

University of Nevada, Reno

Gym Membership Wellness Program as a Cost Benefit to Health Insurance Companies

A thesis submitted in partial fulfillment
Of the requirements for the degree of
Master of Science in Nursing

By

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THE GRADUATE SCHOOL

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prepared under our supervision by

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Entitled

**Gym Membership Wellness Program As A Cost Benefit To Health Insurance
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be accepted in partial fulfillment of the
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Abstract

Gym memberships are offered to the public for a fee to provide cardiovascular and strength conditioning equipment that promotes exercising behavior and improves health. Consistent exercising behavior as a preventive health measure demonstrates a reduction in obesity and comorbidities associated with obesity. A health insurance company in Reno, Nevada offers the Motivate U wellness program, which includes gym membership and a personal trainer, at no cost to selected insured members to promote healthy lifestyle changes; with an anticipated return-on-investment (ROI) due to decreased healthcare costs and medication expenses associated with the treatment of comorbidities of obesity. The purpose of this prospective study was to evaluate the health outcomes and cost-benefit ratio of Hometown Health Insurance's Motivate U Program.

This study compared Motivate U participants' cost of current medications and number of health care visits, along with changes in body mass index (BMI), blood pressure, and laboratory values at baseline and after completion of an 8-week gym membership program. This data determined whether the exercise behavior promoted a less expensive treatment to comorbidities of obesity compared with usual medical care. The study used a modified trans theoretical model of behavior change to demonstrate the act of changing behavior to promote preventive health with exercise. This study assumed that changing one's behavior to include consistent physical exercise would decrease obesity and associated comorbidities, along with decreased health care visits and lower costs of medication. A decrease in healthcare expenses would demonstrate an economic benefit for Hometown Health Insurance that would be significant enough to offer free gym membership coverage for all their members.

There were 65 study participants who completed the Motivate U wellness program in spring 2016. Baseline and post-intervention comparisons of the study group demonstrated statistically significant decreases in body mass index ($p < 0.001$), diastolic blood pressure ($p < 0.001$), number of days exercised ($p < 0.001$), and minutes per day exercised ($p < 0.001$). The

ROI for the 8-week Motivate U Program was estimated at 113.6%. A 6-month post intervention survey of 25 participants, identified a significant decrease in the self-reported number of medications taken ($p < 0.001$) and amount of money spent on medications ($p = 0.036$) compared to baseline. In addition, perceived barriers of tiredness or lack of motivation to exercise were reported to be resolved post intervention. There was no significant difference in the number of visits to healthcare providers over the course of this study.

This study demonstrated that health insurance companies can offer fiscally responsible wellness programs with gym memberships that promote positive health behavior change and outcomes in their participants. The Motivate U wellness program demonstrated a positive ROI, along with benefits to participants as evidenced by increased number of days and minutes exercised, as well as decreases in BMI and diastolic blood pressure contributing to an overall economic benefit for treating obesity. Recommendations would be to perform a longitudinal study > 8 weeks with more participants to better assess the financial savings of the program.

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CHAPTER 1

INTRODUCTION

Obesity is one of the leading causes of *preventable* death in America (CDC, 2016). Regular exercise and modified diet significantly reduce both obesity and associated comorbidities (McCance, 2010). The American College of Sports Medicine (2016), recommends engaging in at least 30-60 minutes of moderate activity five days of the week with at least 150 minutes per week. Complications related to overweight and obesity are reduced with this recommended amount of physical activity, as well as medical costs associated with chronic diseases. With this information so readily available, why are people still not exercising? One of the many barriers to an exercising lifestyle includes financial disincentive. Gym memberships are often not affordable to more vulnerable low-income populations. An insurance-covered health promotion-wellness program that pays a gym membership in its entirety could potentially benefit all Americans by promoting exercise behavior. This research study will assess the effectiveness and economic benefit for a leading health insurance company which offers free gym membership coverage for selected voluntary members.

When assessing the impact a sedentary lifestyle contributes to obesity and chronic illness, it is important to consider the consequences of increased health care costs and the necessity of insurance fees as related to hospital admission rates. In 2016, the American Heart Association stated that, "Experts estimate \$5.6 billion in heart disease costs could be saved if one-tenth of Americans began a regular walking program." Although walking is a cost-effective exercise, there are often barriers that defer people from walking outside a gym. Many people feel unsafe to walk in their neighborhood or weather conditions prohibit the safety of walking outside, therefore, the benefits of an enclosed gym can lead to safe involvement. Wang, McDonald, Reffitt, and Edington (2005) separated 42,520 retired veterans >65 years old into categories of sedentary lifestyle, moderately active, and very active lifestyles. These researchers compared

annual costs of emergency room claims, outpatient costs, pharmaceutical costs and hospitalization days as covered by both Medicare and preferred provider organization plans. The findings were that sedentary individuals had an average of \$1,456 higher health care costs than moderately active individuals.

Select employers developed preventive health wellness programs, to encourage their employees to engage in positive lifestyle changes, included diet and exercise to improve overall health. “The company’s efforts at reducing barriers to healthy lifestyles and its provision of health benefits that support preventive practices seem to be paying off in terms of reduced medical insurance costs” (Goetzl et al., 2013, p. 488). Patel et al. (2011) analyzed a retrospective longitudinal study to determine if membership in a fitness facility increased participation and reduced hospital claims. One additional gym visit per week was a protective factor that significantly reduced the odds of a hospital admission by 7%. There was an associated lower financial burden for one gym visit per week, but also the financial burden decreased with each additional gym visit. Hence, there is preliminary evidence of the benefits of physical activity as it relates to decreasing risk factors for chronic illness; and that with this decrease in comorbidities of chronic illness a decrease in medical costs for employers and insurance companies.

Statement of the Problem

Obesity is associated with comorbidities such as cardiovascular disease, hypertension, hyperlipidemia and diabetes. These chronic diseases are costly for insurance companies as they often require multiple medications and hospital inpatient visits to manage acute exacerbations. Schumock et. al., (2015) analyzed the national trends in prescription drug expenditures from 2014, with “total prescription sales in the United States for the 12-months period ending September 30, 2014, were \$360.7 billion, representing a 12.2% increase over the previous year,” (p.719). With the amount of costs and usage of prescriptions rising, preventive health may be economically beneficial for preserving available healthcare funds. Physical exercise reduces

body mass index (BMI), blood pressure and blood sugar, thereby reducing the comorbidities associated with obesity. Unfortunately, physical exercise by gym membership is costly and often not available for vulnerable populations. At present time, most health insurance companies do not offer gym membership as part of a wellness program or insurance benefit for their clients.

Purpose of the study

The purpose of this prospective study was to evaluate the health outcomes and cost-benefit ratio of Hometown Health Insurance's Motivate U Program. The study will also evaluate if the fees for an all-inclusive gym membership would outweigh the cost of comorbidities associated with obesity.

Significance of the Study

There have been numerous studies supporting the significant beneficial impacts that physical exercise has on health. Subjective quality of life, and objective improvements include decreased BP for hypertensive persons, decreased BMI to within-normal weight category, and decreased fasting blood glucose for persons with diabetes. Individuals who engage in at least 30 minutes of moderate activity most days of the week will likely experience improvements in health (ACSM, 2016). For a person to obtain these recommendations they must have access to a safe environment to engage in physical activity. With a proven economic benefit of covering a gym membership for preventive wellness, as opposed to paying for comorbidities associated with complications of obesity, insurance companies will have evidence of a return on investment (ROI) to promote preventive care. With positive findings from this study, insurance companies may be motivated to cover gym memberships in their entirety, like that of the program Hometown Health insurance has offered, as a financial investment in the overall health of their insured members.

Scientific and Theoretical Assumptions

The major assumption of this study is that physical exercise will decrease the intensity of comorbidities associated with obesity. Other assumptions for this research study include:

- 1) All cohort participants engage in and complete the physical training as offered in the Motivate U Program.
- 2) Participants have an existing obesity-associated comorbidity.
- 3) Lab work, BP readings, and BMI calculations are accurate and complete.
- 4) Normal parameters in BP, BMI, lipid panel and fasting blood glucose would require less medication and inpatient hospital admissions.
- 5) The preventive health intervention of gym membership is less expensive than hospital admission and medication fees of chronic diseases associated with lack of physical exercise.

Research Questions

The following research questions will be investigated:

- 1) Does physical exercise with gym membership have a significant decrease on a participant's BP, BMI, lipid panel, fasting blood glucose, and occurrence of medical treatments and medication costs?
- 2) Is there a significant economic benefit for treating obesity by offering gym membership rather than current standard of care?

Conceptual and Operation Definitions

- 1) Blood pressure (BP) - a measurement of the heart's ability to pump blood through the arteries. The systolic pressure (top number) reflects the pressure in the arteries when the heart beats; the diastolic pressure (bottom number) reflects the pressure in the arteries when the heart is at rest.

- 2) Body mass index (BMI) – A way of screening weight category by measuring a person’s weight in kilograms divided by the square of height in meters. BMI appears to be strongly correlated with comorbidities such as cardiovascular disease. Formula: $\text{weight (lb)} / [\text{height (in)}]^2 \times 703$. BMI categories: 18.5-24.9 normal weight, 25-29.9 overweight, 30-39.9 obese, 40-49.9 morbidly obese, >50 super obese. (CDC, 2016)
- 3) Comorbidities - two or more chronic diseases in one individual. For this study, the comorbidities include diabetes (DM2), hypertension and cardiovascular disease.
- 4) Diabetes - Fasting plasma glucose ≥ 126 mg/dL. Fasting is defined as no caloric intake for at least 8 hours. Two-hour plasma glucose ≥ 200 mg/dL or an HbA1c $\geq 6.5\%$, (McCance, 2010).
- 5) Fasting blood glucose - the measurement of a person’s blood glucose after 8-12 hours of no food ingestion. *Impaired* fasting blood glucose in an adult is >100 mg/dL.
- 6) Hypertension - The average of two or more properly measured BP values from two or more clinical encounters. Hypertensive BP is considered greater than 140 systolic or greater than 90 diastolic at two separate readings. (American Heart Association, 2015).
- 7) Motivate U Program - an eight week long, health and wellness program offered by Healthy tracks associated with Hometown Health Insurance Company. An estimated 115 participants complete a voluntary program in one of five local gyms that assists in helping people make healthy lifestyle changes.
- 8) Obesity - abnormal or excessive fat accumulation that increases risk for chronic diseases including T2DM and cardiovascular disease. $\text{BMI} \geq 30$ (CDC, 2016).
- 9) Physical Exercise - Engaging in planned and repetitive activity with the purpose of improving overall health and well-being (Caspersen, 1985).
- 10) Preventive health- Focusing on the promotion of health by diet and exercise to prevent disease.

11) Return-on-Investment (ROI) - A tool used to determine whether an investment has either made profit or cost to Hometown Health Insurance Company. $ROI \% = \frac{\text{Net Program Benefits}}{\text{Program Costs}} \times 100$, (Chmielewski, 2002, p. 231).

Limitations of the Study

Limitations of this study included selection bias; Hometown Health had preselected voluntary participants based upon an application to participate in the Motivate U program, the researcher had no influence on selection of participants. The participant pool for the study was limited to 114 people; these individuals may have not accurately reflected the entire Hometown Health insured population. Due to limited sample size at the initiation of the study and the high level of attrition from first measurement to the eight week and six month follow up measurements, statistical significance testing must be interpreted with caution as type two errors may exist within these data. Instrument accuracy and researcher bias was another possible limitation of the study. Although the study used the same instruments and researcher to establish BMI calculations and BP readings, data could have been affected by individual interpretation of blood pressure readings. The length of the study and cost of the experiment also limited the studies' results. The Motivate U program was a voluntary program, the participants engaged in activities offered, submitted questionnaire and completed lab work as they wished, which altered the completion of program participant pool. The study began with one-hundred and fourteen participants, sixty-five completed the 8-week program and post measures, twenty-five participated in the 6-month survey measures, but only seven acquired the 6-month lab draws. The cost of gym membership was not the only barrier to exercising routinely, and length of the study was limited to an 8-week program, both of which may not accurately reflect long-term compliance of exercising regularly.

CHAPTER II

REVIEW OF THE LITERATURE AND CONCEPTUAL FRAMEWORK

Assuming that physical exercise, as provided by the Motivate U program reduces elevated BMI, fasting blood glucose, elevated BP, and lipid panel, then it is important to review the financial burden of obesity and the impact on the public health system and insurance companies. What is the cost of obesity, diabetes, hypertension, and hyperlipidemia? A discussion will follow about the cost benefits of having a gym membership, as well the benefits Hometown Health has already achieved with the Motivate U program regarding obesity-associated comorbidities.

Obesity: A Costly Epidemic

Obesity can affect healthcare costs for patients of all ages; more than one third (36.5%) of U.S. adults have obesity (CDC, 2016) and the prevalence of obesity is higher among women than men. Yang and Hall (2008) analyzed Medicare individuals over the age of 65 to determine if there was a difference in normal weight individuals as compared to obese individuals regarding the cost of outpatient care, inpatient care, long term nursing facilities and outpatient prescription drugs. Again, obese men and women had a range of 6% -17% more lifetime health expenditures than that of normal weight individuals, (Yang & Hall, 2008). Similarly, Lakdawalla, Goldman and Shang (2005) estimated that obese individuals would spend an average of \$39,000 more than normal weight counterparts over a lifespan. Annual medical costs associated with obesity may be as high as \$147 billion per year, with private insurers footing the bill for nearly half of this total, (Yang and Nichols, 2011).

Diabetes is a comorbidity associated with obesity that can lead to an expensive financial burden on health insurance companies. The National Diabetes Information Clearinghouse (2015) explains that impaired fasting blood glucose indicates that the body has developed insulin resistance. The pancreas produces insulin, which is used to decrease levels of blood glucose by

absorbing glucose into fat and muscle or storing glucose in the liver. Insulin resistance occurs when muscle, fat and liver cells are not absorbing glucose properly, therefore the pancreas is at increased workload for the beta cells to make insulin, (McCance, 2010, p.737). Over time the beta cells are not able to keep up with insulin production and increased fasting plasma glucose occurs. Categorization of prediabetic is considered 100-125 mg/dL, and diabetic is considered >126 mg/dL (NDIC, 2015). There have been animal and human studies that emphasize the importance of physical activity, to decrease the risk of chronic diseases such as Type 2 diabetes mellitus (T2DM) and cardiovascular diseases. Booth, Laye, Lees, Rector, & Thyfault (2007) studied active rats using a running wheel vs. sedentary rats without access to the running wheel to compare the decrease in insulin sensitivity in the epitrochlearis muscle, as well as accumulation of intra-abdominal fat in sedentary rats. There was a rapid decrease in insulin sensitivity by the cessation of a physically active lifestyle in the rats (Booth, 2007). A sedentary lifestyle contributes to pathways of diseases, including T2DM and changes in insulin sensitivity can occur within as little as two days. Ross (2015) demonstrated “That 200 minutes per week of vigorous exercise was associated with a 9% improvement in glucose tolerance is reinforced by our finding that 2-hour insulin level, insulin area under the curve, and the Matsuda index were also improved compared with the control group” (p. 331). With a personal trainer encouraging vigorous activity throughout the Motivate U program, an improvement in glycemic control may be seen, (Ross, 2015). According to Zhuo (2014) “a structured lifestyle modification program has been found to reduce the risk of diabetes by 50-58%” and that this “could be achieved at a reasonably low cost,” (p. 2562). In a systematic review by Ng, Lee, Toh, and Ko (2014), the direct cost of diabetes was related to inpatient visits and was directly billed to health insurance companies with the highest reported expenditure being \$137.7 billion in the U.S. Medication therapy has become a prevalent method of treatment of comorbidities of obesity in the United States, including prescriptions for pre-diabetics, (Berra, 2003). A study from the diabetes prevention program research group

(2005) studied lifestyle modifications have been more substantial at reducing elevated blood glucose as opposed to treatment with oral hypoglycemic agents.

According to the CDC, (2016) 70 million people have high blood pressure with only about half having their condition under control. Approximately 30 million Americans take antihypertensive medications accounting for \$12 billion in care and exceeding \$10 billion in medication. More specifically, patients or their medical insurer pay about \$420 per year to manage hypertension and costs accumulative of \$46 billion in services. (CDC, 2016). Fagard (2001) conducted a meta-analysis of randomized controlled intervention trials and determined that “dynamic aerobic training reduced blood pressure” (p.489). An increase in blood pressure (BP) contributes to medically expensive chronic diseases including stroke and cardiovascular disease. In 2010, high BP contributed to \$93.5 billion in healthcare services, medications and missed days of work (Goetzel et al., 2013), all of which could have theoretically been prevented by access to gym services of aerobic exercise equipment. Consistent with other studies, metabolic syndrome (defined as a group of risk factors that contribute to heart disease, diabetes or stroke) also impacts the increase in medical cost of hospital admissions. Lakka et al. (2003) studied how metabolic syndrome and low levels of leisure-time physical activity and cardiorespiratory fitness were associated with increased risk for T2DM, coronary heart disease, cardiovascular and overall mortality. Similarly, metabolic syndrome is associated with a 1.5-fold increase risk of all-cause mortality, and 2-fold increased risk of cardiovascular disease, (Motillo et. al, 2010). The CDC reports that 73.5 million Americans have high low-density lipoproteins (LDL) and that less than half are getting treatment to lower their levels. Hyperlipidemia predisposes these Americans to twice the risk for heart disease than those with ideal LDL levels (CDC, 2016). In summary, as previously stated sedentary individuals accumulated an average of \$1,456 higher healthcare costs annually than those with moderate activity. The average cost of a gym membership nationwide is \$696 annually. (Gym membership statistics, 2016).

Gym Membership Decreasing Obesity Rate

There are limited studies on the benefits of gym membership as a method to decrease the cost of obesity, however, significant research exists on the use of exercise equipment to reduce comorbidities of obesity. This review of literature will primarily focus on the aspect of gym membership as a resource for decreasing obesity. Like the design of this study, Yancey, McCarthy, Harrison, Wong, Siegel, & Leslie, (2006) analyzed 366 obese African American women's fitness level and BMI after a free 1-year gym membership. There was a marginal significant effect on BMI, however, the "economic incentive of a free 1-year gym membership was a more potent intervention than the education and social support intervention tested" (p 427). At the one-year follow up survey, 70-72% of participants were still maintaining the exercise program implemented, and using the gym facility as a resource to improve their health. This retention rate is important to assess the longevity of value that the cost benefit would prove to insurance companies. If our study demonstrates a return on investment for insurance companies, in reference to decreased cost of medications, Yancey, McCarthy, Harrison, Wong, Siegel, & Leslie's studied their participants entering the maintenance phase of the trans theoretical model of behavior change for an overall lifestyle intervention of healthy behavior. This may suggest that if the Motivate U program demonstrates a cost benefit for a healthy lifestyle change, the results may provide a return on investment annually.

Gym Facilities generally have a variety of exercise equipment to engage the member in cardiorespiratory fitness, strength building and flexibility to improve health. A treadmill is available in most gym facilities to improve cardiorespiratory fitness. Ross, Hudson, Stotz, & Lam studied 200 abdominally obese adults to see if the amount and intensity of exercise influenced abdominal obesity and glucose tolerance (2015). Participants performed the exercise interventions on a treadmill and were measured using an accelerometer. "Reductions in body weight were greater in all exercise groups than in the control group," (Ross, Hudson, Stotz, &

Lam, 2015, p.330), and a reduction in 2-hour glucose level was seen exclusively in the higher intensity exercise group. With availability of gym facilities with access to a treadmill, any amount of exercise would yield health benefits regarding obesity.

Exercise adherence is essential to contribute to the health benefits of access to a gym facility. If an insurance company covers the fees of gym membership in its entirety, one must use the gym equipment to maintain their wellness and the preventive health cost benefits. Sadjja et al., 2012, predicted the adherence of exercise to a 12-week exercise program based on fitness characteristics and gender. The program included cardiorespiratory exercise, resistance training and a cool down and stretching with a personal trainer. Within a “population of sedentary individuals with elevated BP, age and cardiorespiratory fitness were predictive of exercise adherence in both men and women,” (Sadjja et al., 2012, p. 161). The Motivate U program anticipated exercise adherence throughout the 8-week program equally between men and women, and that the availability of cardiovascular equipment (including treadmill, bike and elliptical) resistance training and stretching to improve overall health and reduce comorbidities of obesity.

Benefits of Hometown Health’s Motivate U Program

Since the debut of the Motivate U program in 2012, there have been 347 participants that have lost a combined 1,074 lbs. and 1,435 inches. This is an average of four inches lost per participant. These assessments have been presented as individual case assessments and have not yet demonstrated the effect of an exercise program as a cost benefit on a population level. This free program is valued at \$600 per participant. The value is broken down between the cost of gym membership, small group classes with a personal trainer, Garmin for select individuals, prizes, lab fees and Motivate U attire.

Conceptual Framework

This study used a modified trans theoretical model of behavior change from health behavior change. The model consists of six stages: precontemplation, contemplation,

preparation, action, maintenance and termination, (Prochaska & DiClemente, 1983). To initiate health-promoting behavior, an individual must go through the steps of the trans theoretical model of behavior change. Precontemplation is the stage in which an individual is not yet ready to make a change. Contemplation stage is when the individual has considered engaging in activity for change. This study focuses on the preparation and action stage of this model where an individual has decided to apply for the Motivate U program, go through the requirements of lab draws, assessments and BMI measurements and then continues to participate in the 8-week program to achieve their goal of a healthier lifestyle with physical activity. The maintenance stage would be after the Motivate U program has ended and whether the individual continues with their consistent physical activity or stop engaging in physical activity. The termination stage is not used in the model of physical exercise because healthy changes require continual exercise that should not be terminated.

One of the many barriers of exercise is anticipated enjoyment of exercise, (Ruby, Dunn, Perrino, Gillis, & Viel, 2011). Our cohort participant population is in the preparation and action stage of the trans theoretical model of health behavior change (TTMBC). By overcoming anticipated uncomfortable aspects of beginning exercise, participants established a routine of exercise behavior that set them in the maintenance stage of the trans theoretical health model. Moving into the maintenance stage, it is predicted we may portray an accurate reflection of benefits of insurance covered exercise expenses over a lifetime.

The preparation stage included assessing the individual using a questionnaire of current involvement of physical activity, current medications taken related to comorbidities of obesity, measurements for BMI, blood pressure readings and lab draw for fasting blood glucose. The action stage of the trans theoretical model included performing and completing the eight-week program designed by Motivate U. After the individual has applied for and completed the

Motivate U program they have made a conscious effort to change their behaviors and determined their success rate.

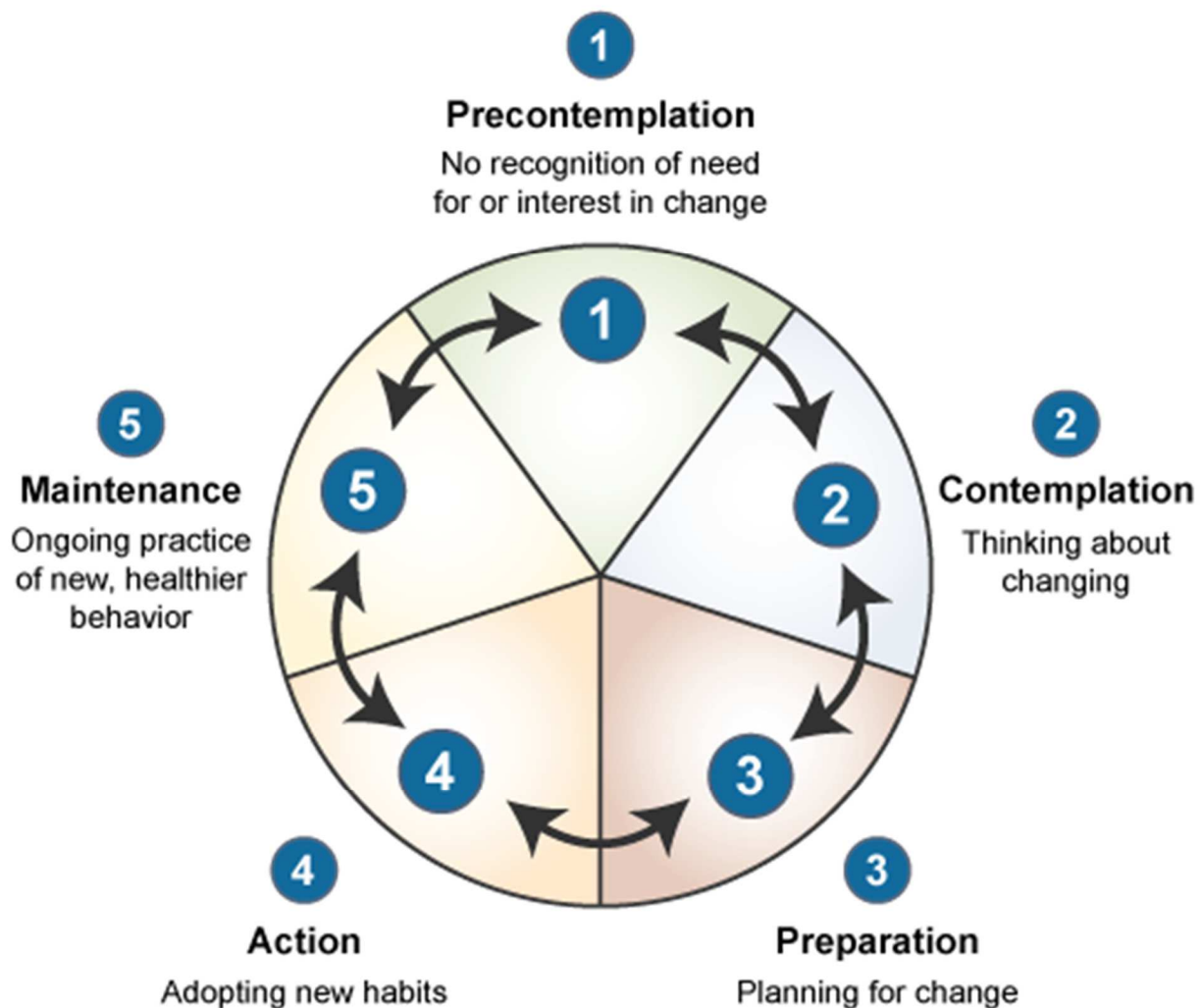


Figure 1. Trans theoretical model of change.

CHAPTER III

METHODOLOGY

There is a need to determine if physical exercise by gym membership can positively affect BMI, BP, lipid panel, and fasting blood glucose, and a cost-benefit analysis for a positive return on investment for health insurance companies. By establishing a cost benefit of physical exercise as a preventive health initiative, insurance companies could justify offering gym memberships for all their insured as opposed to treating the chronic illnesses associated with obesity, hypertension, and diabetes.

This chapter consists of methods and procedures used in this research study. The sections include: research questions, research method and design, techniques for data collection, sampling procedures, attention to human subjects' protection, and the proposed statistical analyses.

Research Questions

The following research questions will be investigated:

- 1) Does physical exercise by gym membership have a significant decrease on a participant's BP, lipid panel, BMI, fasting blood glucose, and occurrence of medical treatment and medication costs?
- 2) Is there a significant economic benefit for treating obesity by offering gym membership versus treating comorbidities?

Research Design

This study employed a quasi-experimental, repeated measure design to compare health outcomes and associated ROI for Hometown Health's Motivate U Program. Participants in the Motivate U program served as their own controls with repeated measures of health outcome parameters that included BMI, BP, lipid panel and fasting blood glucose of participants before and after the 8-week program to determine associated effects.

Description of Setting

The Motivate U program used five gym facilities located in northern Nevada including: Double Diamond Athletic Club, Freestyle Fitness, Evoke Fitness, Sierra Strength and Speed and Performance EDU. Each participant was assigned to a gym facility and personal trainer to complete their 8-week duration exercise regimen.

Sample

The initial sample for this study was 114 adult participants who were ≥ 18 years of age in the Motivate U program for Spring 2016. The subjects became their own reference group and were assessed on fitness level at baseline (March 31, 2016), post intervention at 8-weeks (May 23, 2016), and then 6 months later (November 2016).

Human Subjects Protection

The study protocol was approved by the Biomedical Institutional Review Board of the Institutional Review Board of the University of Nevada, Reno prior to any data collection (Appendix I). Informed signed consent was obtained from all interventional participants in person by the researcher prior to baseline data collection (Appendix II). Confidentiality of health information for this study's data was maintained per protocol throughout the study.

Data Collection

Objective health assessment data included the subject's blood pressure (BP), fasting blood glucose, lipid panel, BMI, and the types and number of all prescribed medications taken including those related to any comorbid cardiovascular diseases or diabetes. There were two sets of data, that included a baseline (pre-program) measure for the interventional group, and post-program measure for the interventional group. BMI measures were calculated by the same researcher using current height and weight measurements obtained in person. The same equipment was used with all participants for the baseline and 8-week post measures to prevent interviewer bias, instrument bias, minimize misclassification bias, and ensure accuracy and

reliability of these data. The student researcher oversaw Hometown Health's Registered Nurse employees who collected health data using various instruments for the Motivate U program. A questionnaire collected data for type/amount of medications taken by the subject (Appendix IV). The number of recent health care visits were measured. Questionnaires collected data at baseline within one week of beginning the Motivate U program, at the end of the 8-week intervention, and again at 6-months after the Motivate U program.

Research Instruments and Procedure

Participation in this study was obtained by informed consent. Participants completed a questionnaire that assessed the current type and number of medications as well as number of health care treatment visits and hospital admissions within the last 6 months. An in-body measurement was taken with a medical scale after the subject has removed shoes and socks to determine BMI. BP was measured by three registered nurses in the patient's right arm with a calibrated aneroid sphygmomanometer placed at heart level, with a proper cuff for arm size, using the slow-deflation auscultatory method (Pickering et al, 2015). For systolic pressures ≥ 160 mmHg, two measurements were taken 5 minutes apart and averaged. Fasting blood glucose and lipid panel were collected by registered nurses and processed by the protocol and procedures of Renown Medical Laboratory. Time commitment for participants averaged 20 minutes for blood pressure readings, BMI and lab draws.

Data Analysis

Comparison of data measures between pre-and post-intervention were analyzed by the SPSS Version 22 statistical program. Subjects' measures of BP, BMI, lipid panel and fasting blood glucose were compared for significant differences by paired samples T-test. The number of medications, a nominal measurement, were analyzed with Pearson Chi-square. A cost-benefit analysis used a return on investment formula and was conducted using both individual level and aggregate levels (Chmielewski & Phillips, n.d.).

The independent variable in this study was the health information and survey information collected throughout the study. The dependent variable in this study was the 8-weeks of exercise and personal training completed in its entirety by the participants in the Motivate U wellness program. The purpose of initiating the dependent variable was to see if exercise influences the biometric screening results and amount of money spent on prescriptions for comorbidities of obesity. A priori power analysis demonstrated that a minimum sample of 54 would be required to demonstrate a large effect (0.5) with an alpha level of 0.05. One hundred and forty-seven participants would be required to demonstrate a medium effect (0.3).

Funding

The Motivate U Program was funded entirely by Hometown Health Insurance Company, and instruments were provided by the Hometown Health nursing team. All participants received a health assessment to collect data, a personal trainer in small group setting, a Garmin for select individuals, and access to pre-selected gym facility for 8 weeks at the expense of Hometown Health valued at \$600 per participant. Hometown Health paid each gym facility \$100 per individual at the start of the program, and \$100 at the end of the program for each individual who completed the 8-week motivate U program for a total gym membership plus small group personal trainer fee of \$200 per individual. The student researcher received \$195 from Sigma Theta Tau *Nu Iota* chapter for research supplies.

CHAPTER IV

RESULTS

This prospective study was conducted to investigate the potential relationships of exercise with blood pressure, BMI, fasting blood sugar, and lipid panel; as well as the subjective information provided by participants on the relationship of exercise and number of medications taken for medical conditions, spending money on medication, provider office visits, urgent care visits, ER and hospital visits. The findings described in this study represent a convenience sample of voluntary participants covered by Hometown Health and their participation in the Motivate U wellness program. These findings describe the total samples health data results compared over time, as well as subjective questionnaire data.

Description of the Sample

Data were collected prospectively as the Motivate U program progressed over a period of nine months (March 2016-November 2016). Participants' were included in the study if they were an adult aged >18 years, with consent to participate in the spring 2016 Motivate U and signed consent to participate in this research study. The demographic and study variables were collected using the gym membership wellness program study survey as well as results of blood pressure, BMI at time of collection, and laboratory results of lipid panel, and fasting blood glucose as participants completed this portion.

The initial study pool were the 114 participants in the spring 2016 Motivate U program; one participant was disqualified due to pregnancy per University of Nevada, Reno Human subjects protocol. A total of 65 participants completed the two measures of the study including pre-and post-biometric screening data (BMI, and blood pressure), and questionnaires. Out of the 65 participants, 25 completed the 6-month post telephone survey, and only seven of the participants took advantage of the post Motivate U program lab workup offered. The data analysis of biometric screenings on the 65 participants who completed the entire 8 weeks of the

Motivate U program. The 6-month survey of 25 participants was then analyzed to determine placement on those participants on the trans theoretical model of behavior change spectrum.



Figure 2. Sequence of prospective study

Table 1 describes the characteristics of the study sample ($n = 65$). The total sample consisted of predominately female subjects (73.8%). Ethnicity classification was accomplished by self-reported description at beginning of the program. The predominate ethnicity self-reported was white non-Hispanic (66.2%), followed by white Hispanic (30.8%), black (1.5%) and two or more races (1.5%). The mean age of the sample was 41.06 years, $SD = 10.44$, spanning the ages of 22 to 61 years old. Reported profession of participants included clerical and business professionals (38.5%), technical (32.3), education (12.3), healthcare (9.2%) and other (6.2%). Predominate education level was bachelor's degree or higher (49.2%), followed by some college (27.2%) and high school education (23.1%). Every participant declared themselves as employed, not retired.

Table 1. *Participant Characteristics* (n = 65)

Characteristic		
Age in years (M, SD)	41.1 (10.44)	
Age range	22 – 61	
	(n)	Percentage %
Gender		
Male	17	26.2
Female	48	73.8
Ethnicity		
White (non-hispanic)	43	66.2
White Hispanic	20	30.8
Black	1	1.5
Two or more races	1	1.5
Profession		
Healthcare Clinical	6	9.2
Education	8	12.3
Technical	21	32.3
Clerical & Business	25	38.5
Professional		
Other	4	6.2
Education		
High School	15	23.1
Some College	18	27.7
Bachelor's degree or higher	32	49.2
Employment		
Employed	65	100

Description of Research Variables

Biometric screening variables included 1) body mass index (BMI), 2) obesity classified as ≥ 30 BMI, 3) systolic blood pressure (SBP) and 4) diastolic blood pressure (DBP); and lab values including lipid panel, 5) high density lipoprotein (HDL), 6) low density lipoprotein (LDL), 7) triglycerides, 8) total cholesterol, and 9) fasting blood glucose. Table 3 provides Survey question variables including 10) whether the participant has a current medical condition, 11) how many medications are they taking for that medical condition, 12) how much money per month are they spending on medications, 13) how many times they have visited their primary care provider,

14) urgent care, 15) ER, or 16) hospital, 17) how many days they are exercising and 18) how many minutes per day they are exercising.

Analyzing the biometric screenings there was a statistical significance average difference between BMI ($t = 4.972$, $p < 0.001$) as well as DBP ($t = 3.929$, $p < 0.001$). BMI ($r = .989$, $p < 0.001$), obesity ($r = .806$, $p < 0.001$), SBP ($r = .691$, $p < 0.001$) and DBP ($r = .656$, $p < 0.001$). On average, BMI before the Motivate U program was .64154 higher than BMI after completion of the program (95% CI (.38377, .89930)), and DBP was 3.66 mmHg higher than DBP after completion of the Motivate U program, (95% CI (1.799, 5.52)).

Table 2. *Biometric Screening Measures*

Variable	Baseline	Post-Intervention 8-weeks	<i>p</i> – value
BMI, M (SD)	34.10 (6.92)	33.46 (6.87)	< 0.000
Normal weight <25 n (%)	3 (4.6%)	4 (6.2%)	
Overweight 25-29.9 n (%)	18 (27.7%)	21 (32.3%)	
Obese 30-39.9 n (%)	29 (44.6%)	26 (40%)	
Morbidly obese 40-49.9 n (%)	14 (21.5%)	13 (20%)	
Super Obese >50 n (%)	1 (1.5%)	1 (1.5%)	
Systolic BP in mmHg, M (SD)	132.43 (15.05)	131.60 (15.53)	0.566
Diastolic BP in mmHg, M (SD)	83.63 (8.79)	79.97 (9.29)	< 0.000

Results from baseline to post intervention showed there was a statistically significant average difference between number of provider office visits in the past 6 months ($t = 5.247$, $p < 0.001$), an increase in days of exercise during the Motivate U program ($t = -8.376$, $p < 0.001$) and a significant increase in the minutes of exercise per day ($t = -7.824$, $p < 0.001$). The total number of medications taken decreased significantly using the Pearson chi-square model. Although the amount of money spent on medications had decreased after completion of the Motivate U program, due to the large standard deviation there was no statistically significant difference. The total sum spent on medications at baseline was \$1387, the total sum spent on medications at 8-week intervention was \$1247. Between the 65 participants that completed the program, this was

a \$2.15 savings on medications per individual after 8-weeks of physical exercise. ($\$1387 - \$1247 / 65$ participants = \$2.15 per participant).

Table 3. *Medications and description of medication types*

Variable	Baseline	Post-intervention	Pearson Chi-Square <i>p</i> – value
Total number of medication (n)			< 0.000
No medication	23	28	
1 - 3 medications	34	32	
> 4 medications	7	4	
Types of Medications (n = yes)	N	N	No analysis
HTN meds	10	12	
CV meds	0	0	
Respiratory meds	2	2	
DM meds	5	5	
Hypothyroid meds	5	5	
Depression meds	5	4	

Table 4. *Exercise patterns*

Variable	Baseline	Post-Intervention	<i>p</i> – value
Spending on medication in \$/month M (SD)	\$21.67 (45.60)	\$18.70 (53.11)	0.322
Number of days exercise per week			0.012
0 days	16	0	
1-3 days	32	20	
>4 days	17	45	
Minutes of exercise per day			< 0.000
0 mins.	15	0	
1-30 mins.	26	9	
31-60 mins.	21	51	
>60 mins.	3	5	

Barriers that prevented participants from initiating exercise prior to the start of the Motivate U program (Table 5) included being tired or unmotivated (40.6%), not enough time (20.3%), pain with exercise (15.6%), no barriers stated (10.9%), the gym costing too much financially (6.3%) or other (6.3%). Barriers that prevented participants from continuing to

exercise after completion of the program changed showing a reduction in barriers that prevented participants from using the gym (43.1%), the gym costing too much financially moving to the second most reported barrier (18.5%), not enough time (16.9%), other (12.3%), pain with exercise (4.6%) and being tired or unmotivated now moving tied to the bottom of the list of barriers at (4.6%).

Table 5. *Barriers to exercising*

Barrier	Baseline (n)	Post-intervention (8 weeks)
No barriers to exercising	7	27
Tired or unmotivated	26	3
Not enough time	13	11
Gym too expensive	4	12
Pain	10	3
Other	4	8

Six-Month Survey Post-Intervention

There were 25 participants that completed the entire study over 9 months. Comparing these participants against themselves, the number of medications taken decreased significantly ($p = 0.001$). The amount of money spent on medications also significantly decreased ($p = .036$) from \$30.96 (SD = 65.83) to \$23.46 (SD = 57.75). The original amount of money spent on medications at baseline was \$774 and at 6-months post intervention was \$587 ($\$774 - \$587/25$ participants = \$7.48 saved per individual at the six-month survey; an increase from the 8-week post intervention of \$2.15 saved per individual). The number of days exercising per week did increase over time ($p = 0.886$), as well as the number of minutes exercised per day, ($p = 0.779$), however both were not statistically significant.

Table 6. Medications and description of medication types (6-month)

Variable	Baseline	Post-intervention	6 month	<i>p</i> – value
Number of medications (n)				0.001
No Medication	9	11	16	
1-3 medication	12	11	7	
>4 Medication	3	2	1	
Spending on medication in \$/month (SD)	\$30.96 (65.83)		\$23.46 (57.75)	0.036
HTN meds	3	3	3	
CV meds	0	0	0	
Respiratory meds	1	0	1	
DM meds	2	2	2	
Hypothyroid meds	4	4	3	
HLD meds	4	4	4	
Depression meds	2	2	0	
Total amount spent on medication	\$1387	\$1247		

Table 7. Exercise patterns (6-month)

Variable	Baseline	6-month survey	Pearson Chi-Square <i>p</i> value
Days exercise/week			0.816
0 days	7	2	
1-3 days	11	15	
>4 days	7	8	
Minutes exercise/day			0.779
0 mins.	6	2	
1-30 mins.	6	4	
31-60 mins.	15	17	
>60 mins.	0	2	

The number of visits to a provider’s office, urgent care, ER, or hospital admission could only be compared from the baseline to the 6-month follow up group, as these were comparable 6-month time frames. The number of visits to healthcare providers increased with participants seeking primary care. The number of visits to urgent care and ER minimally decreased, and the amount of hospital admission rates remained the same. According to Caldwell, Srebotnjak, Wang

& Hsia (2013), a cross-sectional study averaged an ER visit was \$1233 with 60% of IQR greater than \$1550. The Annals of Internal Medicine study stated the average cost of an urgent care visit was \$155 (Mehrotra et. al., 2009). From the baseline survey to the 6-month survey there were two less visits to an urgent care facility and one less visit to the ER. This would show an additional revenue of investment of \$1543. This amount would average a revenue of investment of \$61.72 per individual for the 25 participants. The return on investment for the 6-month participants was 147.1%; with the additional \$61.72 per individual revenue saved on ER and UC visits + \$7.48 saved per individual on medication spending + \$425 saved per individual on comorbidities of obesity = \$494.20. $ROI = \$494.2 - \$200 / \$200 = 147.1\%$ cost benefit.

Table 8. *Number of visits 6 months' post-intervention*

Variable	Baseline	6-month survey	Pearson Chi-square <i>p</i> value
Number of visits to Provider			0.186
No visits	7	6	
1-3 visits	17	17	
>4 visits	1	2	
Number of visits to Urgent Care			0.058
No visits	20	22	
1-3 visits	5	3	
Number of visits to ER			0.08
No visits	22	23	
1-3 visits	2	1	
Number of Hospital admissions			No difference
No visits	24	24	
1+	1	1	

The barriers to exercise in the final participants who completed the entire study changed from tired or unmotivated being the primary barrier at baseline, to either no barriers to exercising or other reasons after the 6-month survey.

Table 9. *Barriers to exercise 6 months after post-intervention*

Barrier (n = 24)	Baseline (n)	6-month survey
No barriers to exercising	1	6
Tired or unmotivated	14	4
Not enough time	4	5
Gym too expensive	0	2
Pain	3	2
Other	2	5

CHAPTER V

DISCUSSION

Significant Findings

The Motivate U Program was an 8-week course valued at nearly \$600 per participant sponsored by Hometown Health. This value included gym membership, small group personal training at a specified gym as well as lab work, Motivate U t-shirts, accessories and a Garmin for select individuals to track the participant's progress. Hometown Health paid each gym facility \$100 per individual at the start of the program, and \$100 at the end of the program for each individual who completed the 8-week motivate U program for a total gym membership plus small group personal trainer fee of \$200 per individual. During this 8-week program, there was a statistically significant improvement in BMI as well as diastolic blood pressure. Per CDC, obesity increases medical expenditure \$1,429 greater than normal weight people in 2006, (CDC, 2016). Furthermore, 70 million Americans have high blood pressure (CDC, 2016) contributing to \$93.5 billion in healthcare services, medications and missed days of work (Goetzel et al., 2013), equally approximately \$1,335 per person per year. Theoretically, reducing BMI and DBP would have the impact of reducing healthcare costs of one individual with comorbid conditions at \$2,764 per year. If analyzing the return on investment (ROI) for Hometown Health solely for the 8-week period of exercise, we would have to compare to an equivalent time frame for reduction in healthcare costs. For this study, $\$2,764 \text{ per year} / (52 \text{ weeks per year} / 8\text{-week program} = 6.5) = \425 revenues from investment (cost benefit) in reduction of medical care expenditure during the 8-week program. There was also a \$140 cost savings for medications at the 8-week post intervention for the 65 participants that would become additional revenues from investment of \$2.15. These total \$427.15 revenues from investment per individual for the 8-week program.

Figure 3. ROI equation

$$\frac{\text{Revenues from Investment} - \text{Cost of Investment}}{\text{Cost of Investment}} \times 100 = \text{ROI (\%)}$$

Compared to the \$200 invested per Hometown Health for gym membership and small group personal trainer, the \$427.15 reduction in medical care expenditure of this program would demonstrate a return on investment:

revenue from investment (\$427.15) - cost of investment (\$200)/cost of investment \$200 x 100) = 113.6%.

Per the national average for the cost of gym membership at \$696 annually (\$696/6.5 weeks) = \$107 for an average 8-week gym membership the ROI would equal 299% (revenue from investment (\$427.15) - cost of investment (\$107)/cost of investment (\$107) x 100 = 299% ROI) for the financial benefit of decreasing obesity and BMI with investing in annual gym membership.

Although the amount of money spent on medications per participant was reduced, there was no statistically significance difference in spending. This study demonstrated an increased statistical significance in the amount of days exercised, as well as minutes exercised, comparing exercise prior to beginning the program and after completion of the program. Many of the participants met the criteria for recommended physical activity as provided by the American Heart Association (AHA, 2016) and American College of Sports Medicine after the completion of the program (at least 30 minutes of moderate-intensity aerobic activity at least 5 days per week for a total of 150 minutes; ACSM, 2017).

Only seven participants out of the initial 65 obtained a lipid panel and fasting blood glucose after completion of the Motivate U program. This is not an adequate sample size to analyze the impact of the intervention on lipid panel and fasting blood glucose for the study.

There were 25 participants who completed the entire 9-month study, including Baseline biometric screening, survey questionnaire, completion of 8-week Motivate U program, post intervention biometric screening, survey #2 questionnaire and 6-month survey #3. Themes in this sub-group demonstrated that the amount of money spent on medication significantly decreased. The number of days exercised, as well as minutes per day of exercise, increased in this study as well, however there was no statistical significance. The number of visits to urgent care and ER minimally decreased, whereas admission to hospital rate remained consistent. Barriers of this sub-group originally consisted of being too tired or unmotivated, however after 6 months of consistent exercise they changed to perceiving no barriers to exercising or other factors.

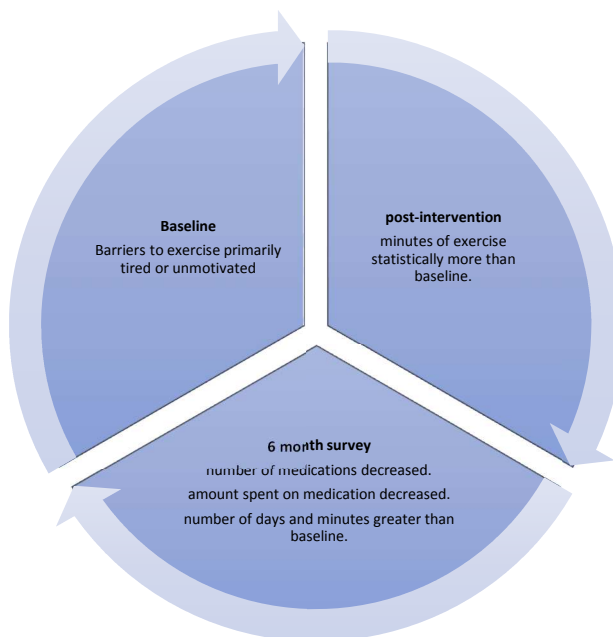


Figure 4. Summary of significant findings showing number of medications and amount of money spent decreased

There were 65 of the original 114 participants who accomplished the action phase of the trans theoretical model of health behavior change, adopting new habits of statistically significant increased days and minutes of exercise. Many have entered the maintenance stage of this model at the 6 month follow up survey continuing to exercise more days and minutes than the baseline group. Barriers to exercise evolved from the participants originally being too tired or unmotivated to either no barriers to exercise and the gym being too expensive at the post intervention survey, or no barriers to exercise and other reasons after the 6-month follow-up. By leading our participants into the maintenance stage with the Motivate U program, we have a better understanding and reflection of the benefits that an insurance covered gym membership wellness program provides over a lifetime.

The significant difference of diastolic blood pressure and reduction of BMI after the completion of the Motivate U program, with associated decreased amount of medications taken, correlates with the review of literature demonstrating an increase in medical expenditures for sedentary individuals. The Motivate U, insurance based wellness incentive program offered by Hometown Health is unique as a preventative measure to encourage its' insured members to become physically active by increasing days and minutes of exercise per week. There was limited research on gym memberships to reduce obesity, with Yancey, McCarthy, Harrison, Wong, Siegel, & Leslie, (2006) reporting a marginal difference on BMI, whereas this study had a significant decrease in BMI with offered free gym membership. This study is unique, in that free gym memberships offered by insurance companies as wellness incentives have limited research studies available.

Recommendations

Recommendations would be to perform a longitudinal study over a longer course than the 8-weeks documented could better assess the impact of physical exercise on cost benefit decreasing medical care expenditure. There was also a decrease in the number of visits to the ER

and urgent care at the 6 month follow up survey, to have a comparison group of measured BMIs and DBP would show if there was a significance that may demonstrate further cost benefit and return on investment. Secondly, having the participants complete the lab work, including fasting blood glucose and lipid panel 6 months after initiation of gym membership wellness program, that would give a more accurate reflection on benefits of exercise as a mean to decrease obesity and comorbidities associated with this process. There were only seven participants out of the 65 who completed the program that obtained a post Motivate U program lipid panel and fasting blood glucose, which does not accurately reflect the population of participants.

Conclusion

The research questions investigated whether physical exercise has a significant decrease on participant's BP, BMI, lipid panel, fasting blood glucose, and occurrence of medical treatment and medication costs was addressed, and in summary there was a statistically significant decrease in diastolic blood pressure and body mass index with physical exercise within the 8 week Motivate U program. The program offered 8 weeks of free gym membership, as well as personal trainers in small group setting, and showed a 113.6% return on investment for the \$200 per participant spent by Hometown Health on gym membership and small group personal trainer. If compared to national average gym membership costs, there would be a 299% return on investment for insurance companies to cover gym memberships in their entirety.

Furthermore, there was a statistical significance in the amount of days exercised and number of minutes exercised per day, which addresses the second research question whether there is a significant economic benefit for treating obesity by offering gym membership rather than current standard of care. The current standard of care is to recommend lifestyle changes to decrease obesity including physical exercise with a recommended 5-10% weight loss reduction over 6 months, ("How are Overweight and Obesity treated", 2012). After lifestyle modifications,

have been attempted, weight loss surgery would be considered, which would significantly impact the medical care expenditure. The Motivate U program with gym membership and personal trainer has demonstrated increased days and minutes exercised contributing to an overall economic benefit for treating obesity.

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APPENDIX I- IRB APPROVAL



University of Nevada, Reno

Research Integrity Office
 218 Ross Hall / 331,
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DATE: February 10, 2016
 TO: Bernadette Longo, PhD, RN, CNL, APHN-BC
 FROM: University of Nevada, Reno Institutional Review Board (IRB)

PROJECT TITLE: [832585-1] Gym Membership Wellness Program as a Cost Benefit to Health Insurance Companies

REFERENCE #:
 SUBMISSION TYPE: New Project
 ACTION: DETERMINATION OF EXEMPT STATUS
 DECISION DATE: February 10, 2016
 REVIEW CATEGORY: Exemption Categories # 2 and 4

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The Research Integrity Office, or the IRB reviewed this project and has determined it is EXEMPT FROM IRB REVIEW according to federal regulations. Please note, the federal government has identified certain categories of research involving human subjects that qualify for exemption from federal regulations.

Only the Research Integrity Office and the IRB have been given authority by the University to make a determination that a study is exempt from federal regulations. The above-referenced protocol was reviewed and the research deemed eligible to proceed in accordance with the requirements of the Code of Federal Regulations on the Protection of Human Subjects (45 CFR 46.101 paragraph [b]).

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Reviewed Documents

- Application Form - Exempt IRB Flex (UPDATED: 01/21/2016)
- Consent Form - Recruitment and Information Sheet (UPDATED: 01/27/2016)
- HIPAA Consent/Authorization - HIPAA Authorization Form.pdf (UPDATED: 02/10/2016)
- Questionnaire/Survey - Survey 3 - Post Measure at 6 months (UPDATED: 01/28/2016)
- Questionnaire/Survey - Survey 2 - Post Intervention Measure (UPDATED: 01/28/2016)
- Questionnaire/Survey - Survey 1 - Baseline Measure (UPDATED: 01/28/2016)
- University of Nevada, Reno - Part I, Cover Sheet - University of Nevada, Reno - Part I, Cover Sheet (UPDATED: 12/21/2015)

If you have any questions, please contact Valerie Smith at 775.327.2370 or at valeries@unr.edu.

NOTE for VA Researchers: You are not approved to begin this research until you receive an approval letter from the VASNHCS Associate Chief of Staff for Research stating that your research has been approved by the Research and Development Committee.

Sincerely,



Richard Bjur, PhD
Co-Chair, UNR IRB
University of Nevada Reno



Janet Usinger, PhD
Co-Chair, UNR IRB
University of Nevada Reno

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Nevada, Reno IRB's record.

APPENDIX II- AUTHORIZATION TO SHARE HEALTH INFORMATION

UNIVERSITY OF NEVADA, RENO

AUTHORIZATION TO USE, CREATE AND SHARE HEALTH INFORMATION FOR RESEARCH PURPOSES

Researchers: Bernadette Longo, PhD, RN, and graduate student Laura Orange, BSN, RN

Title of Study: Gym Membership Wellness Program as a Cost Benefit to Health Insurance Companies

IRB Protocol #: 832585-1

By law, researchers must protect the privacy of health information about you. In this form the word "you" means both the person who takes part in the research and the person who gives permission for another person to be in the research. Researchers may use, create, or share your health information for research **only if you let them**. This form describes what researchers will do with your health information. Please read it carefully. If you agree with it, please sign your name at the bottom. You will get a copy of this form after you have signed it.

If you sign this form, information will be shared with the people who conduct the research. In this form, all these people together are called "researchers." Their names will also appear on the research consent form that you sign.

The researchers will use the health information only for the purposes named in this form.

1. My health information that may be used, created, or shared includes:

- Your name and the health measurements collected by the *Motivate U* program that include height, weight, body mass index, waist circumference, body fat percentage, blood pressure and laboratory tests including lipid panel and fasting blood glucose.

2. My health information will be used for:

- Conducting the research study to determine if the fees for an all-inclusive gym membership would outweigh the cost of related illnesses associated with obesity.
- The researchers will compare you and other participant's health measurements routinely taken by the *Motivate U* program at the start and at the end of the program.
- To ensure that this research meets legal, institutional and accreditation requirements.

3. What the researchers may do with my health information:

The researchers may use and create health information about you for the study. They may also share your health information with certain people and groups. These may include:

- The University of Nevada, Reno Institutional Review Board/Office of Human Research Protection
- The sponsor of the study, Hometown Health's *Motivate U* program, and its representatives.
- Government agencies, review boards, and others who watch over the safety, effectiveness, and conduct of the research, when required by law.
- If *Motivate U's* program would find measurements or test results of concern, they would notify you.

4. Removing your name from health information

The researchers may remove your name (and other information that could identify you) from your health information. No one would know the information was yours.

If your name is removed, the information may be used, created, and shared by the researchers and sponsor as the law allows. (This includes other research purposes.) This form would no longer limit the way the researchers use, create, and share the information.

5. How the researchers protect health information

The researchers and Hometown Health's *Motivate U* program will follow the limits in this form. If they publish the research, they will not identify you unless you allow it in writing. These limitations continue even if you take back this permission.

6. After the researchers learn health information

The limits in this form come from a federal law called the Health Insurance Portability and Accountability Act (HIPAA). This law applies to your doctors and other health care providers.

Once the researchers get your health information, this law may no longer apply. But other privacy protections will still apply.

7. Storing your health information

Your health information may be added to a database or data repository. This permission will end when the database or data repository is destroyed.

8. You do not have to sign this permission (authorization) form. If I decide not to sign the authorization form:

- It will not affect your treatment, payment or enrollment in any health plans or affect your eligibility for benefits.
- You may not be allowed to participate in the research study.

9. After signing the authorization form, you can change your mind and:

- Not let the researcher disclose or use your protected health information (revoke the authorization).
- If you revoke the authorization, you will send a written letter to the Primary Investigator Bernadette Longo to inform her of your decision.

Dr. Bernadette Longo, Associate Professor of Nursing
University of Nevada Reno
Mail Stop 0134, Orvis School of Nursing
Reno, NV 89557

- If you revoke this Authorization, researchers may only use and disclose the protected health information **already** collected for this research study.
- If you revoke this Authorization your protected health information may still be used and disclosed should you have an adverse event (a bad effect).
- If you change your mind and withdraw the authorization, you may not be allowed to continue to participate in the study.

10. Please note

Unless you take back your permission (authorization), this form does not have an ending date.

11. Your signature

I agree to the use, creation, and sharing of my health information for purposes of this research study

Signature of research subject or participant's legal representative

Date

Printed name of research subject or participant's legal representative

Representative's relationship to participant

APPENDIX III- MOTIVATE U RECRUITMENT AND INFORMATION SHEET



Recruitment and Information Sheet

Gym Membership Wellness Program



University of Nevada, Reno

*You are invited to participate
in this research study.*

Title of Research Study: Gym membership wellness program as a cost benefit to health insurance companies

Purpose: This research will be conducted during Hometown Health's *Motivate U program* offered during Spring 2016. The purpose of the research study is to determine if the fees for an all-inclusive gym membership would outweigh the cost of related illnesses associated with obesity. Hometown Health has selected you for their *Motivate U program* by an application process. The researchers had no involvement with determining eligibility for the *Motivate U program*. If you are selected for the program you are eligible to participate in this research study.

What is involved? The researchers will compare your health measurements routinely taken by the *Motivate U program* at the start and at the end of the program. The researchers will also ask you to complete a short survey about your health, lifestyle habits, visits to your doctor and medications. The survey will be given three times: at the start of the program during orientation, the end, and then 6 months later by a phone call. The additional time commitment to fill out the survey or answer questions on the phone is approximately 3 minutes.

Benefits of this research include providing evidence about a cost benefit for insurance companies to provide free gym memberships to all of it's members.

The risks or foreseeable discomforts of this research study are limited to your completion of the survey and sharing this information. The researchers will collect your health information and survey responses and compare over time using a number, so your name will not be directly attached to the information. The research records will be kept confidential and secure.

Your Participation is voluntary. If you choose to not participate or wish to discontinue participation at any time, you will not experience any penalty or loss of benefits with the *Motivate U program*.

Please check here: **Yes, I want to participate.** You may use my health information and survey for the research.

Questions? Please contact the researchers or the Research Integrity Office at the University of Nevada Reno. Phone: (775) 327-2368

Principle Investigator for this research:
Associate Professor Bernadette Longo, Ph.D., RN
Orvis School of Nursing
Office Phone: 1-775-682-7149
longo@unr.edu

Student Researcher- Main contact
Laura Orange, RN
Master of Science in Nursing student
Phone:
Lorange@nevada.unr.edu

APPENDIX IV- SURVEYS

Participant
#

Gym Membership Wellness Program Study

SURVEY #1

Please complete the following Survey. *Thank you for your time.*

Last Name: _____ Age: _____

Gender: Male Female Ethnicity: White (non-Hispanic)

Profession: _____ White Hispanic Asian

Highest level of education: _____ Black American Indian

Employment status: _____ Two or more races Other

Do you have any diseases or medical conditions? No Yes (*please list below*)

List all medications (& amount) you currently take: _____

How much are you spending on medication each month? \$ _____

In the last 6 months: (*write in number of visits*)

How many times have you been to your healthcare provider's office? _____ times

How many times have you been to an Urgent Care? _____ times

How many times have you been to the Emergency Department? _____ times

How many times have you been in the Hospital? _____ times

How many days per week do you exercise? _____ days

How many minutes each day do you (on average) exercise? _____ minutes

In the last 6 months describe the "barriers" that have prevented you from exercising: _____

In the last 6 months did you eat breakfast regularly? Yes No



Gym Membership Wellness Program Study

Participant
#

SURVEY #2

(End of 8-week Program)

Please complete the following Survey. *Thank you for your time.*

Do you have any diseases or medical conditions? No Yes (*please list below*)

List all medications (& amount) you are still currently taking: _____

Are there any medications that your doctor has recently stopped? _____

Are there any medications that you now take a lower dose or less often? _____

How much are you spending now on medication each month? \$ _____

In the last 2 months: (*since you started the Motivate U Program*)

How many times have you been to your healthcare provider's office? _____ times

How many times have you been to an Urgent Care? _____ times

How many times have you been to the Emergency Department? _____ times

How many times have you been in the Hospital? _____ times

How many days per week do you now exercise? _____ days

How many minutes each day do you (on average) exercise? _____ minutes

In the last 2 months describe the "barriers" that have prevented you from exercising: _____

Do you now eat breakfast regularly? Yes No

The student nurse researcher "*Laura Orange*" would like to call you in 6 months to ask the same questions.

Please provide your phone number(s): _____



Gym Membership Wellness Program Study

Participant #

SURVEY #3 (Six month Post Survey)

The Student Researcher will call the participant on the phone and read the following script:

“Hello. This is Laura Orange the student nurse researcher from University of Nevada Reno who is conducting the Motivate U Research Study. Do you have about 3-5 minutes to talk with me about how you are doing? I have the same questions to ask you as before on the survey. If you prefer to not answer any of the questions that is fine, just let me know”

Do you presently have any diseases or medical conditions? No Yes (please tell me)

What medications & amounts are you are currently taking? _____

Are there any medications that your doctor has recently stopped? _____

Are there any medications that you now take a lower dose or less often than before the Motivate U Program? _____

How much are you now spending on medication each month? \$ _____

Since ending the Motivate U Program – or since _____ (say the month it ended)

How many times have you been to your healthcare provider’s office? _____ times

How many times have you been to an Urgent Care? _____ times

How many times have you been to the Emergency Department? _____ times

How many times have you been in the Hospital? _____ times

How many days per week do you now exercise? _____ days

How many minutes each day do you (on average) exercise? _____ minutes

Since ending the Motivate U Program – or since _____ (say the month it ended)

please describe the “barriers” that have prevented you from exercising:

Do you now eat breakfast regularly? Yes No

Thank you very much for your time and participation in the research. The study is now over and I will not be contacting you again. This information will be kept secure & confidential and destroyed after the study is completed.”