states that 66% of Americans are overweight or obese [6].

Treatment for obesity can take on many forms such as, behavioral therapy, surgery, or lifestyle modification. Behavioral therapy treatment focuses on modifying learned behaviors that are preventing health. The treatment focuses on setting goals, self-monitoring, stimulus control, and cognitive restructuring. Behavioral therapy usually takes place between a patient and a healthcare provider. Surgery is another form of treatment for the morbidly or high-risk obese. In order to be a surgical candidate, criteria of a BMI of at least 40 kg/m² or a BMI of 35 kg/m² with comorbidities must be met. Bariatric surgery has been responsible for the resolution or improvement of comorbidities in 50% of patients opting for surgery. Weight loss from bariatric surgery can result in patients losing 40 to 70% of their total body weight within the first two years [5].

Lifestyle modification approaches treatment through dietary and physical activity components [5]. The dietary component focuses on nutrition, calories, portion control, and food choices. The physical activity component focuses on daily activity. Lifestyle modification is a treatment that takes place in a group setting with regular meetings. Predictors of success with a lifestyle modification approach include attendance and continuation of the intervention

after the program concludes [5]. Clinical and public health nurses can use lifestyle modification as a way to teach patients and the community about health promotion through lifestyle changes such as diet and exercise.

Rural Communities

West Virginia is the only state that lies completely within the Appalachian Region, which follows the spine of the Appalachian Mountains. The region is known for its high rural population and blue-collar industries, such as mining, forestry, and agriculture. The majority of the people who reside within the region live below the poverty rate. West Virginia ranks in the top five among all states for obesity, low income, and lack of education. Statistics reveal that 28% of West Virginia's population is obese, annual income averages \$30,400, and, 25% of West Virginians did not graduate from high school. The lack of education and understanding can have a significant impact on health promotion and disease prevention. Education can positively contribute to health and health promotion behaviors. Rural community living can affect daily exercise, such as walking to and from work or the store, and increases the reliance on automobiles for transportation. The average time for West Virginians to commute to work is 25.4 minutes by vehicle. Transportation by vehicle is a part of daily life in the rural community, which decreases daily physical activity, such as walking [7].

Faith-Based Organizations

The Patient Protection and Affordable Care Act, which was passed in 2010, contained a law aimed at tackling national prevention and health promotion to improve health in the United States [8]. Congress appointed the Department of Health and Human Services, the Centers for Disease Control and Prevention, and the Centers for Medicare and Medicaid Services responsible for this effort [8]. Furthermore, Congress prohibited companies from requiring all employees to participate in workplace wellness programs [8]. With the majority of adult, United States, residence being part of the workforce, an employee required wellness program could improve health. However, with the regulations, it is impossible to reach a majority of the United States' adult population [8].

Faith-based organizations have the ability to reach many Americans with 69% reported as moderately to very religious and 40% attending faith-based services regularly. Whisenant, Cortes, and Hill [9] studied two rural community churches implementing a health promotion program at the church. The program consisted of three study sessions and a six-month weekly exercise program. The sample contained 35 participants from both churches. The first session focused on treating the body as a temple; the second session focused on nutritional choices and food trends; the third session focused on physical activity. After three months, weight, blood pressure, and BMI had decreased and physical activity had increased. Weight after three months was -112 pounds and systolic blood pressure was -7 mmHg. After six months, weight was -202 pounds and systolic blood pressure -10 mmHg. The study concluded that a faith-based health promotion program can have positive effects on blood pressure and weight [9].

Despite the requirement preventing mandatory wellness programs among the workplace population, focus can be aimed at another community that includes a majority of the nation's population, faith-based institutions [8]. According to Nordtvedt and Chapman,

[8] a faith-based project focusing on weight, diet, and exercise attracted participation and favorable modified health results. The study drew 41 participants from the congregation, all of whom were overweight or obese. The researchers focused on two health issues in the participants: metabolic syndrome and diabetes. The authors concluded that, with dietary changes and an increase in exercise, the participants reduced weight, and the intervention had a positive effect on insulin resistance and metabolic syndrome [8].

Duru, Sarkisian, Leng, and Mangione [10] conducted a study in three Los Angeles churches. They evaluated the effects of a faith-based walking program on the blood pressure of African-American women, age 60 and older. These women reported being active less than 30 minutes, three times a week and walking less than 35,000 steps per week. The study included 62 participants. The intervention consisted of goal setting, community resource guides, walking, prayer, and scripture reading. Weekly steps were calculated and recorded, as were weekly blood pressure readings. The walking, faith-based program led to an increase in walking and a decrease in blood pressure after six months [10].

Faith-based organizations can serve an important role in the community socially, culturally, and politically, as well as in health promotion [4]. Faith-based organizations have strong social support, provide a caring environment, have the availability of space, and already communicate with their constituents in a variety of ways [8].

Collaborative partnerships between churches and health professionals, such as nurses, can lead to a successful faith-based health promotion program. Faith-based organizations are often willing to partner with health professionals in order to reach the under-served or those in need. Faith-based community health promotion programs have been found to influence change [4].

Faith-based organizations reach a large percentage of the United States' adult population. Faith-based organizations that partner with nursing leaders have the ability to attract participants, who can improve their health, through health promotion and prevention programs. The faith-based organization and nurse relationship has the potential to improve and promote health in the community.

Length of Program

Changes in health behaviors take time and motivation. Mettler, Preston, Jenkins, et al. concluded that a 12-week program and a one month follow up was ample time for participants to become motivated and make changes in health behaviors [11]. A one-month follow survey revealed that 46% of participants had maintained their weight, while a survey conducted at the completion of the 12-week program indicated that 29% of participants had maintained their weight. At one month, 45.1% of participants reported healthy eating, compared to 17.6 after completion of the 12-week program [11]. As nurse leaders prepare and design health promotion programs, the length of the programs must be considered, remembering that change does not always occur during the program.

Changing diet quality can improve the ability to gain less weight over time and promote a weight loss. O'Brien, Hutchesson, Jensen, Morgan, Callister, et al. concluded that a 12-week program with weekly interventions was ample time to promote a quality diet and

decrease BMI [12]. The program was conducted with a sample group of 192 adults who were 18 to 60 years of age, with a BMI between 25 and 40 kg/m². This program used interventions based on social cognitive theory, self-efficacy, goal setting, monitoring of weight, exercise, and diet. Surveys regarding dietary intake, weight, and physical activity were conducted pre-program and at 12 weeks. The results revealed a mean decrease in weight of 3.3 kg \pm 4.0 kg over 12 weeks [12].

Short-term weekly programs can produce a decrease in BMI. Based on Lloyd and Khan's study of 2,456 participants, the results concluded that a 12-week health promotion program was an effective time frame to producing a change [13]. The change resulted in a weight loss of >5% in 44% of participants at the end of 12 weeks. Participants were adults 18 years and older with a BMI of 28kg/m² or greater who were willing to participate in a weight loss program [13].

An intervention program focusing on activity can increase weight loss and decrease BMI. Findlay, Davison, Smith, and Jones reported that a 12-week intervention program focusing on increasing activity produced a significant decrease in weight and BMI [14]. The program sample included adult women with a BMI greater than 25 kg/m². The women participated in weekly meetings about exercise and weight. The women were asked to participate in 30 minutes of exercise each day. The results showed a mean decrease in BMI of -8.7kg/m² after the 12-week program. Participants were surveyed and height and weight were calculated at baseline, six weeks, and 12 weeks. However, only baseline and 12-week calculations were compared [14].

Health promotion programs require ample time to be effective. A 12-week health promotion program provides sufficient time for learning to take place and changes to be made in one's eating, physical activity, and BMI. Within 12 weeks, participants should report an increase in knowledge regarding healthy eating and physical activity as well as a decrease in BMI.

Nurses' Role

The increase in overweight and obesity in the United States should encourage nurses to be knowledgeable and willing to educate patients about optimal health. Nurses are needed to promote health in the clinical areas, as well as in the community. Nurse leaders can take a proactive role in battling obesity at work and personally. In addition to being educators, nurses can be role models for their families, communities, and patients by promoting a healthy lifestyle (weight, diet, and exercise). Nurses are more likely to want to educate and teach patients and community members about healthy behaviors when they themselves are embracing this lifestyle [15].

Nurses can promote health by providing health information to the public. Community and school nurses may use research to design health promotion programs for certain populations. The International Council of Nursing stated that nurses have a strategic role in promoting health through weight maintenance and nutrition education. Nurses can advocate for the promotion of increased physical activity, support efforts to decrease consumption, and provide education to assist in health promotion [16].

Framework

The health belief model (HBM) provided the framework for designing and implementing this health promotion program. The HBM assists with behavioral assessment focusing on perceptions and attitudes toward health and/or disease. The HBM states that health promotion changes occur when the patient identifies his or her individual perception, modifying factors, and likelihood to action [17]. This model was used as the framework of the 12-week health promotion program by assessing a change in weight, BMI, physical activity, and nutritional consumption.

Individual Perceptions

Perceived susceptibility refers to patients' opinions about how their eating habits, physical activity, weight, and health can lead to negative outcomes. Perceived severity was the patients' opinions of how serious the negative outcome or disease can be. Once individual perceptions are understood, modifying factors are identified through education [17]. The project allowed participants to recognize and understand their current health status through the pre- and post-program surveys.

Modifying Factors

A person's modifying factors include demographic information, personality characteristics, socio economic level, environmental, and knowledge related to the issue. Modifying factors can lead to perceived susceptibility of a disease, perceived threat of a disease, or perceived benefit versus barrier to a behavioral change [17].

Environmental factors include convenience foods, genetics, access to care, lack of health promotion programs, rural area, family that loves to eat, and social events focused on food. Cues to action helps to identify why people realize there is a threat and a need for change. These cues could be media, family, a coach, or a friend [17]. The project assisted participants in identifying factors that prevented them from reaching optimal weight and BMI.

Likelihood of Action

When people arrive at this stage, they already have concluded there is a threat and a change must be made. Likelihood of action identifies the perceived benefits and barriers for change. What is the benefit to change? The benefit is health promotion, disease prevention, healthy lifestyle, and self-satisfaction. Perceived barriers are the reasons change may not take place. Change sometimes takes money, time, effort, and/or initiative [17]. The project provided information and knowledge to participants to make a change in weight, BMI, physical activity, and nutritional consumption.

Method

Project Design

The project was designed to determine if a 12-week health promotion program affected BMI, weight, physical activity, and nutritional choices. The project coordinator introduced ten different modules all related to weight, obesity, nutrition, and exercise. Presentations and information provided to participants was on a sixth-grade reading/understanding level. Presentations were verbal via lecturing and use of PowerPoint and visual via PowerPoint handouts to promote learning. Approval was obtained by Capella University Internal Review Board (IRB) to protect patient identity.

The modules were modeled after an intervention planned and conducted by O'Brien, Hutchesson, Jensen, Morgan, Callister, et al. [12]. The intervention consisted of a 12-week program based on nutrition, physical activity, and obesity education for adults. The modules used were from the Pennington nutrition series created by Pennington Biomedical Research Center: LSU [18].

Pre-program implementation consisted of advertisement of the program through the church bulletin and fliers at the county senior center and health department. Week one, participants completed a demographic form, weigh in, and pre-program *PACE* [19] and *Godin Leisure-Time Exercise Questionnaire* [20]. Weeks two and three addressed the question, what is obesity and obesity statistics in the United States. Weeks four and five addressed dietary guidelines and answered the questions, what and how do I eat? Week six explained, functional foods that are nutritionally beneficial. Weeks seven and eight introduced physical activity and explained different types of exercise. Week nine described what fad diets are and the risks. Week 10 and 11 focused on weight loss goals and weight loss management. In week 12, participants completed a weigh in, post-program *PACE*, [19] and *Godin Leisure-Time Exercise Questionnaire* [20]. Participants were asked to return, after the program ended, for a one-month follow-up to calculate weight and BMI.

Sample

The sample included 18 adults (ages 25 and older) from a West Virginia community who chose to participate in the health promotion program. Inclusion criteria included: ≥ 25 years of age, with signed, informed consent; resident of a West Virginia community; BMI of 25 or greater; mentally competent; ability to read and write; English as primary language; committed to attend all sessions. Exclusion criteria included: < 25 years of age; not a resident of a West Virginia community; BMI less than 25; mentally incompetent; unable to read and write; not fluent in English. After the first week, three participants (16.7%) did not return leaving the sample size for the program at 15 participants ($n=15$).

Setting

This was a 12-week health promotion program designed for adults with a BMI of 25 or greater, who reside in a West Virginia community. Recruitment took place through the church bulletin as well as flyers in the county senior center and health department.

The program meetings were conducted at a local church. The church accommodates up to 350 participants and the church was well known in the community and centrally located in the county.

Data Collection

Data was collected through pre, post, and one-month follow up program measurement of participants' BMI and weight. Participants were asked to weigh in the first and last weeks of the program, as well as, one month after and to keep a food and exercise log each week throughout the program.

Data was also collected through the use of pre-and post-program participant surveys. The surveys were designed for adult learners and composed at a sixth-grade reading level. The surveys asked participants to provide demographic information, such as age, sex, height, and weight. In addition, the surveys asked questions related to diet, nutrition, and physical activity. All participants completed

a pre- and post-program survey.

The pre- and post-surveys consisted of the *PACE* and *Godin Leisure-Time Exercise Questionnaire* which were obtained via permission. The *PACE* research began in 1990 contracted by the US Centers for Disease Control and Prevention to develop tools to help counsel patients about health, physical activity, and nutrition. The *PACE* questionnaire uses a Likert scale to evaluate nutrition and physical activity. The results are scored based on a scoring guide for each question [19]. The *Godin Leisure-Time Exercise Questionnaire* was used as a simple questionnaire to assess leisure time physical activity lasting at least 15 minutes or more, during free time, in a seven-day period and is scored using the questionnaire scoring guide [20]. The instrument's validity and reliability has been published [21].

Surveys were completed via a paper and pencil method. Data was compiled and stored in such a way that participants' personal information was not provided to the project coordinator. Participants and their personal information (name) remained anonymous, secured in a locked file cabinet, and identification numbers were assigned to participants by the project coordinator.

Data Analysis

The statistical software program, Statistical Package for the Social Sciences (SPSS) version 23 was used to organize and analyze the data. The data was then analyzed to assess to what degree: learning took place, participants' weight decreased, participants' activity increased, and participants' nutritional choices improved.

Descriptive statistics was used to paint a picture of the program participants with regard to variables such as age, weight, height, and BMI. In addition to analyzing individuals' pre-and post-program measures through the use of paired *t*-tests, the project coordinator compiled the data to analyze pre- and post-program differences. The project coordinator disaggregated the data by different demographic variables in order to look for patterns and outliers.

Findings

Of the 18 participants who attended the first week, 15 continued the program, attending all twelve weeks. All participants ($n=15$) met inclusion criteria and completed all pre- and post-data collection forms and surveys. Of the participants ($n=15$), 13 were females (86.7%) and two were males (13.3%). Ages ranged from 30-87 years with a mean of 58.4 years (*SD* 18.9). Pre-program weight and height were collected from each participant and BMI was calculated. Pre-program weight mean was 200.08 pounds (*SD* 53.2) with a range of 155 to 347 pounds. Pre-program BMI mean was 34.1 kg/m² (*SD* 8.2) with a range of 27.3 to 56 kg/m². Post-program weight and height were collected from each participant and BMI was calculated. Post-program weight mean was 190.7 pounds (*SD* 50.6) with a range of 149.5 to 336 pounds. Post-program BMI mean was 32.3 kg/m² (*SD* 7.9) with a range of 24.1 to 54.2 kg/m². Table 1 and Table 2 demonstrate pre, post, and one-month follow-up program demographics. Table 3 demonstrates pre, post, and one-month follow-up weight and BMI paired sample *t*-tests.

Table 1: Pre- and Post-Demographics

	Pre-program Weight	Post-program Weight	Weight loss	Change in BMI Pre- and Post-	Post-program BMI	Pre-program BMI	Age
Mean	200.0800	190.6800	-9.3867	-1.9200	32.2067	34.1267	58.73
N	15	15	15	15	15	15	15
Standard Deviation	53.16366	50.64548	8.67261	1.71972	7.91224	8.23186	18.877
Range	192.00	186.50	25.50	5.90	30.10	28.70	57
Minimum	155.00	149.50	-25.00	-5.80	24.10	27.30	30
Maximum	347.00	336.00	.50	.10	54.20	56.00	87
Sum	3001.20	2860.20	-140.80	-28.80	483.10	511.90	881

Table 2: One-Month Follow-up Demographics

	One month follow up weight	One month follow up BMI	One month follow up weight loss	One month follow up change in BMI
N	Valid	15	15	15
	Missing	0	0	0
Mean	189.2000	31.9600	-1.6800	-.2867
Standard Deviation	49.72453	7.78201	2.17295	.33138
Range	186.50	30.10	7.20	1.10
Minimum	145.00	23.40	-6.20	-1.00
Maximum	331.50	53.50	1.00	.10
Sum	2838.00	479.40	-25.20	-4.30

Table 3: Weight and BMI Paired Sample Tests

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Standard Deviation	Standard Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-program Weight – Post-program Weight	9.40000	8.66685	2.23777	4.60046	14.19954	4.201	14	.001
Pair 2	Pre-program BMI – Post-program BMI	1.92000	1.71972	.44403	.96765	2.87235	4.324	14	.001
Pair 3	Post-program BMI – One month follow up BMI	.24667	.34407	.08884	.05613	.43720	2.777	14	.015
Pair 4	Post-program Weight – One month follow up Weight	-1.4800	2.16439	.55884	-2.67860	-.28140	-2.648	14	.019

Participants completed Pre- and post-program surveys. The four surveys included: *Godin-Leisure Exercise Questionnaire* and PACE surveys Healthy Eating, Physical Activity, and Eating Habits. The *Godin-Leisure Exercise Questionnaire* focused on the amount of physical activity each participant completes during a seven-day period. Using paired *t*-testing; the pre-program mean activity score, based on the questionnaire score guide, was 14.2 (*SD* 18.9) and a post-program mean activity score of 28.1 (*SD* 19.5). Further results concluded *CI* = -26.9 to -.75; *t* = -2.3; *df* = 14; *p* = .04. The PACE: Healthy Eating Likert-based survey resulted in pre-program mean of 2.7 and post-mean of 3.5. Paired *t*-testing

of the pre- and post-means resulted in *CI* = -1.2 to -.42; *t* = -4.3; *df* = 14; *SD* = .77; *p* = .001. The PACE: Physical Activity Likert-based survey resulted in a pre-program mean of 2.5 and post-mean of 3.2. Paired *t*-testing of the pre- and post-means resulted in *CI* = -1.1 to -.18; *t* = -3.0; *df* = 13; *SD* = 0.8; *p* = .10. The PACE: Eating Habits Likert-based survey resulted in a pre-program mean of 2.6 and post-mean of 1.8. Paired *t*-testing of the pre- and post-means resulted in *CI* = .2 to 1.3; *t* = 3.1; *df* = 14; *SD* = 1.0; *p* = .009. Table 4 summarizes pre- and post-questionnaires with paired sample *t*-tests.

Table 4: Questionnaire Paired Sample Tests

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Standard Deviation	Standard Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Godin-Leisure Exercise Pre-program Activity Score - Godin-Leisure Exercise Post-program Activity Score -	-13.86667	23.67297	6.11233	-26.97632	-.75701	-2.269	14	.040
Pair 2	Pre-program <i>PACE</i> : Healthy Eating – Post-program <i>PACE</i> : Healthy Eating	-.844	.773	.200	-1.272	-.416	-4.232	14	.001
Pair 3	Pre-program <i>PACE</i> : Physical Activity Mean – Post-program <i>PACE</i> : Physical Activity Mean	-.648	.801	.214	-1.110	-.185	-3.025	13	.010
Pair 4	Pre-program <i>PACE</i> : Eating Habits – Post-program <i>PACE</i> : Eating Habits	.73750	1.02194	.26386	.17157	1.30343	2.795	14	.014

Discussion

After completing the 12-week program, the participants had a decreased overall weight of -140 pounds and a mean of -9.4 pounds (*SD* 8.7). BMI also decreased overall by -28.8 kg/m² and a mean of -1.9kg/m² (*SD* 1.7). At the one-month follow-up, participants had an additional decrease of 25.2 pounds and a mean of -1.7 pounds (*SD* 2.2). The one-month follow-up also revealed an additional decrease in BMI of -4.3 kg/m² and a mean of -0.3 kg/m² (*SD* 0.3). The *Godin-Leisure Exercise Questionnaire* indicated a mean increase of +13.9 in activity scores representing an increase in exercise from week one to week 12 of the program. The *PACE: Healthy Eating* survey focused on activities, thoughts, and feelings used to make changes in dietary habits. Using a Likert scale, participants were asked to rate how often they participated in a health eating statement over the past month with one (1) being “never” and five (5) being “many times”. Pre-program mean was 2.7 while post-program mean increased to 3.5 on the 1 to 5 scale signifying an increase in health eating habits after the 12 week program. The *PACE: Physical Activity* survey focused on activities, thoughts, and feelings used to make changes in physical activity. Using a Likert scale, participants were asked to rate how often they participated in a physical activity statement over the past month with one (1) being “never” and five (5) being “many times”. Pre-program mean was 2.5 while post-program mean increased to 3.2 on the 1 to 5 scale suggesting an increase in physical activity habits after the 12 week program. The *PACE: Eating Habits* survey focused on negative eating habits and how often the statements pertained to each participant. Using a Likert scale, participants were asked to rate how often they participated in a negative eating habit statement with one (1) being “never” and five (5) being “5+ times per week”. Pre-program mean was 2.6 while post-program mean decreased to 1.8 on the 1 to 5 scale suggestive of a decrease in negative eating habits after the 12 week program.

Limitations

Since the program accepted any adult, in the West Virginia community wishing to participate, the results had limited generalizability to other populations. With time constraints on advertising and promotion prior to starting the project, the sample size was smaller than expected. The time frame (day, time, month) in which the program was implemented may have deterred or prevented participants. However, with the positive results from the project this program should be implemented with a larger sample to ensure significance. This health promotion program could

be expanded to include children and adolescence in an effort to decrease and prevent obesity in all ages.

Conclusion

Obesity is an epidemic affecting the United States, more specifically West Virginia. West Virginia has high rates of obesity, increased BMI, poor nutritional intake, and decreased activity. Providing education can promote weight loss through healthy eating and increasing physical activity.

By implementing a 12-week health promotion program, knowledge and learning promoted healthy changes among participants. Participants applied what was learned at weekly meetings. Application showed a decrease in weight and BMI and an increase in physical activity and nutritional eating.

References

1. Menez S, Cheskin L, Geller G (2013) Perspectives on obesity and its treatment: Health care providers and the general public in rural West Virginia and urban Baltimore. *Health Educ Behav* 40: 663-672.
2. Cromartie J, Parker T, Breneman V, Nulph D (2011). <http://www.ers.usda.gov>. Mapping population and economic trends in rural and small-town America.
3. U.S. Department of Health and Human Services (USDHHS). 2010. <http://www.healthypeople.gov/2020>. Healthy People 2020.
4. Bopp M, Webb B, Fallon E (2012) Urban-rural differences for health promotion in faith-based organizations. *Online J Rural Nurs Health Care* 12: 51-63.
5. Burke L, Wang J (2011) Treatment strategies for overweight and obesity. *J Nurs Sch* 43: 368-375.
6. Flegal K, Carroll M, Ogden C, Curtin L (2010) Prevalence and trends in obesity among US adults, 1999-2008. *JAMA* 303: 235-241.
7. Herath J, Brown C (2013) Obesity in WV: Control and costs. *Am J Public Health* 1: 203-280.
8. Nordtvedt M, Chapman L (2011) Health promotion in faith-based institutions and communities. *Am J Health Promot* 25: 1-8.
9. Whisenant D, Cortes C, Hill J (2014) Is faith-based health promotion effective? Results from two programs. *J Christ Nurs* 31: 188-193.
10. Duru O, Sarkisian C, Leng M, Mangione C (2010) Sisters in

- motion: A randomized controlled trial of a faith-based physical activity intervention. *J Am Geriatr Soc* 58: 1863-1869.
11. Mettler E, Preston H, Jenkins S, et al. (2014) Motivational improvements for health behavior change from wellness coaching. *Am J Health Behav* 38: 83-91.
 12. O'Brien K, Hutchesson M, Jensen M, Morgan P, Callister R, et al. (2014) Participants in an online weight loss program can improve diet quality during weight loss: A randomized controlled trial. *J Nutr* 13: 1-8.
 13. Lloyd A, Khan R (2011) Evaluation of healthy choices: A commercial weight loss programme commissioned by the NHS. *Perspect Public Health* 131: 177-183.
 14. Findlay S, Davidson H, Smith S, Jones J (2012) A 12-week activity point system achieves weight loss in sedentary overweight and obese women: A pilot study. *Proc Nutr Soc* 71.
 15. Marchiondo K (2014). Stemming the obesity epidemic: Are nurses credible coaches? *Medsurg Nurs* 23: 155-158.
 16. Lazarou C, Kouta C (2010) The role of nurses in the prevention and management of obesity. *Br J Nurs* 19: 641-647.
 17. Burke E (2013) Health Belief Model. [http://www.currentnursing.com.Nursing Theories](http://www.currentnursing.com/Nursing Theories).
 18. Pennington Biomedical Research Center: LSU (2011) <http://www.pbrc.edu/training-and-education/penninton-nutrition-series/>
 19. Norman G, Carlson J, Sallis J, Wagner N, Calfas K, et al. (2010) Reliability and validity of brief psychosocial measures related to dietary behaviors. *Int J Behav Nutr Phy Act* 7.
 20. Godin G (2011) The Godin-Shephard leisure-time physical activity questionnaire. *Health Fit J Can* 4: 18-22.
 21. Amireault S, Godin G, Lacombe J, Sabiston C (2015) The use of the Godin-Shepard Leisure-Time Physical Activity Questionnaire in oncology research: A systematic review. *BMC Med Res Method* 15: 1-11.

Copyright: ©2017 Amy E. Spurrier et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.