The Effect of Health Coaching on Health Risk

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Melissa Anne Young

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We hereby certify that this Dissertation, Melissa Anne Young, conforms to acceptable standards and fully fulfills the Dissertation requirements for the degree of Doctor of Education from College of Saint Mary

MJ Petersen, EdD, MSN, RN
Chair

Christy Hutchison, J.D.
Committee member

Mary Kay Smid, EdD, MSN, RN
Committee member

Acknowledgement Page

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Abstract

The purpose of the longitudinal, non-experimental causal comparative quantitative study was to evaluate the relationship between telephonic health coaching and health risk of three Midwestern employer groups participating in a comprehensive wellness program. The research study explored wellness program participants enrolled in telephonic health coaching to determine if sustained positive lifestyle modifications reduced health risk over an eighteen-month period of time. The research evaluated whether telephonic health coaching had an effect on program participants' pre and post overall wellness score (Gold, Anderson, & Serxner, 2000). The research also evaluated if telephonic health coaching effected program participants' medical cost and utilization. The significance of the study was to address the limitations of the existing research and broaden the breadth and depth in the field of health coaching and wellness.

The review of literature focused on the value of health coaching provided to comprehensive wellness programs. Early research of health coaching through comprehensive wellness programs had been positive in validating the outcomes of risk reduction and cost savings. Effective health coaching programs employ multiple components of evidence based interventions such as motivational interviewing, transtheoretical model behavior change and self-efficacy.

The sample size of the research study included 1,770 eligible participants. Three hundred ninety-five individuals participated in the health coaching program from July 1, 2014 through December 31, 2015. A multiple linear regression was calculated to predict health coaching based on participants' clinical risk group (CRG), medical claims and medical utilization for three midwestern companies. A significant regression equation was found suggesting that participation in health coaching was a strong indicator for improved CRG, medical claims and

medical utilization. A year over year comparison of participant health assessment scores was conducted and showed a statistically significant difference in reduction of health risk and overall wellness scores for those individual who participated in health coaching compared to those individuals who did not participate in health coaching.

The study did not include other factors in the analysis that may have impacted medical claims such as plan design, economic status, turnover and environmental conditions. Consequently, the results were only applicable to the period of time in which the data collection process occurred. The study offered suggestive evidence for continued research in the area of health coaching and incentives. Additional research needs to occur to fully understand the effects of health coaching in regards to a comprehensive wellness program.

Keywords: Health Coaching, Wellness Programs, Incentives

CHAPTER 1: INTRODUCTION

Increased health care expenditures are a result of our lifestyles and negative behaviors (Gold, Anderson, & Serxner, 2000). Despite the known benefits of exercising, eating healthy, and adhering to medications, individuals struggled to perform these behaviors consistently. The practice of medicine has become increasingly patient-centered. Patient involvement in the medical decision making process through patient education was central to improving overall health outcomes and patient satisfaction (Chen et al., 2010). The research study explored wellness program participants enrolled in telephonic health coaching to determine if sustained positive lifestyle modifications reduced health risk over an eighteen-month period of time. The research evaluated if telephonic health coaching had an effect on program participants' clinical risk group health score, medical claims, and medical utilization (Gold, Anderson, & Serxner, 2000). This chapter discussed the purpose, background and significance of this study by addressing the limitations of the existing research and broaden the breadth and depth in the field of health coaching and wellness.

Purpose of the Study

The purpose of the longitudinal, non-experimental causal comparative quantitative study was to evaluate the relationship between telephonic health coaching and health risk of three Midwestern employer groups participating in a comprehensive wellness program. The research study explored wellness program participants enrolled in telephonic health coaching to determine if sustained positive lifestyle modifications reduced health risk over an eighteen-month period of time. The research evaluated whether telephonic health coaching had an effect on program participants' pre and post overall wellness score (Gold, Anderson, & Serxner, 2000). The

research also evaluated if telephonic health coaching affected program participants' medical cost and utilization.

Background

Employer-sponsored wellness programs were established in the 1970s due to the development of the Occupational Health and Safety Administration (OSHA). OSHA's emphasis was on avoiding workplace accidents and work-related illnesses (Greiner, 1987). Workplace health centers tended to focus on occupational health to improve employee productivity and reduce costs. By the 1980's worksite wellness programs became popular as a result of the cultural change regarding fitness, the industrial health care burden, and research revealing the cost of unhealthy employee behavior (Greiner, 1987). The employer wellness programs of the 1980's were holistic programing which offered employees a range of support, including smoking cessation, stress management, nutrition, and weight management.

Employer-sponsored wellness programs showed up in research articles as early as 1982. The Journal of Occupational Health described how corporate wellness programs reduced health care cost, reduced illness related absences and attracted talented employees to the company (Penack, 1991). The Framingham Heart Study (NHLBI, 1948) and the Surgeon General's reported on Smoking and Health (DDHS, 1981) supported the claim that lifestyles correlate to disease and/or wellness (Pencak, 1991). Furthermore, the federal government through the Healthy People 2000 campaign set the goal that 75% of employers with at least 50 employees would need to offer health promotion services as a benefit (USPHS, 1991). The development of employer-sponsored wellness programs reflected the shift of responsibility for health care from the employer to the employee.

The 1990's and early 2000's focused on protecting individuals through the American with Disabilities Act (ADA) and Health Insurance Portability and Accountability Act (HIPAA). The purpose of the ADA was to protect individuals with disabilities against employment discrimination (1991). The ADA limits employers regarding physical examinations and disability related inquiries unless job related (1991). Due to this limitation, health risk assessments and health screenings which are typically part of an employer-sponsored wellness became into question. Health risk assessments do not focus on job functions of an individual employee and were deemed not job-related under the ADA and thus could not be mandated (ADA, 1991). The ADA permitted generalized disability related inquiries if disclosure was voluntary (ADA, 1991).

The purpose of HIPAA was to protect individually identifiable health information held by covered entities and their business associates and gave patients an array of rights with respect to that information (1996). At the same time, the Privacy Rule was balanced to permit the disclosure of health information needed for patient care and other important purposes (HIPAA, 1996). HIPAA nondiscrimination and wellness provisions have been in place since 2006. These provisions prohibit group health plans and group health insurance issuers from discriminating against individual participants and beneficiaries for plan eligibility, benefits and premiums based on an individual's health status (HIPAA, 2006). An exception had allowed premium discounts, rebates or other modifications to cost sharing in return for adherence to certain programs that promoted health and disease prevention. The regulations divided the wellness and prevention programs into two different categories: participatory wellness programs and health-contingent wellness programs.

Examples of participatory programs:

1. Reimbursement for participation in a fitness center (HIPAA, 2006).

2. A diagnostic testing program that provided a reward for participation in the program regardless of outcomes (HIPAA, 2006).

3. Rewarded health plan participants who attend no-cost health seminars (HIPAA, 2006).

Examples of health-contingent wellness programs:

1. A program that imposed a premium surcharge based on tobacco use (HIPAA, 2006).

2. A program that used biometric screening or a health risk assessment to identify employees with specified conditions or risk factors and then provided a reward to those identified in the "healthy" range while requiring employees who were identified as outside the normal or healthy range to take additional steps to obtain the same reward (HIPAA, 2006). Additional steps might include a meeting with a health coach, a required to take a health or fitness course, required to adhere to a health improvement action plan, etc. (HIPAA, 2006). The ADA and HIPAA assisted employers to ensure individuals were not being discriminated against due their health risk or disabilities.

Genetic Information Nondiscrimination Act of 2008 (GINA) passed to prohibit employers from using an applicant's or employee's genetic information as the basis for making employment decisions, setting premiums for group health insurance, or providing other privileges of employment (GINA, 2008) With the addition of GINA, employers needed to review the questions included on their health risk assessments. Employers needed to avoid not only asking questions about a person's results from genetic testing, but also about the person's family health history (GINA, 2008). For example if a health risk assessment asked: "Does your family have

any history of cancer, heart disease, or other illness?" or even "Are there any other health matters that you would like to discuss?" the employer could be in violation of GINA. HIPAA, ADA and GINA had provisions protecting individuals from being discriminated against based on health factors (HIPAA, 1996; ADA, 1991; GINA, 2008).

Employers were motivated to assist their employees with tools and programs to make and keep healthy lifestyles despite the growing federal and state regulations. Unhealthy and technologically advanced lifestyles increased the incidence of chronic conditions like diabetes and heart disease. Chronic conditions such as diabetes and heart disease had become a burden on society with decreased quality of life, premature death, disability and increased health care cost (Kaiser Family Foundation, 2013). Sedentary behaviors occurred in many settings including at home, work, and in leisure time. Despite the known benefits of exercising, eating healthy, and adhering to medications, individuals struggled to perform these behaviors consistently. Health plans and employer groups adopted programs to assist with improving the health risk of those individuals and to control the cost of health care coverage. Almost one-in-four employers (24%) offered health benefits and provided employees with an opportunity to complete a health risk assessment (Kaiser Family Foundation, 2013). The advantages for employer-sponsored wellness programs were decreased utilization of healthcare facilities, improved health for chronic conditions, increased productivity, decreased absenteeism, and improved physical status (Loeppke, Edington, & Beg, 2010; Long & Sheehan, 2010; Baicker, Cutler & Song, 2010; Hochart & Lang, 2011; Henke, Goetzel, McHugh & Issac, 2011).

Health management programs and employee wellness programs incorporated in health coaching interventions assisted individuals in making and adhering to lifestyle changes. According to Chen et al. (2010), effective health coaching entailed providing individuals with

health information to improve their overall health status. Health coaching supported individuals in gaining knowledge, skills, tools and confidence to become active participants in their health care (American Academy of Family Practice, 2014). Health coaching was critically important due to the prevalence of the leading causes of death in the United States, i.e., heart disease, cancer, stroke, lung disease, and injuries, are reduced through prevention and effective patient education (Hill & Miller, 2004). Strong evidence suggest counseling and education benefited not the individual patient and society as a whole (The JNC 7 Report, 2003). Providing individuals with complete and current information helped to create an atmosphere of trust, enhances the doctor patient relationship, and empowers individuals to participate in their own health care (Irmk, Duzozand, & Bozyer, 2010). Effective health coaching ensured participants had a sufficient level of knowledge and understanding which allowed them to make informed decisions regarding their care (Irmk, Duzozand, & Bozyer, 2010).

To qualify for traditional health coaching programs, individuals had to complete a health risk assessment. The health risk assessment had an engagement tool to assessed health risks and motivation (Healthcare Financing Administration, 2014). Upon completion of the health risk assessment, individuals were referred to lifestyle programs which assisted in making lifestyle changes. Lifestyle changes improved individual's health and lowered their overall health risk. The program individuals were referred to was health coaching.

There were no current standards for being a health coach (Lipsomb, 2007). There were two different types of health coaches: health coach and nurse coach. Each type of coaching option enabled the opportunity to engage an individual in programs to help them achieve a healthier lifestyle. Health coaches had bachelors, masters, or doctoral degrees in health related

fields and extensive expertise in the area of smoking cessation, nutrition, weight management physical activity, and stress management (Health Fitness, 2013).

Individuals with a chronic condition were assigned to a nurse coach (Health Fitness, 2013). Nurse Coaches were registered nurses skilled in helping participants understand and adhere to their clinical care plan and were trained in the behavior change techniques (Health Fitness, 2013). Individuals assigned to work with a nurse coach had health conditions that were not being managed appropriately, had multiple gaps in care and/or comorbidities (Health Fitness, 2013).

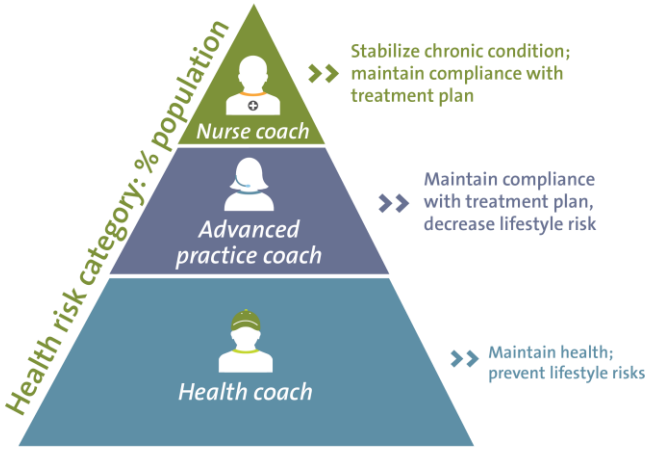


Figure 1 Health Coaching Hierarchy illustrated the hierarchy of the health coaching program conducted by Health Fitness. Adapted from Health Fitness, 2013, *Empowered Coaching*. Note: Used with permission from Health Fitness (Appendix A)

Health coaching allowed participants to create their own tailored approach in reducing health risk by choosing a behavior focused area with their health coach. Services were available through multiple delivery channels including: integrated telephonic and/or web-based, telephonic, and onsite. The type and frequency of interactions were determined by the

participants and coach based on the level of support the participant needed to achieve the desired change. Health coaching programs offered a variety of motivational and behavior change techniques to assist individuals in making small changes to impact their overall health and health risk levels.

For most individuals behavior change occurred gradually over time, with the person progressing from being uninterested, unaware, or unwilling to making a change (*precontemplation*), to considering a change (*contemplation*), to deciding and preparing to make a change (*preparation*) (Zimmerman et al., 2000). This was followed by definitive action and attempts to maintain the new behavior over time (*maintenance*) (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). People progressed in both directions in the stages of change (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Most people would "recycle" through the stages of change several times before the change becomes fully established (Zimmerman et al., 2000; Prochaska & DiClemente, 1984).

Health coaches evaluated a person's readiness to change for any proposed intervention (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Interventions not staged to the readiness of the individual are less likely to succeed (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Interventions which moved a person too quickly through the stages of change were more likely to create resistance and impede behavior change (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Anything that moved a person along the continuum toward making a positive change would be viewed as a success (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Employing stage-specific interventions decreased frustration by lessening the unrealistic expectation that change would occur with a single intervention (Zimmerman et al., 2000; Prochaska & DiClemente, 1984).

The success of a health coaching program was dependent on two factors: the individual participant and the health coach. The research was clear that healthy behavioral practice prevent chronic illness and improved management of prevalent conditions (The JNC 7 Report, 2003). The individual participant needed to be willing to move along the readiness of change continuum to make positive health changes (The JNC 7 Report, 2003). The experience, education and training of the health coach to facilitate behavioral health interventions for participants were essential.

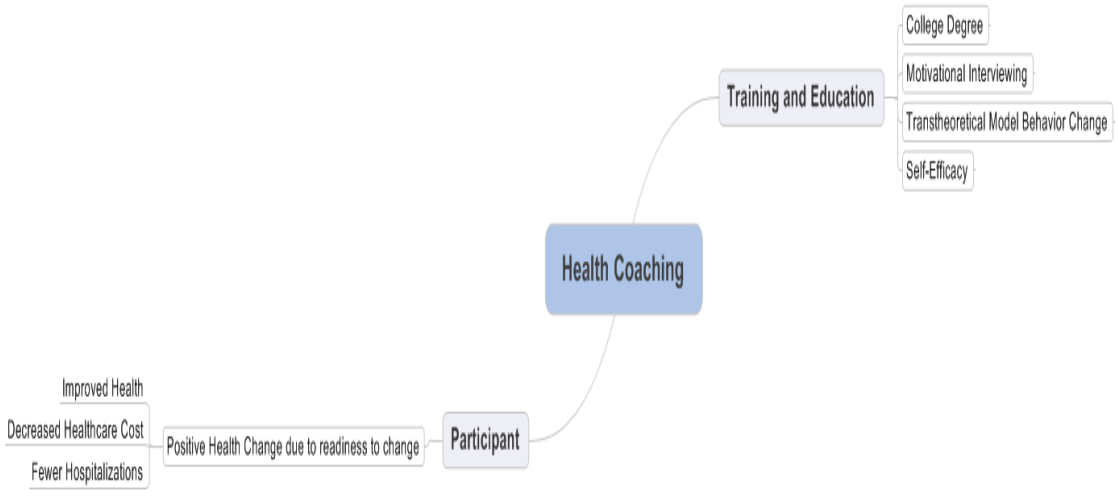


Figure 2. *Health Coaching Concept*. This figure illustrated the process of the health coaching.

Problem Statement

The rising cost of healthcare had a financial impact on employers. Rising costs were due to the increasing incidence of chronic conditions and health risk (Mattke et al., 2013). Employers showed a growing interest in adding comprehensive wellness programs. Employer-sponsored comprehensive wellness programs worked to improve employees' health and reduced corporate healthcare costs (Isaac, 2013). Employers appraised the value of adding health coaching to their comprehensive wellness programs, evaluated if this intervention had a long-

term positive effect on individuals' health risk, medical cost, and utilization (Baicker, Culter, & Song, 2010; Heake, Goetzel, McHugh, & Isaac, 2011; Aydeck et al., 2008). Few long-term research studies have been conducted on the topic of health coaching and its impact on health risk, medical cost and medical utilization (Prochaska et al., 2012; Butterworth et al., 2006). Researchers often studied a single population which may have been implicitly generalized to all organizations. The purpose of the longitudinal, non-experimental causal comparative quantitative study was to provide insight, from three Midwestern employer groups, to determine if sustained positive lifestyle modifications reduced health risk over an eighteen-month period of time and resulted in an impact to telephonic health coaching participants' health risks, medical costs, and medical utilization.

Research Questions

According to Creswell (2010), scholarly justification for a research study were when an author bases the questions and ideas on previous research. The author's justification for this research study were based on previous research which indicated lifestyle interventions as part of workplace wellness programs reduced health risk factors (Baicker, Culter & Song, 2010; Heake, Goetzel, McHugh & Isaac, 2011; Aydeck et al., 2008). The research questions for the longitudinal, non-experimental causal comparative quantitative study were:

Q1. What was the correlation between telephonic health coaching and Clinical Risk Group of three Midwestern, fully insured employer groups' employees participating and not participating in a comprehensive wellness program?

Q2: What was the overall relationship of Clinical Risk Group and telephonic health coaching participants compared to non-participants of three Midwestern, fully insured employer groups in terms of medical costs?

Q3: Was there a significant difference ($p \leq .05$) of telephonic health coaching participants compared to non-participants of three Midwestern, fully insured employer groups in terms of medical utilization?

Q4: Was there a significant difference ($p \leq .05$) of telephonic health coaching participation for three Midwestern, fully insured employer groups offering and not offering program incentives?

Limitations

Limitations of a research study are factors a researcher has no control over (Leedy & Ormrod, 2010). The longitudinal, non-experimental causal comparative quantitative study used self-reported wellness program data through the health risk assessment. The study did not include other factors in the analysis that may also had an impact on medical claims such as plan design, economic status, turnover and environmental conditions. For this research study, the researcher had no control over the number of individuals who participated in their respective employer's sponsored wellness program. Participation in health coaching was voluntary, adverse selection was another potential limitation (Haynes, Dunnagan, & Smith, 1999). Consequently, the population for this research study had a larger female population than male. The results are only applicable to the period of time in which the data collection process occurred. The results of the study may not be applicable to other companies utilizing telephonic health coaching program. Each participant determined when they spoke with their health coach. Health coaching sessions could be done during work time and/or after hours. Each company was unique in terms of its employee demographics, educational level, employees' health status, corporate wellness culture, and health coaching program.

Additionally, a limitation to this study included the bias of the researcher. Bias in research is defined as any influence, condition, or set of conditions that alone or in any combination can distort the data (Leedy & Ormrod, 2010). Acknowledgement of any biases and an explanation of measures taken to avoid these biases by the researcher were noted (Leedy & Ormrod, 2010).

Assumptions

One assumption for this research study was that all participants were honest in their responses when completing the health assessment and participating with their health coach. Another assumption assumes there were participants already predisposed to live a healthy life as well as unhealthy lifestyles. Individuals choose to participate or not based on how they were currently living their lives. Lastly, the majority of chronic diseases in the U.S. were related to an individual's health risk. An individual's health risk factors were leading to a greater incidence of chronic diseases such as diabetes, coronary heart disease, and heart failure. These chronic conditions were a burden on the U.S. as they lead to reduced quality of life, premature disability and/or death and increased medical costs and medical utilization (Mattke et al., 2013; Kurtze, Rangul, Hustvedt, & Flanders, 2008; Paradis, Perusse, Godin, & Vohl, 2008; Greenlund et al., 2004; & Edington, Yen, & Braunstein, 1999).

Delimitations

The research study was designed to analyze the telephonic health coaching program, health risk, and medical claims related data collected from three employer groups of a Health Insurance Company located in the Midwestern section of the United States. Consequently, the results were only applicable to the period of time in which the data collection process occurred. The results of the study may not be applicable to other companies utilizing a telephonic health

coaching program. Each company was unique in terms of its employee demographics, educational level, employees' health status, corporate wellness culture, and health coaching program.

Definition of Terms Operationalized

The following list provides key terminology used in the study as an easy to reference guide:

Clinical Risk Groups (CRGs). CRGs was a risk adjustment tool and clinically based classification system used to measure a population's burden of illness (3M Clinical Risk Groups, 2011). CRGs used standard claims data, pharmaceutical data and functional health status collected longitudinally to assign each individual to a single, mutually exclusive risk group (3M Clinical Risk Groups, 2011).

Eligibility File. A full eligibility file was sent weekly to the vendor, HealthFitness. The eligibility file consisted of all eligible employees from the three employer groups.

Employer Groups. An Employer Group was an entity with a current group benefits agreement in effect with a health plan. The health plan provided fully insured health care services to employee subscribers and eligible dependents (Nebraska Department of Insurance, 2002).

Fully insured plan. A fully insured plan where the employer contracts with another organization to assume financial responsibility for the enrollees' medical claims and for all incurred administrative costs (Nebraska Department of Insurance, 2002).

Health behavior. Health behavior was an action taken by a person to maintain, attain, or regain good health to prevent illness. Health behavior reflected a person's health beliefs (Butterworth, Linden, McClay, & Leo, 2006)

Health coaching. The health coaching model allowed participants to create their own tailored approach by selecting goals within the lifestyle management programs. The lifestyle management program for health coaching included: sleep plan, stress management, cardio training, strength training, flexibility, sit less, tobacco cessation, eat regular meals, meal portions, high-sodium foods, high-fat foods, whole grain, fruits, vegetables, water, sugary drinks, sugary foods, and medical care plan. Health coaches began with the behaviours participants were ready to address, putting focus where they were most motivated to improve, and were likely to have more control over changing. Participants worked with one coach who provided the support and guidance needed to achieve the results that were most important to each participant. Health coaches were employed by HealthFitness. Health coaches had bachelor's, master's or doctoral degrees in health related fields and extensive expertise in lifestyle health behaviour change that address health risks (weight, blood pressure, cholesterol, pre-diabetes, tobacco use) and contributed to overall health and well-being. Health coaches utilized Transtheoretical Model, Motivational Interviewing and Self-efficacy with participants. All health coaching was done telephonically.

Health risk assessment (HRA). Health risk assessment was a systematic approach to collecting individual's information which identified their health risk factors, provided individualized feedback, and linked the person with at least one intervention to promote health, sustain function and/or prevent disease (Health Care Financing Administration, 2014). The HRA instrument obtained information on demographic characteristics (e.g., sex, age), lifestyle (e.g.,

smoking, exercise, alcohol consumption, and diet), personal medical history, and family medical history (Health Care Financing Administration, 2014).

Health risk factors. Health risk factors were determined through the 3M Clinical Risk Groups (CRGs) (3M Clinical Risk Groups, 2011). Each individual was assigned to a single, mutually exclusive group drawing from standard demographic, diagnostic and procedural data. All individuals were assigned to one of nine health statuses, ranging from catastrophic (i.e. history of a heart transplant) to healthy (i.e. no chronic health problems or other indication of risk) (3M Clinical Risk Groups, 2011).

Incentives. Incentives were used by employers to increase employee engagement in wellness programs.

Medical claims. Medical claims were medical bills submitted to health insurance carriers and other insurance providers for services rendered to patients by providers of care (Nebraska Department of Insurance, 2002). Maternity related medical claims were excluded from the study.

Medical Utilization. Medical utilization was the extent to which the members of a covered group used a program over a stated time. Medical utilization was expressed as the number of services used per 100 per person eligible for that service (Nebraska Department of Insurance, 2002).

Participants. Participants in the study were defined as individuals who participated in the employer-sponsored wellness program by performing one or more of the following activities: health risk assessment (HRA), biometric screening, and/or health coaching. The participants were from three employer groups whose corporate offices were located in a Midwestern State.

All three organizations were in the healthcare industry. Each of these employer groups were fully insured by a health insurance carrier. Participants were included in the research study if:

1. They were age 19 or older, and
2. They were enrolled in the company's group health plan for greater than twelve-months, and
3. They had no maternity related medical claims during the study period.

Non-participants. Non-participants were defined as individuals who did not participate in the employer-sponsored wellness program.

Self-efficacy. Albert Bandura defined self-efficacy as one's belief in their ability to succeed in specific situation. One's sense of self-efficacy played a role in how they approached goals, tasks, and challenges (Bandura, 1977).

Self-management. Self-management was defined as "the individual's ability to manage the symptoms, treatment, physical and psychosocial consequences and lifestyle changes inherent in living with a chronic condition" (Newman et al., 2004).

Summary

In conclusion, the longitudinal, non-experimental causal comparative quantitative study provided insight, from three Midwestern, fully insured employer groups, into the impact of telephonic health coaching on participants' health risks, medical costs, and medical utilization over an eighteen-month time period. The purpose of this longitudinal, non-experimental causal comparative quantitative study was to evaluate the relationship between telephonic health coaching and health risk of three Midwestern employer groups participating in a comprehensive wellness program. The research study explored wellness program participants enrolled in

telephonic health coaching to determine if sustained positive lifestyle modifications reduced health risk over an eighteen-month period of time. The research evaluated whether telephonic health coaching had an effect on program participants' pre and post overall wellness score (Gold, Anderson, & Serxner, 2000). The research also evaluated if telephonic health coaching effected program participants' medical cost and utilization. The significance of the study was to address the limitations of the existing research and broaden the breadth and depth in the field of health coaching and wellness. The scope of the literature reviewed emphasized the importance of health coaching within employer-sponsored wellness programs, the benefits of employer-sponsored wellness programs on health risk and medical claims, participation and incentives, and continued self-management and support to help individuals change their negative health behaviors into positive ones.

Chapter II: LITERATURE REVIEW

The review of literature focused on the value health coaching had within employer-sponsored wellness programs. Health coaching has become a popular solution to employer groups and health plans to reduce individual's health risk. Employer groups appraised the value of adding health coaching to their comprehensive wellness programs. Evaluating the long-term effects on individual health risk, medical risk and medical utilization of those that participate in health coaching was important in determining the value health coaching provided to comprehensive wellness programs. The first section of the review of literature focused on health coaching within employer-sponsored wellness programs. The second section offered the benefits of employer-sponsored wellness programs on individual's health risk and medical claims. The third section provided an overview of participation and incentives of employee sponsored wellness programs. The fourth section provided the theoretical framework that health coaching programs utilized.

Health Coaching

Health coaching was an outgrowth of the 1950's health education and health council activities (Butterworth, Linden, & McClay, 2007). Health coaching was developed from a wide range of disciplines and was based on broad academic knowledge including cognitive and behavioral psychology, social science, positive psychology, and organizational change and development (Butterworth, Linden, & McClay, 2007). Health coaching was a process facilitated behavior change, challenging the individual to listen to the wisdom of his or her highest self (Miller & Rollnick, 2002). The transformative process based on the principles of positive psychology and the practices of motivational interviewing and goal setting, promoting healthy lifestyle changes (Miller & Rollnick, 2002). Health Coaching facilitated a vision for well-being

and transformed that vision into goals and then action, sustaining lasting change which allowed positive health to manifest (Miller, 2011; Miller & Rollnick, 2002**).**

Hemming (2003) recommended individuals take responsibility for their lifestyle choices because a healthy lifestyle was essential to the prevention of illness and disease. The Centers for Disease Control and Prevention (CDC) stated that four behaviors: "inactivity, poor nutrition, tobacco uses, and frequent alcohol consumption," were the primary risk factors for chronic conditions such as diabetes and heart disease (2010). The result of changing lifestyle related behavior through positive health choices had an estimated 70% reduction in health care costs (National Consortium for Credentialing Health & Wellness Coaches, 2011). Seligman (2008) suggested placing one's center of attention on health verses focusing on illness saved health care cost and lives. Health coaching was a catalyst for behavior change because many people do not have the motivation, education or resources to make shifts in their own well-being (National Consortium for Credentialing Health & Wellness Coaches, 2011). Time available to physicians to educate patients and assist with behavior change was limited. Physicians informed patients of areas they needed to improve, but many patients did not have the understanding, skill, motivation or confidence to follow through on the advice (Miller 2011; National Consortium for Credentialing Health & Wellness Coaches, 2011).

Gold, Anderson, and Serxner (2000), evaluated the long-term impact of telephone-based interventions which targeted high risk and readiness to change. Quasi-experimental design included a pre/post comparisons of lifestyle related health risks between participants and non-participants (Gold, Anderson, & Serxner, 2000). Programs were offered in seven areas: back care, cholesterol control, eating habits, exercise and activities, stress management, tobacco use, and weight control (Gold, Anderson, & Serxner, 2000). Participants were 1.8 to 3.5 times as

likely as non-participants to reduce the targeted health risk in 6 of the 7 areas (Gold, Anderson, & Serxner, 2000). Participants were also 1.7 to 3.5 times as likely as non-participants to reduce their health risks in 9 of 13 lifestyle areas not targeted by the intervention (Gold, Anderson, & Serxner, 2000). Faghri, Blozie, Gustavesen, and Kotejoshyer (2008) evaluated employees' health and lifestyle changes following health risk appraisal only and health risk appraisal with consultation. Health risk appraisals were completed at baseline and 6 month (Faghri, Blozie, Gustavesen, & Kotejoshyer, 2008). The second health risk appraisal showed improvements in nutrition, fitness and overall health in both groups ($P = <0.05$) (Faghri, Blozie, Gustavesen, & Kotejoshyer, 2008). Significant improvements were also found between health risk appraisal with consultation group and stages of change for exercise, nutrition, and overall lifestyle (Faghri, Blozie, Gustavesen, & Kotejoshyer, 2008). Group difference in stages of change for exercise, amount of snack food, fruits and vegetables consumed and physical activity were significant (Faghri, Blozie, Gustavesen, & Kotejoshyer, 2008). Both studies showed a reduction in health risk directly associated with changes in lifestyle. Significant changes were seen in the health coaching participants.

The Effects of Comprehensive Wellness Programs

Employer-sponsored wellness programs assed their employees' health risk and tailored interventions to assist employees to adhere to small lifestyle changes. Several companies, like Johnson & Johnson and Pepsi Co., invested in comprehensive worksite wellness programs as a way to control rising health care costs by empowering their employees to assume more responsibility for their own health and well-being (Mattke, 2013; Liu, Harris, Weinberer, Serxner, Mattke & Exum, 2013; Henke, Goetzel, McHugh & Isaac, 2011). Understanding what constitutes a workplace wellness program was broad, and the range of benefits varied from

organization to organization. Wellness programs offered a variety of organized activities that increased awareness, assessed risks, educated, and promoted behavior change to improve health (Mattke, et al., 2013). These activities focused on some sort of screening activity to identify health risk, lifestyle management activity (i.e., weight watchers, health coaching), disease management (i.e., improve control of chronic conditions) and health promotion activities to further healthy lifestyles (i.e., smoking bans, healthy lunchroom options) (Mattke, et al., 2013). Participation was voluntary among employees at the worksite, making selection bias a major concern.

Self-Management

Self-care behaviors such as self-testing, healthy eating and physical activity were important outcomes. Self-care behaviors were directly targeted for change during self-management educational sessions. Evidence from several studies focused on the Therapeutic Lifestyle Change (TLC). The TLC focused on healthy eating, exercise and weigh reduction with a health coach resulted in a respective "42% and 58% reduction in the development of type 2-diabetes" (Tuomilehto et al., 2001; Pan XR et al., 1997). Evidence from these studies supported the need for type 2-diabetics to be closely followed by a healthcare professional to ensure that the lifestyle changes of healthy eating, exercise and weight loss were maintained long-termed with the patient (Carino et al., 2004; Tuomilehto et al., 2001; Pan XR et al., 1997). Unfortunately, the United States healthcare system was not set up to provide or reimburse for behavior change efforts as necessary to successfully manage type 2-diabetes. Time constraints on providers interfered with their ability to properly support the patient in their lifestyle modification efforts. Health coaches were trained to assist and support individuals in making lifestyle modifications. Health coaches worked with individuals to create a tailored approach by choosing behavior focused areas such as

increased physical activity, improved nutrition, or weight loss. Health coaches had the time and skills necessary to ensure an individual had the support and educational materials to be successful which was difficult for healthcare professionals to provide during a ten minute doctor visit.

Another research study supported the need for short and long term support for those struggling with barriers, like lifestyle modification, associated with a chronic condition was the Diabetes Prevention Program. The study was conducted in 27 clinics with 3,234 participants (Carino et al., 2004). The results found that intensive lifestyle changes resulted in a 7% weight loss which was more effective than the pharmacologic therapy (Carino et al., 2004). The Diabetes Prevention Program showed that lifestyle modification reduced the incidence of diabetes. It was essential that a diabetic patient adhere to his lifestyle modifications. Utilizing health coaching provided individuals with the needed support to obtain short and long-term self-management skills as well as lifestyle modifications

The Diabetes Attitudes, Wishes and Needs (DAWN) study, identified a broad set of attitudes, wishes, and needs among both people with diabetes and care providers to lay a foundation for efforts to improve diabetes care. The results of the DAWN study found 19.4% of those with type 1-diabetes and 16.2% of those with type 2-diabetes reported they complied with all aspects of their prescribed regimens (Skovlund et al., 2005). Greater than 15 years after diagnosis, "problems of living with diabetes were prevalent, including fear of future complications and resulting social disabilities, as well as immediate social and psychological burdens" (Skovlund et al., 2005). The DAWN study found many gaps within the care of diabetics and the increased need of self-management education as this was an integral part of diabetics care process (Skovlund et al., 2005). The DAWN study supported the need to change current practice of

diabetics to include both short and long-term self-management skills. The current health care systems are poorly equipped to handle the short and long-term self-management skills needed to help diabetics overcome barriers to achieving adequate glycemic control.

Diabetes education programs played a primary role in educating type 2-diabetics to live with and manage their conditions. The results of several studies supported the short-term efficacy of these programs in improving type 2-diabetics glycemic control and self-care behaviors, regardless of the nature of the education provided (Carino et al., 2004; Gillet et al., 2010; Tang et al., 2005). Despite the short-term positive effect, the evidence supports that sustained improvement with these lifestyle changes may be harder to attain (Carino et al., 2004; Gillet et al., 2010; Tang et al., 2005). There appears to be a relationship between the frequency of healthcare interaction and positive outcome of sustained lifestyle changes (Norris et al., 2002; Collins et al., 2009). Research supported the need for continued support and education to assist individuals in making and sustaining lifestyle modifications.

Medical Cost

Not only do small lifestyle changes have a positive effect on diabetes, but a review of literature showed the impact of wellness programs on employee health care costs for other conditions and health risks (Baicker, Cutler, & Song, 2010). The studies examined were for interventions over a three year period of time however, most wellness programs continued (often indefinitely) beyond the study duration. Large employers adopted wellness programs saw substantial positive returns, even within the first few years after adoption. For instance, medical costs fell about $3.27 for every dollar spent on wellness programs, and absentee day costs fell by about $2.73 for every dollar spent (Baicker, Cutler, & Song, 2010). An analysis of PepsiCo's

health and wellness program, based on two-years of baseline data and at least one year of data from the intervention, found a relative reduction in per member per month (PMPM) medical cost of $76 and $61 in the second and third year of the wellness program (Liu et al., 2013). The overall program reduced PMPM cost of $38 (Liu et al., 2013). Several other research studies showed that participation in employer-sponsored wellness programs lowered participants health care expenses, reduced unhealthy health risk and incidence of chronic conditions (Schwartz et al., 2010; Baicker, Culter, & Song, 2010; Liu et al., 2013; Heake, Goetzel, McHugh, & Isaac, 2011; Aydeck et al., 2008). Aydeck et al., compared employees who participated in the program with risk matched non-participants in regards to their total healthcare expenditures (2008). The results found that the estimated health care expenses per person per year were $176 lower for participants (Aydeck et al., 2008). Employer-sponsored wellness programs were a key resource to help individuals successfully make and sustain lifestyle modifications. Behavioral changes assisted individuals in managing their chronic conditions, reduced incidence of complications and assisted individuals in lowering their health risk.

According to a 2009 Kaiser Family Foundation Survey, health insurance cost was the second largest expense for employers. To absorb these escalating costs, many employers were shifting a greater share of the health care cost to their workers. The growing health care costs were a result of higher personal health risks. Individuals were making more unhealthy lifestyles choices which lead to more costly chronic conditions. The CDC estimated that "75 percent of the national health expenditures" were for the treatment of chronic conditions (2010). Thus, to control the economic burden of these growing cost employers were looking at managing health risks and illness burden in their employee population through comprehensive wellness programs.

Health Risk

One research study focused on effects of a comprehensive wellness programs on an individual's health risk was the Prevention Plan. The Prevention Plan was a study which evaluated employee health risk after one year of integrated primary prevention (wellness and health promotion) and secondary prevention (biometric and lab screening) interventions (Loeppke, Edington, & Beg, 2010). The study evaluated fifteen health risk measures and found that there were participant movement from the higher risk levels to the lower risk levels within the cohort population (Loeppke, Edington, & Beg, 2010). The Prevention Plan assisted individuals with lowering their health risk through a wellness and health promotion program.

Another research study focused on fifteen employer groups, with Blue Cross Blue Shield of Kansas City, that participated in the "Healthier You" program for three consecutive years (Hochart & Lang, 2011). The program was designed to impact employer culture and assist healthy employees to stay at low risk and reduce health risk levels for those at moderate or high risk (Hochart & Lang, 2011). The results found there was movement from those individuals in the moderate and/or high risk levels to a lower risk level over the three-year period (Hochart & Lang, 2011). There was also improvement in blood pressure control and total cholesterol. By impacting the culture of the employer organization through a wellness program, the "Healthier You" participants were able to lower their health risk levels and improve their chronic conditions. This was an example of how making small changes had a powerful effect on an individual's health status.

Another research study that focused on health risk factors was the Citibank Health Management Program. The Citibank Health Management Program showed those individuals

that participated in the more intensive programs features were significantly more likely than others to reduce their health risk (Orminkowski, Goetzel, Smith, Cantor, Shaughnessy & Harrison, 2000). The researchers noted most health risk changes were small, and related to exercise habits, seatbelt usage and stress management (Orminkowski, Goetzel, Smith, Cantor, Shaughnessy & Harrison, 2000). The Prevention Plan, Healthy You and the Citibank Health Management Program provided employees a comprehensive wellness programs that assisted participants in lowering their health risk levels.

Wellness Program Participation and Incentives

Employers strived to have their employees participate in their wellness programs. These voluntary programs had shown to reduce health risk and improve lifestyle modifications. One way employers encouraged participation in wellness programs was through the use of incentives. According to RAND's Employer Survey, as part of the recently published "Workplace Wellness Programs Study," two-thirds of U.S. employers with wellness programs use financial incentives to improve employee engagement (Mattke, et al., 2013). When an employer decided to utilize financial incentives, the question was not only whether to use rewards or penalties, but also to which behaviors or outcomes the incentives targeted. Broadly, incentive schemes were divided into participatory and health-contingent incentives (Baicker, Cutler & Song, 2010). Participatory incentives tied to participation in lifestyle management interventions, such as those that target smoking, diet, and exercise, were more common than health-contingent incentives, which rewarded achieving health related standards, such as blood pressure control, or making progress toward such health goals (Baicker, Cutler & Song, 2010). The use of financial incentives was becoming increasingly popular as a strategy to encourage participation and engagement. Incentives were provided in various forms such as premium discounts, gift cards, and/or prizes.

According to the RAND Study, employers used incentives to increase employee participation in wellness screening activities and intervention programing like health coaching (Mattke et al., 2013).

Most research articles on wellness programs measured the impact of the wellness program as a whole rather than focused on the financial incentives employers provided their employees for participation. In 2007, a pilot study found that small financial rewards tied to weight loss resulted in higher weight loss at three-month period and that larger incentives resulted in larger weight loss (Finkelstein, Linnan, Tate & Birken, 2007). Another weight loss trial found that individuals who received incentives in the form of daily deposits or daily lotteries lost more weight than the control group over sixteen weeks (Volpp, John, Troxel, Norton, Fassbender & Lowenstein, 2008). There was currently limited research of the effect of incentives on employer-sponsored wellness programs.

Theoretical Framework

Health coaching programs offered a variety of motivational and behavior change techniques to assist individuals in making small changes to impact their overall health and health risk levels. Health coaches evaluated a person's readiness to change for any proposed intervention (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Interventions not staged to the readiness of the individual would be less likely to succeed (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Also, interventions that tried to move a person too quickly through the stages of change were more likely to create resistance would impede behavior change (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Anything that moved a person along the continuum toward making a positive change was viewed as a success

(Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Employing stage-specific interventions decreased frustration by lessening the unrealistic expectation that change would occur with a single intervention (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Transtheoretical Model, motivational interviewing and self-efficacy were theories the health coaches utilized when working with participants.

Transtheoretical Model Behavior Change

Behavioral change models assisted individuals in lowering their health risk levels. One behavior change model was the Transtheoretical Model. The Transtheoretical Model (TTM) developed by Prochaska and DiClemente in the late 1970s (Prochaska & DiClemente, 1984). The TTM focused on the decision making of the individual and was a model of intentional change (Prochaska & DiClemente, 1984). It operated on the assumption that people do not change behaviors quickly and decisively. Habitual behavior change occurred continuously through a cyclical process (Prochaska & DiClemente, 1984). The TTM assumed individuals moved through five stages of change: precontemplation, contemplation, preparation, action, and maintenance (Prochaska & DiClemente, 1984). For each stage of change, different intervention strategies were effective at moving the person to the next stage of change and subsequently through the model to maintenance, the ideal stage of behavior (Prochaska & DiClemente, 1984).

Precontemplation

The first stage of the TTM was Precontemplation. Individuals in the Precontemplation stage were not thinking about or intending to change a problem behavior in the next six-months (Prochaska & DiClemente, 1984). These individuals were usually not armed with the facts about the risks associated with their problem behavior. Additionally, many individuals made

unsuccessful change attempts, became discouraged and regressed back to the Precontemplation stage (Prochaska & DiClemente, 1984). The inclusion of the Precontemplation stage represented a significant contribution of the TTM, as individuals in this stage comprise a large proportion of individuals engaged in risky or unhealthy behaviors (Prochaska & DiClemente, 1984). Prochaska et al. (1992) suggested individuals in the precontemplation stage showed resistance to recognizing or modifying a problem behavior. For an individual to move out of this stage the individual must experience a negative affective state, acknowledge the problem or experience a cognitive dissonance (Scholl, 2002).

Contemplation

The second stage of the TTM was Contemplation. An individual entered the Contemplation stage when he or she became aware of a desire to change a particular behavior within the next six-months (Prochaska & DiClemente, 1984). In this stage, individuals weighed the pros and cons of changing their behavior. Contemplators represented a large proportion of individuals engaged in unhealthy behaviors, as ambivalence between the pros and cons of change kept many people immobilized in this stage (Prochaska & DiClemente, 1984). Resolving this ambivalence was one way to help Contemplators progress toward taking the action however, chronic contemplation or procrastination has occurred at this stage (Prochaska & DiClemente, 1984). Individuals still participated in the risky behavior but were aware that this behavior was a problem. The individual was seriously considering resolving the problem (Prochaska et al., 1992). An individual moved to the next stage if they perceived the pros outweighed the cons and if the force of motivation was stronger for change than remaining in their current state (Scholl, 2002).

Preparation

The third stage of TTM was Preparation. By the time individuals enter the Preparation stage, the pros in favor of attempting to change a problem behavior outweigh the cons, and action was intended in the near future, typically measured as within the next thirty-days (Prochaska & DiClemente, 1984). Individuals in this stage made an attempt to change their behavior in the past year, but had been unsuccessful in maintaining that change (Prochaska & DiClemente, 1984). Individuals at this stage may not know how to proceed and could be nervous about their ability to change (Scholl, 2002). A plan of action for the elimination or significant reduction of their behavioral problem was important (Prochaska et al., 1992). Individuals moved to the next stage when they had selected an action plan and were confident they could follow through with the plan (Scholl, 2002).

Action

The fourth stage of TTM was the action stage. The Action stage marked the beginning of actual change in the criterion behavior, typically within the past six-months (Prochaska & DiClemente, 1984). Individuals that had not sufficiently prepared for change or committed to their chosen plan of action relapse occurred and regressed to an earlier stage (Prochaska & DiClemente, 1984). The action stage required the most energy and time commitment. This was also when an individual would receive the most recognition from others because of their visible effort to change (Prochaska et al., 1992). Prochaska, DiClemente and Norcross (1992) suggested when an individual was in the action stage, significant effort was made to change through modifying their problem behavior to acceptable criterion levels. Movement to the final stage

occurred when there was evidence of performance improvement, positive affective state, and received positive social and performance feedback (Scholl, 2002).

Maintenance

The last stage of the TTM was Maintenance. Individuals thought to be in the Maintenance stage when they had successfully attained and maintained behavior change for at least six-months (Prochaska & DiClemente, 1984). While the risk for relapse was still present in this stage, it is less so, and as such individuals needed to exert less effort in engaging in change processes (Prochaska & DiClemente, 1984). Research recognized that the maintenance was a continuation of change, not an absence of it (Prochaska et al., 1992; Patten et al., 2000).

Applications of Transtheoretical Model to Healthy Behaviors

In a research study conducted by Prochaska et al. (2012), a sample of 3,391 individuals, reported health risk in the areas of exercise and stress management, were randomly assigned to three groups: telephonic coaching applied transtheoretical model tailored for stress management; an internet program applied transtheoretical model tailored for stress management and minimal tailoring for exercise; or a control group that received an assessment only. At six-months, a significantly higher percentage of both treatment groups progressed to the action stage for exercise, stress management, health diet and total number of health risks compared to the control group (Prochaska et al., 2012). In another research study conducted by Proper, Hilderbrandt, Van der Beek, Twisk and Van Mechelen (2003), a sample of 299 employees, of three municipal services in the Dutch town of Enschede, were randomly allocated into intervention (n =131) and control group (n =168). Over a nine-month period, intervention group subjects were offered seven counseling sessions (Proper et al., 2003). Counseling was based on the individual's stage

of behavioral change (Proper et al., 2003). There were significant positive effects on total energy expenditure, physical activity during sports, cardiorespiratory fitness, percentage of body fat, and blood cholesterol of those individuals in the intervention group (Proper et al., 2003). Individual face-to-face counseling at the workplace positively influenced physical activity levels and some components of physical fitness (Proper et al., 2003). These findings suggested tailored behavior change programs could effectively reduce health risk and improve the well-being of individuals who participated.

Motivational Interview

TTM assumed an individual progressed through the stages. In health care it was important that the clinician understood the patient's level of readiness to change and then work toward successful movement through the stages. Motivational interviewing helped the clinician work with patients where they were at thereby promoting collaboration. Motivational interviewing derives from TTM (Woollard, et al., 1995). Motivational interviewing was an evidenced based counseling approached (Levensky, Forcehimes, O'Donohue, & Beitz, 2007). It had been described as a: "directive [goal-oriented], client centered counseling style for eliciting behavior change by helping clients to explore and resolve ambivalence" (Miller & Rollnick, 26, 2002). Health coaches used four major principles of motivational interviewing to help clients move toward behavior change: (a) expressing empathy, including acceptance of the individual's feelings and skillful reflective listening; (b) supporting self-efficacy, including giving responsibility to the individual for carrying out change; (c) rolling with resistance, including not arguing for change and recognizing that the client was the primary resource for solutions; and (d) developing discrepancy, including recognizing that change was motivated by a client's perceived discrepancy between present behavior and personal goals or values (Miller & Rollnick, 2002).

Express Empathy

The first principle of motivational interviewing was the counseling principle of express empathy. In this principle, the health coach communicated their understanding and accepting of the client's experience (Levensky, Forcehimes, O'Donohue, & Beitz, 2007). Understanding and acceptance included the patient's ambivalence about change (Miller & Rollnick, 2002). This was truly an attempt by the health care provider to see the situation through the client's eyes which was different from expressing sympathy or relating to a similar situation.

Support Self-efficacy

The second principle of motivational interviewing was supporting self-efficacy. This counseling principle had the health coach maintaining and expressing to the client the belief of the possibility of change (Levensky, Forcehimes, O'Donohue, & Beitz, 2007). A basic aim of motivational interviewing was having the individual believe in themselves, to increase their self-confidence and perceive themselves as someone who can deal with tasks and obstacles (Miller & Rollnick, 2002). The health coach emphasizes the client's ability to choose and carry out a plan to change their behavior. The health coach was focusing on the individual's strengths and social resources to assist them in enabling changes in behavior and lifestyle to take place (Miller & Rollnick, 2002).

Roll with Resistance

The third principle of motivational interviewing included the counseling principle of resistance. Resistance was where the health coach did not directly oppose their clients displayed resistance to the behavioral change (Levensky, Forcehimes, O'Donohue, & Beitz, 2007). Instead

the health coach acted as the primary source of answers and solutions (Miller & Rollnick, 2002). The health coach invited new perspectives to help the client change (Miller & Rollnick, 2002).

Develop Discrepancy

The last counseling principle of motivational interviewing was for the health coach to develop discrepancy. Motivational interviewing aimed to strengthen a person's motivation to change and find a way to implement that change (Miller & Rollnick, 2002). The health coach enhanced the client's awareness of their inconsistencies between the unhealthy behavior and their personal goals and values was when the individual developed discrepancy (Levensky, Forcehimes, O'Donohue, & Beitz, 2007). Awareness was important to motivate the client to change. The health coach refrained from identifying discrepancies for the client but instead, helped the client identify them for themselves (Levensky, Forcehimes, O'Donohue, & Beitz, 2007).

Utilizing these principles helped change patterns of behavior had become habitual to the individual. This form of counseling worked well in small doses to produce a large effect. Motivational interviewing was based on the philosophy that individuals were responsible for changing themselves (Miller & Rollnick, 2002). Health care professions accompanied a process of growing awareness and change rather than lead the process (Miller & Rollnick, 2002).

Motivational interviewing was effective in addressing typical risk factors and lifestyle management issues such as healthy eating behaviors (Resnicow, Jackson, & Wang, 2001). The process was shaped by an understanding of what triggered change (Miller & Rollnick, 2002). In a research study conducted by Butterworth et al. (2006), 276 employees at a medical center self-selected in either a three-month health coaching intervention or control group. The treatment

group showed significant improvement in both the physical and mental health status compared to controls (Butterworth et al., 2006). These findings suggested motivational interviewing based health coaching was effective in improving both physical and mental health status in an occupational setting (Butterworth et al., 2006).

Self- Efficacy

The last behavior change model for health coaching was self-efficacy. Self-efficacy was a key concept of social cognitive theory. The belief that one had the capability to initiate or sustain a desired behavior (Bandura, 1977). Self-efficacy described the circular relationship between belief and action: the more an individual believed they could do something, the more likely they would do it; the more they did something successfully, the more they believed they would be able to do it again (Bandura, 1977). An example of self-efficacy in the transtheoretical model of behavioral change was when individuals moved from contemplation to preparation stage and preparation to action stage (Kraft, Sutton, & Reynolds, 1999).

Daltroy (1993) hypothesized that when individuals had high levels of self-efficacy for preforming healthy lifestyle behaviors, they would then have a positive effect on their health. For example, if an individual had a high level of self-efficacy for health management, that individual was more likely to attempt a new healthy lifestyle behavior and in turn would have better self-rated health (Daltroy, 1993). Several studies showed a high level of self-efficacy was an important factor for diabetes self-management and these individuals rated a higher quality of life (Iannorri et al., 2006; Littlefield et al., 1992; Grey et al., 1998).

Stuifbergen et al. (2003) conducted a research study on 113 females with multiple sclerosis. The 2-phase intervention program included lifestyle change classes for eight-weeks, then

telephone follow-up for three-months. Participants were followed over an 8-month period (Stuifbergen et al., 2003). A series of self-report instrument measured barriers, resources, self-efficacy for health behaviors, health promotion behaviors, and health related quality of life were completed (Stuifbergen et al., 2003). The results indicated statistically the two-phase intervention group for self-efficacy for health behaviors, health-promoting behaviors, and the mental health and pain scales. The data provided initial support for the positive effects of wellness interventions to improve health behaviors (Stuifbergen et al., 2003).

Another study combined self-efficacy and pedometers to promote physical activity among two classes of female junior college students (n= 94). The findings of the study found that the intervention group changed their aerobic steps by 371 steps whereas; the control group only changed their steps to 108 steps (Lee, Kuo, Fanaw, Perng & Juang, 2011). The intervention group reported seeing their steps increase on the pedometer and the assistance of the trail maps made incorporated exercise into their daily activity easier (Lee, Kuo, Fanaw, Perng & Juang, 2011). These results supported the idea that self-efficacy had a positive effect on wellness interventions to improve physical activity via pedometer.

Summary

The review of literature focused on the value health coaching provided to comprehensive wellness programs. These unhealthy habits account for up to 75 percent of a corporation's annual total health care expenditures. The literature emphasized the importance of continued self-management and support to help individuals change their negative health behaviors into positive ones. The second section offered the benefits of employer-sponsored wellness programs on individual's health risk and medical claims. There was a strong association with lifestyle

related health risk such as physical inactivity, obesity and tobacco use with the association of chronic diseases. Effective worksite wellness programs motivated employees to pursue healthy lifestyle changes. Early research of health coaching through a comprehensive wellness programs had been positive in validating the outcomes of risk reduction and cost savings. The third section provided an overview of participation and incentives of employee sponsored wellness programs. There was limited research on the effect incentives had on employer-sponsored wellness programs. Most research articles focused on the impact of the program as a whole rather than the financial incentives employers offer. The fourth section provided the theoretical framework that health coaching programs utilized. Effective health coaching programs employ multiple components of evidence based interventions such as motivational interviewing, transtheoretical model behavior change and self-efficacy.

CHAPTER III: METHODS AND PROCEDURES

This chapter presented the methods and procedures used in the study. In addition, the sample size, data collection procedures, and health risk assessment would be discussed. Also discussed in the chapter was the data analysis and ethical considerations applied to the research design.

Research Design

The purpose of the longitudinal, non-experimental causal comparative quantitative study was to evaluate the relationship between telephonic health coaching and health risk of three Midwestern employer groups participating in a comprehensive wellness program. The research study explored wellness program participants enrolled in telephonic health coaching to determine if sustained positive lifestyle modifications reduced health risk over an eighteen-month period of time. According to Franenkel, Wallen and Hyun (2012), causal-comparative research was when a researcher determined the differences caused by a specific variable already exists between groups. For example, three employer groups differ on a variable (health coaching) and the researcher attempted to determine the reason for this difference. The research evaluated whether telephonic health coaching had an effect on program participants' pre and post overall wellness score (Gold, Anderson, & Serxner, 2000). The research also evaluated if telephonic health coaching effected program participants' medical cost and utilization. The research also assessed if telephonic health coaching had an effect on program participants' medical cost and utilization. Few long-term research studies have been conducted on the topic of health coaching and its impact on clinical risk group health score, medical cost and medical utilization (Prochaska et al., 2012; Butterworth et al., 2006). Researchers often studied a single population which may have been implicitly generalized to all organizations.

For the retrospective, longitudinal quantitative study, all health coaching were done by the contracted vendor, Health Fitness. The health coaches contacted participants by telephone with 3-5 contacts over a one-year period of time. Health coaches had bachelor's, master's or doctoral degrees in health related fields and extensive expertise in lifestyle health behaviour change that address health risks (weight, blood pressure, cholesterol, pre-diabetes, tobacco use) and contributed to overall health and well-being. Health coaches utilized Transtheoretical Model, Motivational Interviewing and Self-efficacy with participants.

The research study included 1,770 participants (1,119 females and 651 males) from three Midwestern employer groups. Participants were included in the research study if:

1. They were age 19 or older, and
2. They were enrolled in the company's group health plan for greater than twelve-months, and
3. They had no maternity related medical claims during the study period.

The samples sizes of previous research studies ranged from 6-2,000 participants. The sample size of 1,445 participants was a large enough sample based on the previous researched conducted on this topic. The inclusion criteria for the study was based on previous research and the business rules established through Health Fitness. The research design for the study was longitudinal. Longitudinal research was used to discover relationships between variables not related to various background variables (Creswell, 2012). Retrospective, longitudinal research technique involved studying the same group of individuals over an extended period of time (Creswell, 2012). Participation in the employer comprehensive wellness program was voluntary. Participants were stratified into four different arms of the study based on their participation in the

comprehensive wellness programs offered by their respective employers. Group 1 included participants who did not participate in the wellness program. Group 2 included participants who took the health risk assessment but did not participate in the biometric screening or health coaching. Group 3 included participants who took the health risk assessment and biometric screening. Group 4 included participants who took the health risk assessment, biometric screening and health coaching. Table 1 provided an overview of the research study design for this retrospective, longitudinal quantitative study.

Table 1

Research Study Design

Purpose: To evaluate the relationship between telephonic health coaching and health risk of three Midwestern employer groups participating in a comprehensive wellness program.
Questions: The research study explored wellness program participants enrolled in telephonic health coaching to determine if sustained positive lifestyle modifications reduced health risk over an eighteen-month period of time. The research evaluated whether telephonic health coaching had an effect on program participants' pre and post overall wellness score (Gold, Anderson, & Serxner, 2000). The research also evaluated if telephonic health coaching effected program participants' medical cost and utilization.
Selection of Subjects: Participants were included in the research study if: they were age 19 or older. They were enrolled in the company's group health plan for greater than twelve-months. They had no maternity related medical claims during the study period.
Research Design: A longitudinal, causal-comparative research design for program years July 2014- December 31, 2014 and January 1, 2015- December 31, 2015.
Collected Data: Demographic information, Health Assessment Overall Wellness Score, Health Risk, Biometric Screening Results, Medical Claims, Clinical Risk Group Score and, Participation level in company's wellness program.
Analyze data: Using SPSS 22.0 both a multiple regression analysis and one-way ANOVA with A post hoc test (Tukey's honestly significant difference) T-test.

Participants

The participants were from three employer groups that had their corporate offices located in a Midwestern State. All three organizations were in the healthcare industry. Each of these employer groups were fully insured by a health insurance carrier. Many of the benefits offered for health insurance were similar for each of the organizations.

Each employer group had designed its comprehensive wellness programs to include healthy activities such as quarterly challenges that included exercising, eating healthy and increasing fruits and vegetables. The programs also included educational activities such as avoiding tobacco, developing stress management skills, and attending wellness classes. The research supported that individual's behavior change occurred gradually over time, with the person progressing from being uninterested, unaware, or unwilling to make a change (*precontemplation*), to considering a change (*contemplation*), to deciding and preparing to make a change (*preparation*) (Zimmerman et al., 2000). This was followed by definitive action and attempts to maintain the new behavior over time (*maintenance*) (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). All three wellness programs assisted individuals in all stages of change.

The employer groups, with the assistance of their health insurance carriers, had designed an incentive program to encourage participation in their respective wellness programs. Both employer A and B offered a premium differential for employee and spouse participation in both the health risk assessment and biometric screening. Employer B also offered incentives for each quarterly challenge. Employer C offered a premium differential for employee participation in health risk assessment. Employer C also included a wellness bonus for participation in wellness

activities throughout the year. The following table provides an overview of each employer group's incentive offering (Table 2).

Table 2

Summary of Each Employer Group's Incentive Structure

Employer Group	Stratification of Participants		Incentive
Employer A	Group 1	(non-participants)	No incentive awarded
	Group 2	(HRA Only)	No incentive awarded
	Group 3	(HRA and BS)	$35/ month medical premium reduction (employee) or, if both (employee and covered spouse) participate a $70/month medical premium reduction incentive
	Group 4	(HRA, BS, and HC)	Chance to be entered into quarterly drawings for prizes
Employer B	Group 1	(non-participants)	No incentive awarded
	Group 2	(HRA Only)	No incentive awarded
	Group 3	(HRA and BS)	$20/ month medical premium reduction (employee and spouse)
	Group 4	(HRA, BS, and HC)	No incentive awarded
Employer C	Group 1	(non-participants)	No incentive awarded
	Group 2	(HRA Only)	$70/ month Medical Premium Reduction
	Group 3	(HRA and BS)	Wellness Bonus based on earning a specific amount of points. Level 1 is $500, Level 2 is $300 and Level 3 is $100
	Group 4	(HRA, BS, and HC)	Wellness Bonus based on earning a specific amount of points. Level 1 is $500, Level 2 is $300 and Level 3 is $100

Note: HRA = Health Risk Assessment BS = Biometric Screening HC = Health Coaching

Data Collection

The health risk assessment was the foundation for an individualized wellness program. The concise assessment of a participant's health status provided actionable recommendations and convenient access to programs which addressed their specific needs. The primary function of the Health Fitness health risk assessment was to identify lifestyle related risks, individual's motivation to change, and engagement (Health Fitness, 2013). The health risk assessment was National Committee for Quality Assurance (NCQA) compliant and contains approximately 40-45 questions and takes 10-12 minutes to complete (Health Fitness, 2013).

A biometric screening event consisted of a check-in, finger stick, height and weight measurement, blood pressure, result review and satisfaction survey (Health Fitness, 2013). A finger stick was a procedure in which an individual's finger was pricked with a lancet to obtain a small quantity of blood for testing an individual's total cholesterol, high density cholesterol, low density cholesterol, triglycerides and glucose levels. Figure 3 was a visualization of the biometric screening event process. The results from the biometric screening event were uploaded into the participant's health assessment. The health risk assessment completion and/or participation in a biometric screening event was the trigger for an individual to enter into the health coaching program (Health Fitness, 2013). Health coaches utilized the health risk assessment and biometric screening results to work with participants on changing lifestyle related risks based on their motivation to change

Figure 3 Biometric Screening Process is a visualization of the biometric screening event process.

The overall wellness score was calculated from health measures (blood pressure, lipids, glucose, and obesity) collected during the biometric screening and lifestyle risk (physical activity, nutrition, tobacco, stress and sleep) from the completion of the health risk assessment. The ranges for the overall wellness score were good 67 or higher; fair 34-66; poor 33 or lower. The overall wellness score was used for stratification for sub-segmentation for communication and programming such as health coaching.

The 3M Clinical Risk Groups (CRGs) was a risk adjustment tool and clinically based classification system used to measure a population's burden of illness (3M Clinical Risk Groups, 2011). CRGs used standard claims data, pharmaceutical data and functional health status collected longitudinally to assign each individual to a single, mutually exclusive risk group (3M Clinical Risk Groups, 2011). CRGs assigned to each individual in a single, mutually exclusive risk group identified by the condition or conditions which best described the individual's clinical state (3M Clinical Risk Groups, 2011). Risk groups were refined to reflect differences in severity inherent within a disease or group of diseases (3M Clinical Risk Groups, 2011). There were four severity-of-illness subclasses. The subclasses were from one to four and indicate

minor (1), moderate (2), major (3), and extreme (4) severity of illness (3M Clinical Risk Groups, 2011).

The information services staff retrieved the participant's medical claims data from the health carrier's electronic data warehouse. The information service staff added the 3M Clinical Risk Groups, Medical Claims and participation in health assessment, biometric screening, and health coaching as appropriate for each individual. The information service staff removed all personal identifiers from the research file. While it is true that the Health Fitness health coaching program may have little impact on certain claims, it is unknown which claims may have been influenced by unhealthy behaviors. Claims that were not explicitly wellness-related fell on both sides of the claims comparison (participants and non-participants). Even if certain claims were excluded, it would only have a marginal impact on the savings estimate. All de-identified data files were provided to the researcher after approval from College of Saint Mary's Institutional Review Board for the statistical analysis.

Instrument

The Health Fitness Health Assessment was internally developed by a team including individuals with expertise and academic training in Behavioral Science, Clinical Medicine, Nutrition, and Exercise Science (Health Fitness, 2013). Each science area and scoring decision was extensively researched using current national guidelines including American Diabetes Association, American Heart Association, Physical Activity Guidelines for Americans, Dietary Guidelines for Americans, National Sleep Foundation, National Safety Council, and the US Department of Transportation (Health Fitness, 2013). In the absence of a national guideline, science-based evidence supported all health related recommendations (Health Fitness, 2013). After the initial Health Assessment was developed, the instrument was subjected to cognitive

validity testing using a third party to administer the testing to a demographically diverse population (Health Fitness, 2013). Changes were made in the initial assessment in order to improve the reliability of the outcomes of the assessment (Health Fitness, 2013). The assessment was reviewed by another third party to evaluate the clinical validity of the total Health Assessment (Health Fitness, 2013). Once the assessment was completed the third party administered test to test reliability (Health Fitness, 2013). The test to test reliability found that most questions showed acceptable to excellent test-retest reliability (HealthFitness, 2013). No questions with 30 or more respondents showed unacceptable reliability (HealthFitness, 2013). The weighted aggregate average coefficient of stability is r = 0.81 indicating good overall test-retest reliability (HealthFitness, 2013).

CRGs had been validated with national data. In majority of cases, the clinical judgment and the data results were in agreement. When there was disagreement, further verification of the clinical logic was obtained from outside clinical experts (3M Clinical Risk Groups, 2011). If a discrepancy between the data and clinical judgment remained the clinical judgment was always used (3M Clinical Risk Groups, 2011). The 3M CRGs had also been independently validated by state Medicaid plans in New York prior to Implementation for payment adjustment as well as extensively reviewed by independent sources (3M Clinical Risk Groups, 2011).

Data Analysis

The data was analyzed utilizing Statistical Predictive Analytics Software and Solutions (SPSS) for Windows. The purpose of the longitudinal, non-experimental causal comparative quantitative study was to evaluate the relationship between telephonic health coaching and health risk of three Midwestern employer groups participating in a comprehensive wellness program. The research study explored wellness program participants enrolled in telephonic health

coaching to determine if sustained positive lifestyle modifications reduced health risk over an eighteen-month period of time. The research evaluated whether telephonic health coaching had an effect on program participants' pre and post overall wellness score (Gold, Anderson, & Serxner, 2000). The research also evaluated if telephonic health coaching effected program participants' medical cost and utilization.

A causal comparative research design does not allow for manipulation of the independent variable as the cause has already occurred (Franenkel, Wallen, & Hyun, 2012). In other words, a participant either participated in the health coaching or did not participate in health coaching. The participant either earned the incentive or did not earn the incentive. The researcher evaluated the effects of the independent variables on the dependent variables of overall wellness score, medical claims and medical utilization. The researcher did not randomly assign groups. The participants were naturally forming the stratification based on their participation/non-participation in their respective employer-sponsored wellness program.

The data analysis was conducted for the longitudinal, non-experimental causal comparative quantitative study included descriptive statistics, multiple regression analysis, one-way analysis of variance (ANOVA) and t-test. The variables for the longitudinal, non-experimental causal comparative quantitative study were aligned to the information studied. The variables studied represented a combination of nominal, ordinal and interval data. Both parametric and non-parametric statistical analyses were conducted in the data analysis. Table 3 presented a listing of the study variables, variable type, data type, data measurement and statistically category.

Table 3

Listing of Variables

Variable	Variable Type	Data Type	Data Measurement	Statistical Category
Age	Controlled	Interval	Mean	Parametric
Participant	Controlled	Ordinal	Frequency	Non-Parametric
Gender	Controlled	Ordinal	Frequency	Non-Parametric
Health Coaching	Independent	Ordinal	Frequency	Non-Parametric
Incentive	Independent	Nominal	Frequency	Non-Parametric
Medical claims	Dependent	Ordinal	Frequency	Non-Parametric
Medical utilization	Dependent	Ordinal	Frequency	Non-Parametric

According to McDonald (2009), one used a multiple regression analysis when there were three or more measurement variables; one was the dependent variable, and the others were independent variables. The purpose of a multiple regression was to formulate an equation using independent variables to predict a dependent variable and/or when attempting to understand the functional relationships between the independent variables and dependent variable (McDonald, 2009). The multiple regression analysis models used to answer the following research questions:

Q1. What was the correlation between telephonic health coaching and Clinical Risk Group of three Midwestern, fully insured employer groups' employees participating and not participating in a comprehensive wellness program?

Q2: What was the overall relationship of Clinical Risk Group and telephonic health coaching participants compared to non-participants of three Midwestern, fully insured employer groups in terms of medical costs?

Q3: Was there a significant difference ($p \leq .05$) of telephonic health coaching participants compared to non-participants of three Midwestern, fully insured employer groups in terms of medical utilization?

The multiple regression models were built to analyze telephonic health coaching, CRG, medical cost and medical utilization of participants and non-participants.

The ANOVA was used to determine whether there are any significant differences between the means of three or more independent (unrelated) groups. The one-way ANOVA compared the means between the groups a researcher was interested in and determined whether any of those means were significantly different from each other (Creswell, 2012). An ANOVA was an appropriate test to conduct to answer the following research question:

> Q4: Was there a significant difference ($p \leq .05$) of telephonic health coaching participation for three Midwestern, fully insured employer groups offering and not offering program incentives?

A post hoc test (Tukey's honestly significant difference) was run to confirm where the differences occurred between groups, if an overall significant one-way ANOVA result occurred (Creswell, 2012). Post-hoc tests attempt to control the experiment error rate (alpha = 0.05). The causal diagram below depicts the framework used in this research study (figure 4).

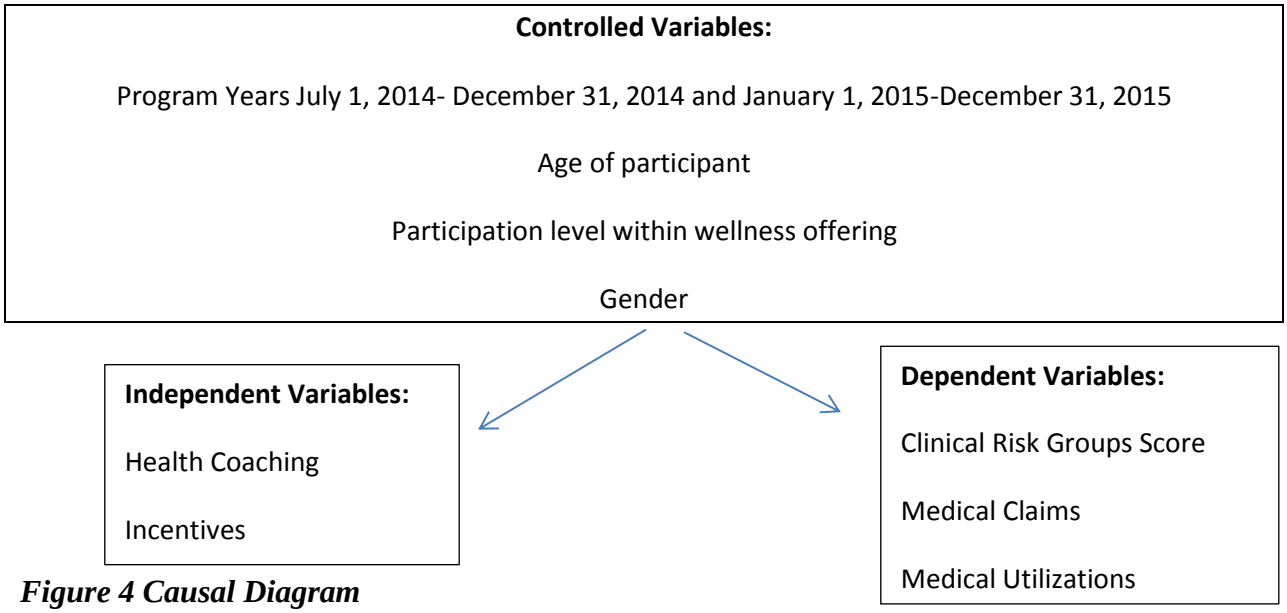


Figure 4 Causal Diagram

Ethical Consideration

Prior to obtaining the data, ethics approval had been obtained from College of Saint Mary's Institutional Review Board (IRB). The research study posed less than minimal risk to the participants and an exempt review from IRB was approved. The data from a large Midwestern Insurance company and three employer groups utilizing Health Fitness for their wellness offering was utilized for the research study. The researcher received permission from the health insurance carrier's legal department to receive the data, (Appendix B). Participation in the employer-sponsored program was voluntary. For the protection of each participant, all collected data was stored on password protected Excel spreadsheet on a secure data warehouse that only the lead researcher had access. The Health Network Analyst III provided the unidentifiable data to be analyzed. The Health Network Analyst III ensured that no identifiers were used and the data was presented in aggregated form, protecting participants from potential harm. The data will be destroyed after seven-years from the completion of the proposed study. The lead researcher will be responsible for destroying the data.

Summary

The research methodology and design were described in detail in this chapter. This chapter focused on how participants were selected, how the data was collected and obtained, details regarding instrument and how the data was analyzed. Ethical consideration were followed at all times during the longitudinal, non-experimental causal comparative quantitative study was to evaluate the relationship between telephonic health coaching and health risk of three Midwestern employer groups participating in a comprehensive wellness program.

CHAPTER IV: RESULTS

This chapter presents the results of data collection and data analysis for each research question. The purpose of the longitudinal, non-experimental causal comparative quantitative study was to evaluate the relationship between telephonic health coaching and health risk of three Midwestern employer groups participating in a comprehensive wellness program. The research study explored wellness program participants enrolled in telephonic health coaching to determine if sustained positive lifestyle modifications reduced health risk over an eighteen-month period of time. The research evaluated whether telephonic health coaching had an effect on program participants' pre and post overall wellness score (Gold, Anderson, & Serxner, 2000). The research also evaluated if telephonic health coaching effected program participants' medical cost and utilization. The data, for the research study, was presented in a Microsoft Excel 2013 spreadsheet with all personally identifiable information removed. The research study included 1,770 participants (1,119 females and 651 males) from three Midwestern employer groups for program years July 1, 2014- December 31, 2015.

Data Analysis

Wellness Participation

The research groups were naturally selected based on their participation in their respective employer-sponsored wellness program. The three Midwestern employer groups designed an incentive program to encourage participation in their respective wellness programs. Both employer A and B offered a premium differential for employee and spouse participation in both the health assessment and biometric screening components of their wellness programs. Employer C offered a premium differential for employee participation in health risk assessment.

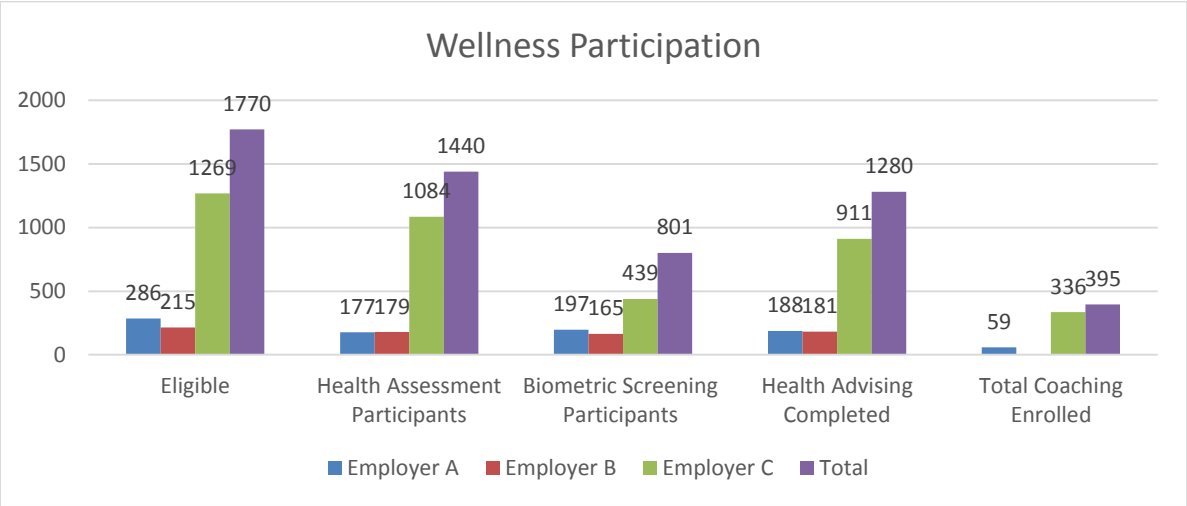
Employer C also included a wellness bonus for participation in wellness activities throughout the year which included the biometric screening event and health coaching. A causal comparative research design does not allow for manipulation of the independent variable as the cause has already occurred (Franenkel, Wallen, & Hyun, 2012). In other words, a participant either participated in the health coaching or did not participate in health coaching. The participant either earned the incentive or did not earn the incentive. The researcher did not randomly assign groups. The participants were naturally forming the stratification based on their participation/non-participation in their respective employer-sponsored wellness program.

From 07/01/2014-12/31/2015, participants from three Midwestern employer groups took part in health assessment (HA), biometric screening, health advising, and coaching programs administered by HealthFitness. The participation for each of the employer groups was broken out by wellness program offering i.e. health assessment, biometric screening, etc. An individual was counted only once in each program offering. The wellness participation per program offering was based on Employer A's 286 eligible individuals. Employer A had 177 individuals (61.89%) compete the health assessment, 197 individuals (68.88%) participated in the biometric screening, 188 individuals (65.73%) completed a health advising call and 59 individuals (20.63%) enrolled in health coaching. Employer B had 215 eligible individuals for their wellness program. 179 individuals (83.26%) completed the health assessment, 165 individuals (76.74%) participated in the biometric screening, 181 individuals (84.19%) completed a health advising call and 0 individuals (0%) enrolled in health coaching. Employer C had 1,269 eligible individuals for their wellness program. 1,084 individuals (85.42%) completed the health assessment, 439 individuals (34.59%) participated in the biometric screening, 911 individuals (71.79%) completed a health advising call and 336 individuals (26.48%) enrolled in health

coaching. Figure 5 reflect the participation per program, in aggregate, for the three Midwestern employer groups.

Figure 5

Wellness Participation (N= 1,770)



Analysis of Research Questions

The research study evaluated the relationship between telephonic health coaching and health risk of three Midwestern employer groups participating in a comprehensive wellness program. The research study explored wellness program participants enrolled in telephonic health coaching to determine if sustained positive lifestyle modifications reduced health risk over an eighteen-month period of time. The research evaluated whether telephonic health coaching had an effect on program participants' pre and post overall wellness score (Gold, Anderson, & Serxner, 2000). The research also evaluated if telephonic health coaching effected program participants' medical cost and utilization.

The sample in the research study included 1,770 eligible participants. 395 individuals who participated in the health coaching program from July 1, 2014 through December 31, 2015.

This time frame was selected as this was when each of the three Midwestern employer groups implemented their comprehensive wellness programs. The average clinical risk group (CRG) was 1.60 (SD = 4.61). The average medical service utilization was 30.11 (SD = 32.83). The average medical claims paid was $5,259.13 (SD = $14, 842.11). The medical claims range was $0-$89,635. Table 4 reflects the descriptive statistics for the study.

Table 4

Descriptive Statistics (N=1,770)

Variable	Mean	Std. Deviation
Health Coaching	1.87	0.34
CRG	1.60	4.61
Medical Utilization	30.11	32.83
Medical Costs	$5,259.13	$14,842.11

The data analysis by research question provides the results with corresponding tables from the multiple regression analysis. A multiple regression analysis was to predict the value of health coaching for the given values of CRG, medical costs and medical utilization of three midwestern companies. The predictors were the CRG measured as a standard claims data, pharmaceutical data and functional health status collected longitudinally to assign each individual to a single, mutually exclusive risk group; medical cost measured as dollars; utilization measured as number of claims. The criterion variable was health coaching.

Research Question 1

Q1. What was the correlation between telephonic health coaching and clinical risk group of three Midwestern, fully insured employer groups' employees participating and not participating in a comprehensive wellness program?

The analysis of the multiple regression for the correlation between telephonic health coaching and CRG participating and not participating in a comprehensive wellness program found the average CRG score for all eligible participants was 1.22. The health coaching participants had an average CRG score of 0.63 and non-participants had an average CRG score of 1.38. Table 5 reflects the descriptive statistics for research question 1.

Table 5

Descriptive Statistics (N=1,770)

Variable	Mean	Std. Deviation
Health Coaching	0.63	1.90
Non-Participant	1.38	4.65
CRG	1.22	4.39

The results of the regression between health coaching and CRG of participants and non-participants indicated a non-significant regression equation was found ($F(1, 1{,}440) = 0.18$, $p < 0.67$ with an $R2$ of 0.00. Participants' predicted CRG was equal to 0.66 +0.15 (health coaching), where health coaching was coded as 1 = yes, 2 = no. There was not a significant finding between CRG and health coaching for both participants and non-participants.

Research Question 2

Q2: What was the overall relationship of Clinical Risk Group and telephonic health coaching participants compared to non-participants of three Midwestern, fully insured employer groups in terms of medical costs?

The multiple regression analysis to determine the overall relationship of Clinical Risk Group and telephonic health coaching participants compared to non-participants of three Midwestern, fully insured employer groups in terms of medical costs found the average medical claims cost for all eligible individuals was $3,835.24. The average medical claim cost for health

coaching participants was $2,280.99 and non-participants average medical claim cost was $4,281.73. Table 6 reflects the descriptive statistics for research question 2.

Table 6

Descriptive Statistics (N=1,770)

Variable	Mean	Std. Deviation
Health Coaching	$2,280.99	$9,821.84
Non-Participant	$4,281.73	$15,455.22
Medical Claims	$3,835.24	$14,837.44

The results of the regression between health coaching and medical cost of participants and non-participants indicated a significant regression equation was found ($F(1, 1,289) = 0.01$, $p < 0.95$ with an R2 of 0.00. Participant's medical cost was equal to $5,414.36 -$83.05 (health coaching), where health coaching is coded as 1 = yes, 2 = no. Participant's medical cost decreased $83.05 when participating in health coaching. Health coaching was a significant predictor of medical cost.

Research Question 3

Q3: Was there a significant difference ($p \leq .05$) of telephonic health coaching participants compared to non-participants of three Midwestern, fully insured employer groups in terms of medical utilization?

The multiple regression analysis to determine the overall relationship of Clinical Risk Group and telephonic health coaching participants compared to non-participants of three Midwestern, fully insured employer groups in terms of medical utilization found the average medical utilization for all eligible individuals was 21.99 services per 100. The average medical utilization for health coaching participants was 16.07 services per 100 and non-participants

average medical utilization was 23.69 services per 100. Table 7 reflects the descriptive statistics for research question 2.

Table 7

Descriptive Statistics (N=1,770)

Variable	Mean	Std. Deviation
Health Coaching	16.07	43.89
Non-Participant	23.69	30.68
Utilization	21.99	32.82

The results of the regression between health coaching and medical utilization of participants and non-participants indicated a significant regression equation was found ($F(1, 1{,}290) = 10.08$, $p < 0.00$ with an $R2$ of 0.01. Participants' medical utilization was equal to 46.13-8.57 (health coaching), where health coaching is coded as 1 = yes, 2 = no. Participants' medical utilization decreased 8.57 services per 100 when participating in health coaching. Health coaching was a significant predictor of medical utilization.

Table 8 presented the indices to indicate the relative strength of the individual predictors and the relationship with health coaching. When the value was positive then there was a positive relationship between the predictor and the outcome whereas a negative coefficient represents a negative relationship. For these data predictors both CRG and medical cost had a positive beta value indicating a positive relationship whereas utilization had a negative beta value indicating a negative relationship.

Table 8

Health Coaching Relationship between Predictors

	B	Std. Error	Standardized Coefficients Beta
(Constant)	1.90	0.01	
CRG	0.01	0.00	*0.04
Medical Utilization	-0.01	0.00	*-0.13
Medical Costs	0.01	0.00	0.06

*p<0.05

Research Question 4

A one-way ANOVA compared the between the groups of participants with post-hoc Tukey compared the effect of the incentive on health coaching participation.

Q4: Was there a significant difference ($p \leq .05$) of telephonic health coaching participation for three Midwestern, fully insured employer groups offering and not offering program incentives?

A one-way between subjects' ANOVA was conducted to compare the effect of health coaching on participation when an incentive is offered. An analysis of variance showed that the effect of incentive given by the Midwest fully insured company was not statistically significant at the $p<.05$ level, $F (4, 1{,}782) = 44.70$, $p = 0.000$. An analysis of variance also showed that the effect of incentive on health coaching was not statistically significant at the $p<.05$ level, $F (4, 1{,}782) = 2.13$, $p = 0.08$. A Tukey HSD further indicated there was no significant relationship between the variables.

Additional Findings

The research study explored wellness program participants enrolled in telephonic health coaching to determine if sustained positive lifestyle modifications reduced health risk over an eighteen-month period of time. A year-over-year comparison of participant health assessment

scores was conducted to determine additional findings. Time 1 completion of the health assessment was between 07/01/14 and 12/31/14, and Time 2 completion of the health assessment was between 01/01/15 and 12/31/15. A total of 868 participants completed both a Time 1 and a Time 2 health assessment. This included 81 health coaching enrollees. The remaining 787 T1/T2 health assessment participants did not enroll in the health coaching program during the Time 1 time frame. The average time between tests for all T1/T2 health assessment participants was 0.7 years.

The overall wellness score (OWS) summarized whether a participant was "doing the right things" for his/her health. It reflected a combination of key lifestyle behaviors and health measures values. The participant's OWS reflected the relative effects of their lifestyle behaviors and health measures that impacted their physical health and risk for chronic disease. The more one's lifestyle choices and health measures align with national guidelines for health promotion and disease prevention the better their OWS. Scores ranged from 0 (least aligned) to 100 (most aligned). Health measures scores and lifestyle scores calculated from participants' health assessment responses are shown in Table 8 for the Enrolled into health coaching group and the Not Enrolled in health coaching group. A positive change in average score from Time 1 to Time 2 signified an improvement. A negative change meant the average got worse from Time 1 to Time 2. The comparison from Time 1 to Time 2 found those individuals that participated in health coaching had a significant improvement to their health measure scores and lifestyle scores compared to those that did not participate in health coaching.

Table 9

Average Health Assessment Score

Score Type	Enrolled T1 Avg.	Enrolled T2 Avg.	Enrolled Change	Not Enrolled T1Avg.	Not Enrolled T2 Avg.	Not Enrolled Change
Health Measures Score						
Blood Pressure Score	55.9	65.6	17.40%*	57.5	59.9	4.20%*
Blood Sugar Score	68.4	73.2	7.00%*	65.3	65	-0.50%
Body Mass Index Score	65.4	69.3	6.00%*	68.9	70.7	2.60%*
Cholesterol Levels Score	49.3	49.9	1.20%	48.3	46.9	-2.90%*
Lifestyle Score						
Nutrition Score	68.8	73.4	6.70%*	68.9	70.2	1.90%*
Physical Activity Score	69.1	73.9	6.90%*	67.7	68.8	1.60%*
Sleep Score	54	58	7.40%*	51.2	54.7	6.80%*
Stress Score	69.1	72.5	4.90%*	72.8	74.6	2.50%*
Tobacco Score	66.6	78.1	17.30%*	71.9	73.9	2.80%*

$p \leq 0.05$ *significant finding

It was important to note that the analysis did not look at other programs the Enrolled and Not Enrolled groups may have been involved in, which could also have impacted their health.

Summary of Results

The summary of results for the longitudinal, non-experimental causal comparative quantitative study were conducted through descriptive and inferential data analysis. The results for research question one found there was not a significant finding between CRG and health coaching for both participants and non-participants. The results of research question two found participant's medical cost decreased $83.05 when participating in health coaching. Health coaching was a significant predictor of medical cost. The results of research question three found participants' medical utilization decreased 8.57 services per 100 when participating in health coaching. Health coaching was a significant predictor of medical utilization. Lastly, an analysis of variance for research question four showed that the effect of incentive on health coaching was not statistically significant at the $p<.05$ level, $F(4, 1{,}782) = 2.13$, $p = 0.08$. A

Tukey HSD further indicated there was no significant relationship between the variables. Additional findings on year over year health assessment completers found those individuals that participated in health coaching had a significant improvement to their health measure scores and lifestyle scores compared to those that did not participate in health coaching. Chapter V will offer the discussion and summary of the study.

CHAPTER V: DISCUSSION AND SUMMARY

The purpose of the longitudinal, non-experimental causal comparative quantitative study was to evaluate the relationship between telephonic health coaching and health risk of three Midwestern employer groups participating in a comprehensive wellness program. The research study explored wellness program participants enrolled in telephonic health coaching to determine if sustained positive lifestyle modifications reduced health risk over an eighteen-month period of time. The research evaluated whether telephonic health coaching had an effect on program participants' pre and post overall wellness score (Gold, Anderson, & Serxner, 2000). The research also evaluated if telephonic health coaching effected program participants' medical cost and utilization. This chapter provides the discussion of the results of the research questions, limitations of the study, recommendations for employer wellness programs, and a summary.

Discussion of the Results of the Research Questions

The quantitative study applied retrospective, longitudinal, casual-comparative research design. With the use of multiple regression, ANOVA, and T1-T2 comparison were effective in examining the research questions. The research study explored wellness program participants enrolled in telephonic health coaching to determine if sustained positive lifestyle modifications reduced health risk over an eighteen-month period of time. The research evaluated whether telephonic health coaching had an effect on program participants' pre and post overall wellness score (Gold, Anderson, & Serxner, 2000). The research also evaluated if telephonic health coaching effected program participants' medical cost and utilization. Data analysis was conducted by the researcher with an unidentifiable data file. The following section considers the research questions with interpretation of the results.

Health Coaching and Clinical Risk Group

The results of the regression between health coaching and clinical risk group (CRG) of participants and non-participants indicated a non-significant regression equation was found ($F(1, 1{,}440) = 0.18$, $p < 0.67$ with an $R2$ of 0.00. Participants' predicted CRG was equal to 0.66 +0.15 (health coaching). There was not a significant finding between CRG and health coaching for both participants and non-participants. This finding is likely a result of the length of the research study. CRGs was a risk adjustment tool and clinically based classification system used to measure a population's burden of illness (3M Clinical Risk Groups, 2011). CRGs used standard claims data, pharmaceutical data and functional health status collected longitudinally to assign each individual to a single, mutually exclusive risk group (3M Clinical Risk Groups, 2011). Wellness program solutions take several years to truly have an effect on individual's health. In the beginning of a health coaching program, a participant may be encouraged to go to their physician and/or take medication on a regular basis which could have an adverse effect on their CRG score. Currently there is limited to no research conducted on the effect of health coaching on clinical risk group score.

Health Coaching and Medical Claims

The results of the regression between health coaching and medical cost of participants and non-participants indicated a significant regression equation was found ($F(1, 1{,}289) = 0.01$, $p < 0.95$ with an $R2$ of 0.00. Participants' medical cost was equal to \$5,414.36 -\$83.05 (health coaching). Participants medical cost decreased \$83.05 when participating in health coaching. Health coaching was a significant predictor of medical cost. This significant finding supports the need for employer-sponsored wellness programs to promote and encourage their employees to participate in health coaching. The findings were consistent with the reports reported by others

regarding the cost effectiveness of wellness programs on medical cost (Schwarts et al., 2010; Baicker, Culter, & Song, 2010; Liu et al., 2013; Heake, Goetzel, McHugh, & Isaac, 2011; Aydeck et al., 2008).

Health Coaching and Medical Utilization

The results of the regression between health coaching and medical utilization of participants and non-participants indicated a significant regression equation was found ($F(1, 1{,}290) = 10.08$, $p < 0.00$ with an $R2$ of 0.01. Participants' medical utilization was equal to 46.13-8.57 (health coaching). Participants' medical utilization decreased 8.57 services per 100 when participating in health coaching. Health coaching was a significant predictor of medical utilization. This significant finding supports the need for employer-sponsored wellness programs to promote and encourage participation in health coaching programs. The findings were consistent with the reports reported by others regarding the cost effectiveness of wellness programs on medical utilization (Schwarts et al., 2010; Baicker, Culter, & Song, 2010; Liu et al., 2013; Heake, Goetzel, McHugh, & Isaac, 2011; Aydeck et al., 2008).

Incentives

Was there a significant difference ($p \leq .05$) of telephonic health coaching participation for three Midwestern, fully insured employer groups offering and not offering program incentives? A one-way ANOVA was conducted to determine whether receiving an incentive on health coaching increased participation. An analysis of variance showed that the effect of incentives given by the Midwest fully insured company was not statistically significant, $F(4, 1{,}782) = 44.695$, $p = 0.000$. An analysis of variance showed that the effects of incentive on health coaching was not statistically significant as determined by one-way ANOVA, $F(4, 1{,}782) = 2.132$, $p = 0.075$. The population size and variance of incentives between the employer-

sponsored wellness programs may have been a barrier for this research question. These results were inconsistent with the research available (Finkelstein, Linnan, Tate & Birken, 2007; Volpp, John, Troxel, Norton, Fassbender & Lowenstein, 2008) however, there was currently limited research on the effect of incentives on employer-sponsored wellness programs.

Health Risk

A year-over-year comparison of participant health assessment scores was conducted. Time 1 completion of the health assessment was between 07/01/14 and 12/31/14, and Time 2 completion of the health assessment was between 01/01/15 and 12/31/15. A total of 868 participants completed both a Time 1 and a Time 2 health assessment. This included 81 health coaching enrollees. The remaining 787 T1/T2 health assessment participants did not enroll in the health coaching program during the Time 1 time frame. The Time 1 and Time 2 comparison showed that there was statistically significant difference in reduction of health risk and overall wellness scores for those individual that participated in health coaching compared to those individuals that did not participate in health coaching. Small lifestyle changes can effect an individual's health risk. This finding supports the need to have more long-term research done on health coaching to see year over year comparison of participants. Knowing the point when participants feel they have achieved all that they can with a health coach is needed. The finding are consistent with previous research (Loeppke, Edington, & Beg, 2010; Hochart & Lang, 2011; Gold, Anderson, & Serxner, 2000; Faghri, Blozie, Gustavesen, & Kotejoshyer, 2008).

Limitations of this Study

The longitudinal, non-experimental causal comparative quantitative study used self-reported wellness program data through the health risk assessment. The study did not include other factors in the analysis that may also had an impact on medical claims such as plan design,

economic status, turnover and environmental conditions. Participation in health coaching was voluntary, adverse selection was another potential limitations (Haynes, Dunnagan, & Smith, 1999). Consequently, the population for this research study had a larger female population than male. The results are only applicable to the period of time in which the data collection process occurred. The results of the study may not be applicable to other companies utilizing telephonic health coaching program. Each participant determined when they spoke with their health coach. Health coaching sessions could be done during work time and/or after hours. Each company was unique in terms of its employee demographics, educational level, employees' health status, corporate wellness culture, and health coaching program.

Recommendations

Research into health coaching in regards to a comprehensive wellness program is in its infancy and there would be a lot to discover and learn. The study offers suggestive evidence for continued research in the area of health coaching and incentives. Health coaching allowed participants to create their own tailored approach in reducing health risk by choosing a behavior focused area with their health coach. The type and frequency of interactions were determined by the participants and coach based on the level of support the participant needed to achieve the desired change. Health coaching programs offered a variety of motivational and behavior change techniques to assist individuals in making small changes to impact their overall health and health risk levels.

For most individuals behavior change occurred gradually over time, with the person progressing from being uninterested, unaware, or unwilling to making a change (*precontemplation*), to considering a change (*contemplation*), to deciding and preparing to make a change (*preparation*) (Zimmerman et al., 2000). This was followed by definitive action and

attempts to maintain the new behavior over time (*maintenance*) (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). People progressed in both directions in the stages of change (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Most people would "recycle" through the stages of change several times before the change becomes fully established (Zimmerman et al., 2000; Prochaska & DiClemente, 1984).

Health coaches evaluated a person's readiness to change for any proposed intervention (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Interventions not staged to the readiness of the individual are less likely to succeed (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Interventions which moved a person too quickly through the stages of change were more likely to create resistance and impede behavior change (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Anything that moved a person along the continuum toward making a positive change would be viewed as a success (Zimmerman et al., 2000; Prochaska & DiClemente, 1984). Employing stage-specific interventions decreased frustration by lessening the unrealistic expectation that change would occur with a single intervention (Zimmerman et al., 2000; Prochaska & DiClemente, 1984).

The success of a health coaching program was dependent on two factors: the individual participant and the health coach. The study offers suggestive evidence for continued research in the area of health coaching and incentives. Behavior change and movement through the continuum of change occurs over time. Additional research would need to occur to fully understand the effects of health coaching in regards to a comprehensive wellness program. For example, repeat the study extending it to at least three to five years to determine the long term effects of health coaching. The additional research would also need to focus on incentives to assist in driving health coaching participation.

Another recommendation would be to evaluate how insurance companies can increase participation and utilization of health coaching programs. Research supports that participation in health coaching programs leads to decrease medical cost and utilization. Insurance companies providing health coaching programs should also evaluate how continued education and training in the areas of motivational interviewing, transtheoretical model behavior change and self-efficacy effect a participants' positive health change due to their readiness to change.

Lastly, it would be important to examine the impact of participation in a comprehensive wellness program on job performance, absenteeism, presenteeism, and turnover. Understanding not only how comprehensive wellness programs effect a participants health risk, medical cost and medical utilization but also on an participants productivity related issues.

Summary

In summary, the purpose of the longitudinal, non-experimental causal comparative quantitative study was to provide insight, from three Midwestern, fully insured employer groups, into the impact of telephonic health coaching on participants' health risks, medical costs, and medical utilization over an eighteen-month time period. The intention was to evaluate the relationship between telephonic health coaching and health risk of three Midwestern employer groups participating and not participating in a comprehensive wellness program. The research study explored wellness program participants enrolled in telephonic health coaching to determine whether health coaching had sustained positive lifestyle modifications which reduced health risk over an eighteen-month period of time. The research evaluated if telephonic health coaching had an effect on program participants' clinical risk group health score (Gold, Anderson, & Serxner, 2000). The significance of the study was to address the limitations of the existing research and broaden the breadth and depth in the field of health coaching and wellness. Effective health

coaching programs employ multiple components of evidence based interventions such as motivational interviewing, transtheoretical model behavior change and self-efficacy. The results for research question 1 found there was not a significant finding between CRG and health coaching for both participants and non-participants. The results of research question 2 found participant's medical cost decreased $83.05 when participating in health coaching. Health coaching was a significant predictor of medical cost. The results of research question 3 found participants' medical utilization decreased 8.57 services per 100 when participating in health coaching. Health coaching was a significant predictor of medical utilization. Lastly, an analysis of variance for research question 4 showed that the effect of incentive on health coaching was not statistically significant. Additional findings on year over year health assessment completers found those individuals that participated in health coaching had a significant improvement to their health measure scores and lifestyle scores compared to those that did not participate in health coaching. The results from the data supported that health coaching had a significant effect on medical claims, medical utilization and health and lifestyle scores. Figure 6 is a visualization of the results of the research study.

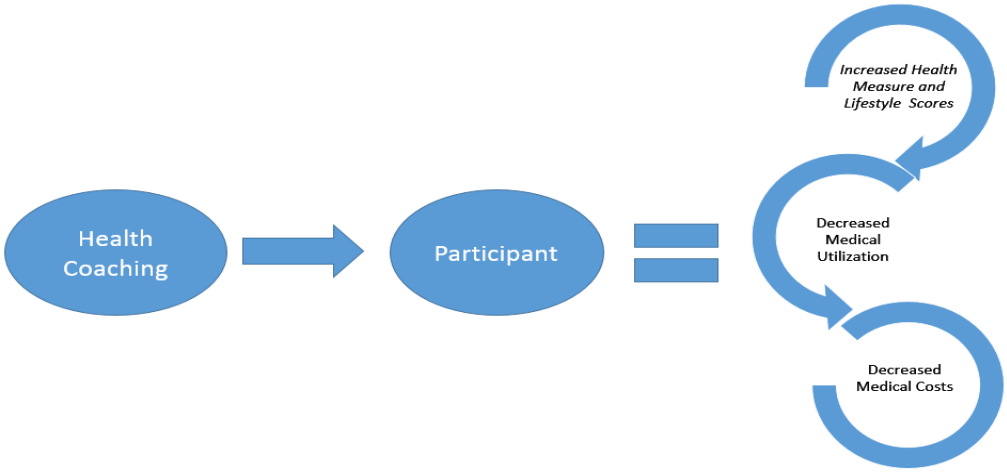


Figure 6. Health Coaching Impact on Medical Cost and Utilization. This figure is a visualization of the outcomes of the research study.

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Appendix A

Permission from Health Fitness

That will be fine. Please let us know how we can help you as you continue work on your dissertation.

Thanks,

Glenn

From: Young, Melissa
Sent: Monday, November 14, 2016 2:45 PM
To: Leary, Glenn
Cc: Ochoa, Laura
Subject: Charts

Hi Glenn-

Is it okay if I use a few of the charts from the Health Fitness presentation in my dissertation when discussing the health coaching program?

Thanks

Melissa Young BS, MHSA

Appendix B

Permission from Health Insurance Carrier

No issues from me.

Jeff

From: Williams, Clint
Sent: Thursday, February 26, 2015 12:05 PM
To: Hunter, Roy; Young, Melissa; Huether, Jeff
Cc: Haddad, Edward; Hempel, James
Subject: Data Request

Neither do me.

From: Hunter, Roy
Sent: Thursday, February 26, 2015 11:40 AM
To: Young, Melissa; Williams, Clint; Huether, Jeff
Cc: Haddad, Edward; Hempel, James
Subject: Data Request

I don't have any . . .

From: Young, Melissa
Sent: Thursday, February 26, 2015 10:55 AM
To: Williams, Clint; Hunter, Roy; Huether, Jeff
Cc: Haddad, Edward; Hempel, James
Subject: Data Request

I meet with Ed and Jim this morning regarding utilizing the Health Fitness Data for my dissertation. Neither Ed nor Jim found there to be a Legal or Privacy issues with this request. Please let me know if you have any issues or concerns. Thanks,

Melissa Young BS, MHSA

Appendix C

Coding for Descriptive Statistics (Independent/Dependent Variables)

Age = years

Sex = (1) female or (2) male

Company = (1) Company A, (2) Company B, (3) Company C

Participated in the wellness program = (1) yes or (2) no

Completed Health Assessment = (1) yes or (2) no

Participated in Health Advising = (1) yes or (2) no

Participated in Health Coaching = (1) yes or (2) no

Received Employer Wellness Incentive = (1) yes or (2) no or (3) Level 1, (4) Level 2, (5) Level 3

Clinical Risk Group =

Medical Claims = total dollar amount in 2015

Medical Utilization = total medical utilization in 2015