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Exploring the Relationship of Modifiable Risk Factors such as Diet, Cardiovascular Exercise, and Sleep to Health Care Employees' Perceived Self-Efficacy at Work

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Exploring the Relationship of Modifiable Risk Factors such as Diet, Cardiovascular Exercise, and Sleep to Health Care Employees’ Perceived Self-Efficacy at Work

A DISSERTATION SUBMITTED TO THE FACULTY OF THE SCHOOL OF EDUCATION OF THE UNIVERSITY OF ST. THOMAS

By
Kara Marie Rebeck

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF EDUCATION

SEPTEMBER 2018
UNIVERSITY OF ST. THOMAS

We certify that we have read this dissertation and approved it as adequate in scope and quality. We have found that it is complete and satisfactory in all respects, and that any and all revisions required by the final examining committee have been made.

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Date
Dedication

Of highest significance is my thankfulness to my Lord and Savior God who gave me continued strength during this dual journey. Mine is a journey of battling cancer and completing my dissertation. An odyssey reminding me to be patient and keep the belief that all things happen for a reason. A special thanks to my supportive mother Beverley Rebeck-Dummer, amazing immediate and extended family, especially my brother, Kristofer Rebeck, incredible close friends, business clients and nanny TJ for your patience, support and consideration, when needed most. Last, my unconditional loving Siberian Huskies Kya and Ruby, who laid beside me through many hours of research, writing and recovering from cancer.
Abstract

The purpose of this quantitative correlational study was to explore if there is a relationship between the modifiable risk factors of diet, cardiovascular exercise, and sleep, and health care employees’ perceived self-efficacy at work. I used two research methods to gather data. I invited the Midwestern Hospital perioperative employees ($N = 102$) to answer two questionnaire forms on health behaviors and self-efficacy regarding their current health status.

In each of the modifiable risk factor categories - nutrition, cardiovascular exercise and sleep pattern – the study participants reported on average, that it was “important” ($M = 3.95 - 4.47$) to eat healthy at work, engage in cardiovascular exercise each week, and get quality sleep every night. One-way ANOVA reported there was no significant difference in mean age category due to health care employee self-efficacy, [$F(5,96) = 1.070, p = 0.382, \text{ns}$]. When comparing men’s and women’s modifiable risk factors of nutritional intake, cardiovascular exercise and sleep patterns to self-efficacy in the workplace, I found similar results in means and standard deviations. Correlational analyses results indicated a moderate correlation ($r_s = .587, p = .001$) between nutrition and cardiovascular exercise. Cardiovascular exercise and sleep followed at $r_s = .405, p = .001$. Self-efficacy and sleep had a weaker correlation at $r_s = .206, p = .001$.

In general, based upon the findings of this study, the risk factors of nutrition and cardiovascular exercise were most moderately linked. Health care employees expressed the strongest self-efficacy correlation with the modifiable risk factor of diet. This study lends moderate to modest support to the idea of creating interventions based on self-efficacy theory in order to positively influence healthy behavior in health care employees.
If health care employers and organizations want to improve the health behaviors of their employees, they may need to focus more on wellness and health promotion today.
Acknowledgments

I wish to express my appreciation to my advisor and chairperson, Dr. Rama Hart, for her support and guidance; and to my dissertation committee members: Dr. Jean Davidson, and Dr. Marcella de la Torre, for their time and patience during this dissertation. I also want to thank all the perioperative health care employees for their participation in this study. Finally, I am grateful for the love and support of all who believed in me and prayed for me during my battle with cancer. All things are possible through hope, courage, and faith.
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Chapter 1: Introduction

Do people who work in the health care field who get adequate nutrition, exercise, and sleep also feel that they are self-efficacious at work? Furthermore, is there a relationship between modifiable risk factors and health care employees’ perceived self-efficacy in the workplace? According to Johnson and Lipscomb (2006), in today’s chaotic world, most of us are spending additional time at work and have increasingly less time to focus on our health and well-being. The world has become increasingly chaotic because people, speed and connectivity, are constantly increasing (Marion, 2014). If employees want to rise above this intensifying chaos, they will need to change behavior, be self-organized, proactive, self-regulated, and contributors to their lifestyle behavioral circumstances not just products of them (Bandura, 2005). According to Bandura (1999), power of most fortuitous influences lies not in the properties of the events themselves but in the interactive processes they initiate. These branching processes are in accord with chaos theory in which minor events set in motion cyclic processes that eventuate in major changes (p. 10).

Because individuals spend the majority of each day at work, employers should encourage employees to stimulate healthy behavior and change unhealthy lifestyle practices in order to reduce health risks. Johnson and Lipscomb (2006), also mentioned, “There is increasing epidemiological evidence that indicates that long work hours are an important risk factor to a number of acute and chronic health outcomes” (p. 922). To be motivated to relinquish these practices, employees will need to recognize their personal risk of disease and injury.
I hope to describe the connection between healthy behavioral outcomes and health care employees’ perceived self-efficacy. According to Kahn-Marshall and Gallant (2012), “As employers look for ways to reduce rising health care costs, worksite health promotion interventions are increasingly being used to improve employee health behaviors” (p. 752). These health promotion engagements may not only help in controlling healthcare costs, but improving employee productivity and organizational commitment, and lowering employee turnover and absenteeism. Linking personal and financial benefits to lifestyle changes may positively reinforce long lasting behavior change.

Our understanding of the relationship between health care employee perceived self-efficacy and healthy eating behaviors, routine physical activity, and adequate sleep on a daily basis could play a significant role in developing future intervention strategies. These strategies would target employer and business organizations, could reduce employee absenteeism, raise productivity, and possibly lower health care costs, and mostly, lead to improved modifiable health behaviors (Warshaw & Messite, 2011).

If we can discover the relationships between healthy behaviors and self-efficacy, then maybe we can introduce teaching and learning of healthy lifestyle behaviors that contribute to positive employee self-efficacy in the workplace (Cherniss, Goleman, Emmerling, Cowan, & Adler, 1988). For instance, access to healthy nutritional foods, a workout facility, or a resting lounge or napping facility for a quick power nap in the workplace could reduce everyday job stress and employee self-efficacy might improve (Quintiliani, Poulsen, & Sorensen, 2010).
Approximately one-third of all U.S. deaths can be attributed to three modifiable risk factor behaviors: tobacco usage, lack of physical activity, and poor dietary habits (Institute of Medicine, 2001). However, many people tend to be unrealistically optimistic about their healthy behaviors—as they are about other areas of life—perceiving themselves to be significantly less at risk than their peers for a wide range of physical diseases and negative health outcomes (Shepperd, Waters, Weinstein, & Klein, 2015).

According to the University of California San Francisco (UCSF) Medical Center (2015), “Risk factors are conditions that increase your risk of developing a disease. Risk factors are either modifiable, meaning you can take measures to change them, or non-modifiable, which means they cannot be changed” (p. 1). Risk factors include obesity, increased, unmanageable stress levels, high blood pressure, diabetes, tobacco smoking or chewing, excessive alcohol intake, and elevated blood cholesterol levels.

Predicting self-efficacy has the potential to be powerful when it comes to modifiable risk factors. Both self-efficacy and modifiable risk factors share an internal locus of control, or the belief that one has control over these factors (Schwarzer, 1992). Albert Bandura (1977a) first introduced the construct of self-efficacy in the 1970s. According to Bandura (1997a), self-efficacy is “one's belief in one's ability to succeed in specific situations or accomplish a task” (p. 1). Self-efficacy beliefs “determine how people feel, think, motivate themselves, and behave” (Bandura, 1994, p. 1). Self-efficacy is also sometimes defined as a construct “universally used and combined with self-confidence in one's ability to perform versus personal worth” (Bandura, 1977, 1986, 1997). For instance, one improves self-efficacy from experiencing the ability to master performance, improve skills, and achieve triumphs and victories. Perceived self-efficacy
is “people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives” (Bandura, 1994, p. 1).

According to the Institute of Medicine (2012), the workplace is a vital venue affecting employee wellness and behavioral choices. The daily choices health care employees make with respect to diet, physical activity, and sleep are all important determinants of health. What health care employees choose to eat and how they strategize activity into (or out of) their lives will play a significant role on their health prospects. Organizations can help employees make healthy choices by creating emotionally and physically healthy worksites, supporting employees’ individual physical activity, and offering onsite nutritious foods. However, if an organization limits its places for physical activities and lacks healthy foods, its employees will continue to experience fewer opportunities to engage in healthy behaviors. These behavioral choices will inevitably affect activity and eating environments and settings for all employees (Institute of Medicine, 2012).

The purpose of this quantitative correlational study was to explore if there is a relationship between the modifiable risk factors of diet, cardiovascular exercise, and sleep, and health care employees’ perceived self-efficacy at work. I studied this relationship due to various perceived self-efficacy circumstances I have encountered in the workplace, such as lack performance, motivation, and cognitive stimulation in the workplace that I believe occur as a result of unhealthy behavioral risk factors, such as the largest growing epidemic, obesity (Simon, 2016). I targeted health care employees from a midwestern hospital because of my background and interest in the health care field.
Research Question

The research question at the center of this study is: What is the relationship between the modifiable risk factors of diet, cardiovascular exercise, and sleep and health care employees’ perceived self-efficacy at work?

Purpose Statement

The purpose of this study was to understand how nutritious dietary intake, sufficient cardiovascular exercise, and adequate sleep relate to health care employees’ perceived self-efficacy at work.

Variables: The independent variables are modifiable risk factors of diet, cardiovascular exercise, and sleep. The dependent variable is health care employees’ perceived self-efficacy at work.

Significance of the Study

The study will contribute to the growing scholarly literature on health care employees’ modifiable risk factors, as well as quality of life and productivity in the workplace. The study may predict whether health care employees who prioritize modifiable risk factors of diet, cardiovascular exercise, and sleep experience a sense of self-efficacy, which can ultimately impact positive outcomes in workplace performance. Changing health risk profiles of an employee (McKenna, 2000) may correlate with modifiable risk factor reduction. By better understanding the correlation between modifiable risk factors and self-efficacy at work, health care organizations might use these findings to potentially transform current health behavior practices by customizing programming for all health care employees to increase perceived self-efficacy in the
workplace, which in turn, may benefit health care organizations in the future (O'Donnell & Bensky, 2011).

**Personal Significance**

My interests and curiosity in choosing to study this topic within a Midwestern Hospital stemmed from my early childhood years. Growing up with a sports-minded family and active siblings, my parents made frequent trips to the emergency room. In fact, a different midwestern hospital emergency room staff knew us on a first name basis as we were seen for numerous orthopedic injuries. My keenness in the medical industry evolved into helping people with their health challenges. I worked as a critical care clinician at a midwestern hospital while pursuing my graduate degrees in the medical arena. I spent several years studying cardiovascular disease and exploring patients’ modifiable risk factors and participation with cardiac rehabilitation. In addition, I explored whether their modifiable risk factors and quality of life improved over time. After completing post-graduate degrees and immersing myself in research several years ago, I was asked to become the Research Director at a midwestern hospital and develop a research foundation, leading to my current work in consulting with health care organizations on research and scientific development in the medical arena.

Because of my appreciation for the medical field and for organization development research, I believe I can have a positive impact on an organization’s understanding of the relationship between modifiable risk factors of diet, cardiovascular exercise, and sleep to health care employees’ perceived self-efficacy at work. Focusing on health behaviors, for instance, may not only help in controlling healthcare expenditures, but may improve health care employee efficiency and organizational
commitment. In addition, this may reduce employee turnover and absenteeism. Finally, linking healthy personal choices to positive lifestyle changes may hopefully reinforce lifelong employee behavior changes that will benefit any organization and offer financial benefits.

**Definition of Key Terms**

**Health.** According to Brooks (2017), “In 1948, the World Health Organization officially defined health as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

**Healthy behaviors.** Examples of healthy behaviors are: regular exercise, smoking cessation, proper nutrition, socialization and work-life balance (Magnavita & Garbarino, 2017).

**Risk factors.** According to the University of California San Francisco (UCSF) Medical Center (2015), “Risk factors are conditions that increase your risk of developing a disease” (p. 1). Risk factors include obesity, increased, unmanageable stress levels, high blood pressure, diabetes, tobacco smoking or chewing, excessive alcohol intake, and elevated blood cholesterol levels.

**Modifiable risk factors.** According to the University of California San Francisco (UCSF) Medical Center (2017), “Risk factors are either modifiable, meaning one can take measures to change them, or non-modifiable, which means they cannot be changed” (p. 1).

**Self-efficacy.** According to Bandura (1997a), self-efficacy is “one's belief in one's ability to succeed in specific situations or accomplish a task” (p. 1). Self-efficacy beliefs
“determine how people feel, think, motivate themselves, and behave” (Bandura, 1994, p. 1).

**Perceived self-efficacy.** Perceived self-efficacy is “people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives” (Bandura, 1994, p. 1).

**Self-confidence.** 1. realistic confidence in one's own judgment, ability, power, etc. 2. excessive or inflated confidence in one's own judgment and ability (Snyder & Lopez, 2009).

**Self-esteem.** According to Rosenberg (2017), “Self-esteem is a positive or negative orientation toward oneself; an overall evaluation of one's worth or value” (p. 1).

**Descriptive statistics.** Descriptive statistics are “brief descriptive coefficients that summarize a given data set, that represent the entire population or a sample of it, and [are] broken down into measures of central tendency and measures of variability, or spread” (Weaver, Morales, Dunn, Godde, & Weaver, 2017, p. 48).

In chapter 2, I present the literature review related to health care employees’ perceived self-efficacy in the workplace, healthy behaviors and risk factors of a balanced diet, regular physical activity, cardiovascular exercise, and adequate sleep.
Chapter 2: Literature Review

Self-Efficacy in the Workplace

For many health care employees, success in the workplace (Van Dam, 2015) serves as the ultimate achievement (Koo & Fishbach, 2010). With each small accomplishment comes gratification and pleasure knowing they are making a difference and progressing (McGrath, 2016). Effectiveness in the workplace is a result of adequate self-efficacy and certainty of one’s ability to fulfill the job requirements and expectations (Wanberg & Banas, 2000). An optimistic vision and determination for an employee with a hard work ethic can lead to more job fulfillment, which in turn, leads to success both inside and outside of the organization (Grawitch, Gottschalk, & Munz, 2006).

Self-efficacy is not the same as self-esteem. Self-esteem is another universal construct related to self-confidence and pertains to one's personal perception of worthiness. According to Rosenberg (2017), “Self-esteem is a positive or negative orientation toward oneself; an overall evaluation of one's worth or value” (p. 1). In general, individuals are motivated to have high self-esteem (Baumeister, Tice, & Hutton, 1989), and having it usually signifies positive self-regard, not arrogance or lack of consideration for others (Bandura & Cervone, 1983). At the same time, low self-esteem or worth can change the way an employee functions in all aspects of life, from the daily requisites at work to friendships and personal relationships (Baumeister & Tice, 1985).

Efficacy on the job, according to Bandura (1982), is the combination of adequate self-esteem and a certainty of one’s own ability to fulfill her/his job requirements and day-to-day obligations. Although self-efficacy and self-esteem may be related, an
employee can have one without necessarily having the other. Certain employees may not have positive self-efficacy for a given activity or job task, but still “like themselves”; by contrast, there are other employees who may regard themselves as highly competent at a given activity or interest, but do not have consistent feelings of positive self-esteem (Judge & Bono, 2001).

According to Bénabou and Tirole (2002), self-efficacy is an individually learned trait, not an inherited trait. A lack of efficacy is not necessarily permanent, but it can be if it is not addressed appropriately. Although individuals may receive guidance on constructive self-efficacy, it is their determination and personal motivation that may improve self-efficacy (Bandura, 2004). The fact that self-efficacy is a learned trait does not mean it is unchanging. For this reason, it is essential that employers create a workplace environment that encourages employees to learn how to improve efficacy.

Self-efficacy has influence over people's ability to learn, their motivation, (Lunenburg, 2011), and their work performance, as people will often attempt to learn and perform only those tasks for which they believe they will be successful (Bandura, 1997). Some studies have even indicated that training methods can enhance self-efficacy in the areas of behavioral modeling and performance (Gist, Schwoerer, & Rosen, 1989).

Furthermore, employees’ perceived self-efficacy may affect their health behavior, as well as social and team relationships in the workplace, is not surprising. According to Bandura (1982), when viewing perceived self-efficacy in the workplace, from the office workspace or cubicle to the executive or senior management boardrooms, an employee may see that a colleague or team member tends to hold an overly inflated level of self-efficacy only modestly related to actual performance.
Employees also perceive self-efficacy specifically in the areas of modifiable risk factors (Prodaniuk, Plotnikoff, Spence, & Wilson, 2004). If people often perceive self-efficacy in their abilities at work and it is known that the modifiable risk factors of diet, cardiovascular exercise, and sleep also relate to workplace outcomes, it would follow that self-efficacy regarding these modifiable risk factors in particular serves as a mediator for workplace outcomes. To what extent does the relationship between self-efficacy and modifiable risk factors correlate to these outcomes?

**Effects of positive self-efficacy in the workplace.**

Having positive self-efficacy seems to be a key to success, especially when it comes to advanced levels of productivity and efficiency in the workplace. Self-efficacy is one of those relevant qualities that inspires employees to do their work well. According to Sadri and Robertson (1993), “More recent studies have reported a link between self-efficacy and work behavior” (p. 139). Not only does self-efficacy impact work behavior, it also impacts health behaviors. Evidence for the effectiveness of positive self-efficacy as an important tool for healthy human behavior comes from a number of various lines of research in several domains of psychosocial functioning, including health and exercise behavior (Bandura, 1991; McAuley & Jacobson, 1991; Sallis, Pinski, Grossman, Patterson, & Nader, 1988; Schwarzer, 1999; 2001). Results of these various lines of research provide converging evidence that employees’ perceptions of their performance capability significantly affect their motivational behavior (Bandura, 1995). Positive self-efficacy is extremely vital for employees to lead their own work and personal life effectively.
Conversely, employees’ perceived self-efficacy maintains only a vague to modest affiliation with their actual behavior in the workplace (Knippenberg, De Cremer, & Hogg, 2004). Even when people are at their most confident, there is no guarantee of maintaining their self-efficacy.

Positive workplace self-efficacy refers to employees’ ability to know what they are doing, what they are best at, and what values and practices they convey to others. Confident, successful, and productive employees are more likely to prosper and thrive (Milken, 2017). They accept reality and uphold positivity to balance between success and failure. Thus, preserving a clear line of balance between positive and negative self-efficacy is essential and a healthy behavioral practice in the workplace.

Positive attributes of one with high self-efficacy are optimism and the ability to problem solve in the face of failure (Bandura, 1997). Bouncing back from a breakdown or system failure and coping with the challenges can be achievable with positive self-efficacy (Bandura, 1977). Having positive self-efficacy may be noticeable and evident in an employee (Tzur, Ganzach, & Pazy, 2016). For instance, employees who display self-efficacy typically speak up when wronged, ill-treated, or victimized; challenge injustice; strive for positive change; work well with other employees and teams versus tearing them down; and bring energy and enthusiasm to their work (Bandura, 1977; 1997). Positive, self-efficacious employees are ready to rise to new challenges, seize opportunities, deal with different situations, and take responsibility for their own healthy behaviors, both personal and professional (Toker, Gavish, & Biron, 2013).

When an employee has positive self-efficacy, it may be illustrated in the initial handshake given to a client, co-worker, or others inside or outside the organization.
Exhibiting positive self-efficacy—firm prominent posture, shoulders and chin raised, and a determined walk—sets an employee apart. These are beneficial characteristics an employee ought to embrace in the workplace that will convince others of her/his self-efficacy (Wallace & Alden, 1997). Furthermore, according to Bandura (1986; 1989), an optimistic sense of positive self-efficacy is advantageous to continued effort and persistence; however, substantial overestimates of one's competence could provide an unwarrantable basis for conflict.

Self-efficacy can benefit the organizational environment by improving the emotional quality of the workplace (Bandura, 2009). In general, individuals’ positive self-efficacy beliefs have been shown to influence and inspire future personal goal setting and to mediate the relationship between goal intentions and motivation (Earley & Lituchy, 1991). Research has also shown the stronger the employees’ self-efficacy beliefs (assessed independently from their goals), the higher the goals they set for themselves and the firmer their commitments are to them (Locke, Frederick, Lee, & Bobko, 1984). Those who have high self-efficacy beliefs will heighten their level of determination and perseverance.

The benefits of positive self-efficacy in the workplace naturally make employees happy, and put them at an advantage when producing specific performances (Bandura, 1997). Positive self-efficacy beliefs and healthy behaviors are reciprocal determinants of each other (Bachmann et al., 2016). According to Abraham and Sheeran (2007), “Beliefs provided an ideal target because they are enduring individual characteristics which influence and are potentially modifiable” (p. 97). Successes are more likely to enhance positive self-efficacy if the employees’ accomplishments are perceived as resulting from
their own confident power and ability rather than from luck (Bandura, 1982). Thus, increasing positive self-efficacy among employees may also disrupt negative influences and foster, perhaps, healthy modifiable risk factors in the workplace (Prodaniuk, Plotnikoff, Spence, & Wilson, 2004). According to Lunenburg (2011) “Seeing a coworker succeed at a particular task may boost your self-efficacy. For example, if your coworker loses weight, this may increase your confidence that you can lose weight as well” (p. 3).

Self-efficacy can allow individuals in the workplace to have and choose positive, yet, realistic and authentic views of themselves and the situations in which they are involved such as leadership and team roles (Bandura, 1982). If workers have self-efficacy, typically they do not fear confrontations or challenges, they stand up for their beliefs, and have the courage to admit their boundaries and limitations. Having an accurate sense of self-efficacy means employees will avoid behaving overconfidently or recklessly (Bandura, 2008).

Lastly, positive self-efficacy is integral to leading a healthy way of life. The more aware individuals are, being their own toughest critics, the better prepared they will be in achieving success. Nwiran (2017) advises employees to dig deeper and build a more self-efficacious person in the workplace:

- Go small. Progress is power.
- Watch others. People learn not only from their own experiences, but by observing the behaviors of others.
- Look back. A reliable way of building self-efficacy is to reflect on your past accomplishments. (p. 1)
Effects of negative self-efficacy in the workplace.

Research scholars see negative self-efficacy as a complicated issue; contrary to what one might expect, research has shown that negative self-efficacy can have positive results in some employees. According to Bandura and Locke (2003), if individuals have mildly or modestly negative self-efficacy, rather than significantly negative self-efficacy, they encounter a better chance of succeeding than if they have highly positive self-efficacy. In fact, Bandura (2004) concluded mildly negative self-efficacy could inspire, influence, and motivate employees to work harder and come to the table well prepared. It may diminish not only the odds of coming across as conceited, but also, individuals with mildly negative self-efficacy may admit their mistakes more readily, blame less, and give credit to others for success—not just to other employees, but to all groups, organizations, and establishments (Nag, 2016).

On the other hand, in an unstable work environment or organization, or when the employee’s own behavioral risk factors such as diet, cardiovascular exercise, and/or sleep have worsened, the workplace can foster a non-inspiring negative self-efficacy, or the belief that one cannot succeed at a given task (Prodaniuk, Plotnikoff, Spence, & Wilson, 2004). For instance, employees with negative or low self-efficacy may make other employees more aware of undesirable feedback and be self-critical and not work to improve, or, if they believe they are incapable of learning or performing a challenging task, they are likely to give up when problems surface (Bandura, 1982). Equally, employees can talk themselves out of succeeding by attributing prior failure to inherent ability rather than to bad luck or reduced effort.
According to Bandura and Locke (2003), negative self-efficacy is primarily discouraging when individuals are not realistic about their objectives and purposeful desire. Lack of self-efficacy is sometimes the result of focusing too much on the impractical guidelines of others within organizations and society. In fact, employee influences on co-workers can be as powerful or more influential than those of a parent, close friend, or society in shaping feelings about one's self (Baumeister et. al., 2003). Even though employees need experience with failures and setbacks to develop a robust sense of positive self-efficacy, Bandura (1986; 1990) suggested they must be resilient in order for them to persist, withstand, and sustain effort in the face of those failures.

The resiliency and ability to recover from challenging situations and exhibit positive self-efficacy beliefs may also play an important factor in day-to-day confidence functioning and execution. Ericsson et al. (1993) also allude to this when discussing the role of deliberate and purposeful practice in the achievement of proficient function and implementation of self-efficacy. Bandura (1990) indicated that when self-doubt sets in after failure, some employees recover from their perceived low self-efficacy more quickly than others.

Negative self-efficacy in the workplace may, in turn, foster many unhealthy behaviors. Though an employee may become aware of these behavioral issues, it is often a challenging task to change or modify them unless the root of the problem, negative self-efficacy, is initially dealt with (Kok et al., 1992). It is not ordinary for an individual to feel good about failure nor is it healthy for them to feel indifferent or uncaring about it. Rather, it may, perhaps, be healthy and motivating for an individual to feel ashamed, rotten, or guilty about it. But a distorted sense of self-efficacy can cause these emotions
to become negative, hurtful, and destructive (Gecas, 1989). As sadness and unhappiness can lead to depression, anxiety, and stress, unhealthy behaviors may lead to unhealthy outcomes. Finally, the more unhealthy, harmful and fearful the negative emotions become, the more they can interfere with and inhibit the ability to reason clearly (Bandura, 1983); consequently, this may lead to employees being less likely to change their unhealthy risk factor behaviors in a constructive and positive manner, resulting in a potential vicious cycle of negative self-efficacy and unhealthy behaviors.

Challenges to an individual’s self-efficacy are a part of everyday life. The critical factor is to learn how to overcome failure and negative experiences, and execute healthy self-efficacy behavior (Redmond, 2010). A key point of intervention is with negative destructive thinking regarding one’s ability to execute a given task. According to Baron (1988), the destructive thoughts might be so deep-rooted and embedded into the mind that an individual believes they are permanent. People with low self-efficacy beliefs have been shown to attribute failure to lack of effort and ability to perform; causal attributions may play a role in the formation of future efficacy expectations (McAuley, 1990). An effective way to boost healthy positive self-efficacy is learning to recognize and deal with negative behaviors; initially, below are a few recommendations to become more positively self-efficacious:

- Find the optimistic viewpoint in a negative situation.
- Cultivate and live in a positive environment.
- Go slowly.
- Do not make a mountain out of a molehill.
• Do not let vague fears hold you back from doing what you want.
• Add value and positivity to someone else’s life.
• Exercise regularly and eat and sleep well.
• Learn to take criticism in a healthy way. (Edberg, 2014, p. 1)

How employees see themselves is vital and it will affect how the rest of the workforce views them (Gist & Mitchell, 1992). Self-efficacious employees have expectations that are realistic (Zimmerman, 1989, 1990). Even when some of their expectations and prospects are not met, they continue to be positive and accept themselves. Positive self-efficacy can be learned by encompassing changes, implementing new healthier behaviors, being patient, and allotting time and energy to the process (Zimmerman, Bandura, & Martinez-Pons, 1992). Building self-efficacy is reliant on breaking old behaviors and developing new beneficial and constructive ones.

In addition, the World Health Organization (2008) concluded, engaging in healthy modifiable risk factors at work such as regular physical activity and cardiovascular exercise, eating a nutritious diet, and getting adequate sleep create a safe and healthy business environment. These healthy behaviors also increase self-efficacy, moral acuity, job satisfaction, and health protection skills, and decrease stress (Ulutasdemir, Kilic, Zeki, & Begendi, 2015).

**Predictors of Self-Efficacy in the Workplace**

Hospitals are the “largest employers in most communities in the United States. They are also the largest segment of the health care industry, which is the largest industry in the U.S. economy” (O’Donnell & Bensky, 2011, p. 1). According to the American Hospital Association (2011), hospitals “are one of the few areas that has grown
continuously during the recent recession, adding an average of 24,000 jobs per month in 2009, and collectively employing more than 5.4 million people” (p. 1). The American Hospital Association (2011) estimates that there are 5,795 registered hospitals, with collective annual spending of $726 billion in 2009, and triple that amount in indirect impact in their communities (p. 1). Hospitals have the potential to have a significant impact on health behaviors in their communities, on their employees and on the science of health promotion, however, currently, they have had little impact on any of these (O’Donnell & Bensky, 2011).

Much previous predictive research on the psychosocial push of healthy behavior in the workplace has been based on the theory of planned behavior (Ajzen, 1991), which suggests that attitudes, social norms, and self-efficacy beliefs predict people's intentions (Moan & Rise, 2005, 2006; Norman, Conner, & Bell, 1999). Experts are seeing predictors of self-efficacy and healthy behaviors of interest more than ever, as the rapid aging population continues to climb (Bokovoy & Blair, 1994).

According to Langan and Marotta (2000):

Previous studies have found that men and women differ in their perceived self-efficacy, with men reporting higher levels of self-efficacy, and women involved less in physical activity than are men. Age differences have also been noted, with a decline in self-efficacy after the age of 60. (p. 37)

Aging is not an illness, but a live condition that bears investigation with different parameters such as physical activity and self-efficacy. Bandura (1989) emphasized that people who believe they are capable of controlling their lives are more likely to be able to do so.
Sleep is another predictor of self-efficacy that has been researched. Rutledge, La Guardia and Bluestein (2013) stated, “Between 50 and 70 million Americans experience insomnia. Costs of treatment, absenteeism and reduced productivity exceed 42 billion dollars annually” (p. 9). Sleep predictor findings suggest health care professionals may want to assess insomnia severity, health status, level of depression and beliefs about sleep prior to beginning any behavioral approaches to manage sleep (Daley et al., 2009). Acceptance of sleep-aid medications has even emerged as the strongest net predictor in this sleep study (Rutledge, La Guardia, & Bluestein, 2013).

Sleep is a predictor of self-efficacy because it predicts readiness to undertake behavioral change, whereas low self-efficacy points to a lack of readiness to take action (Bouchard, Bastien, & Morin, 2003).

Dieting, weight control and healthy nutrition can be governed by self-efficacy beliefs within a self-regulated cycle (Schwarzer & Renner, 2000). An additional benefit to healthy diet practice is that self-efficacy may be improved with planned and successful long-term weight maintenance (Klem, Wing, McGuire, Seagle, & Hill, 1997). Self-efficacy beliefs may impact modifiable aspects of health, such as consistency with a healthy diet. If an employee does not perceive that success is possible or results are not immediate, effort and willingness to manage self may not be attempted (Bandura, 1980; O’Leary, 1985; Schwarzer, 1993). However, accomplishment and determination leads to the experience of success and is a direct influence on positive self-efficacy (Bandura, 1980).

Finally, self-efficacy is a predictor of future success (Bandura, 1980). More future studies that include indexes of overall health, coping and social support may
explain the role of physical activity, adequate sleep and nutritious foods as predictors of self-efficacy in more definitive ways (Langan & Marotta, 2000). In fact, the self-efficacy construct has been found to be one of the most important predictors of health behavior (Bachmann et al., 2016). If health care employers and organizations want to improve the health behaviors of their employees, they may need to focus more on wellness and health promotion today.

**Healthy Behaviors**

Employees are an organization’s greatest assets, but their health issues can significantly affect the workplace (Flamm, 2016). According to Brooks (2017), “In 1948, the World Health Organization officially defined health as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (p.585).

Employees who are not healthy have lower productivity and higher health costs. The cost of health care has a major impact on a company’s bottom line (Flamm, 2016). The Centers for Disease Control and Prevention (2015), have indicated that:

With workers in America today spending more than one-third of their day on the job, employers are in a unique position to promote the health and safety of their employees. The use of effective workplace health programs and policies can reduce health risks and improve the quality of life for 138 million workers in the United States. (p. 1)

Employers have a responsibility and unique opportunity to promote individual health and wellness, and adopt a healthy work environment. Four of the ten costliest health events and conditions for U.S. employers — high blood pressure, heart attack,
diabetes and unstable angina — are related to coronary artery disease and stroke (Flamm, 2016). Work-related anxiety, stress and depression are the leading workplace health challenges and are major occupational health risks ranking above physical inactivity and obesity today (Harvard Health, 2010).

Healthy behaviors of employees in the workplace have declined. In fact, employee healthy behaviors like eating a nutritious diet, engaging in regular cardiovascular exercise, and getting sufficient sleep are decreasing. The deterioration of U.S. workers’ healthy behaviors is driving up employer expenditures (Miller, 2011), as obesity has the largest impact on employers’ health care costs.

Over the last few decades, many research studies have shown that good health status can be achieved through the practice of good health behaviors (Kahn-Marshall & Gallant, 2012). For instance, healthy diet, regular physical activity, and adequate sleep are associated with a lower prevalence of cardiovascular disease (Barr, 2016). However, more research is essential to close today’s gap between health promise and health reality, and foreseeing the healthy behavioral challenges of adequate sleep, sufficient cardiovascular exercise, and nutritious dietary intake at work in the 21st century (World Health Organization, 2006).

According to the World Health Organization (2017):

Cardiovascular diseases are the number one cause of death globally: more people die annually from cardiovascular diseases than from any other cause. An estimated 17.7 million people died from cardiovascular diseases in 2015, representing 31% of all global deaths. (p. 1)
Both the American Heart Association and the Centers for Disease Control (2016), showed coronary artery and cardiovascular disease continue to be the leading causes of death nationwide and worldwide. In the United States, more than 600,000 adults die each year of heart disease (Bennett, Payne, & Simms, 2017, p. 3). Cardiovascular disease and heart disease (often used interchangeably) place a significant economic burden on society. According to the Mayo Clinic (2017):

Cardiovascular disease generally refers to conditions that involve narrowed or blocked blood vessels that can lead to a heart attack (myocardial infarction), chest pain (angina) or stroke. Other heart conditions, such as those that affect your heart's muscle, valves or rhythm, also are considered forms of heart disease. (p. 1)

However, many forms of heart disease can be individually prevented and treated by reducing risk factors with healthier lifestyle choices (Rebeck, 1997).

Risk Factors

What are risk factors? According to the University of California San Francisco (UCSF) Medical Center (2017), “Risk factors are conditions that increase your risk of developing a disease. Risk factors are either modifiable, meaning one can take measures to change them, or non-modifiable, which means they cannot be changed” (p. 1). The good news is that the effect of many risk factors can be changed (one cannot change the risk factor, only its effect). The effect of these modifiable risk factors can be reduced if, however, employees possess a high degree of self-efficacy regarding their ability to make healthy behavioral choices, effective lifestyle changes, with the challenges they will encounter at work (Schwarzer & Luszczynska, 2005). While many risk factors can be
controlled, treated or modified, some risk factors cannot be changed. The aging process, gender, family history, heredity, race, and ethnicity are non-modifiable risk factors. According to Rebeck (1997), cardiovascular diseases may be mitigated by attending to or avoiding risk factors such as:

….tobacco use and smoking, uncontrolled hypertension (high blood pressure), physical inactivity, high – low density lipoprotein (LDL), or "bad" cholesterol, and low - high density lipoprotein (HDL), or "good" cholesterol, unhealthy diet and obesity, uncontrolled stress and anger, uncontrolled diabetes, harmful use of alcohol consumption, inadequate sleep, and women using birth control pills/oral contraception, and women in the post-menopausal part of their life experience additional risk for coronary artery disease. (p. 22)

The Importance of Healthy Behavior and Workplace Performance

Balanced diet.

Today, eating a healthy balanced diet has become more of a challenge than ever in the workplace. A healthy diet will not only help individuals control their weight and lower their vulnerability to medical conditions such as high cholesterol, obesity, diabetes, and hypertension, it may also improve concentration, alertness, problem-solving skills, and self-efficacy at work (World Health Organization, 2008). People are not choosing foods for nutritious reasons.

According to the Centers for Disease Control and Prevention (2012), “approximately one-third” of American adults are obese and this number is climbing (p. 1). Increasing obesity rates lead to greater incidences of cardiovascular, cancer, autoimmune and inflammatory diseases – both acute and chronic – and result in
escalating costs in the workplace due to decreased productivity and absenteeism. However, the effects of poor nutrition extend far beyond obesity. Poor nutrition, often in the form of empty calories, does not provide the energy people need. The productivity and overall healthy behavioral well-being eventually may suffer as a result of poor nutritional intake (World Health Organization, 2008), and may well affect employees’ self-efficacy in the workplace.

Another way to understand the effect of poor nutrition is to examine how poor dietary intake affects an employee’s ability to produce in the workplace. Sovereign Health (2015) states, “Research has revealed that employees who consume an unhealthy diet are 66 percent more likely to experience a loss in productivity compared to those who regularly eat fresh fruits, vegetables, low-fat foods and whole grains” (p. 1). Changing dietary habits is a complex process, and dietary recommendations without consideration of the individual's preference, food tolerance, and culture, will probably not be successful in the long run. In fact, poor nutrition and consumption examined by South Australia Health (2012) might impair one’s daily health and contribute to stress, tiredness and capacity to work, plus lead to unhealthy conditions like:

- Being overweight or obese
- Tooth decay
- High blood pressure
- High cholesterol
- Heart disease and stroke
- Type-2 diabetes
- Osteoporosis
- Some cancers
- Depression
- Eating disorders. (p. 1)

Improving one’s nutritional intake may help correct these unhealthy conditions (World Health Organization, 2008). Perhaps highlighting frequency of intake and specific foods or classification of dietary sources may increase healthy eating. Self-efficacy has extended far beyond the psychological arena and has been demonstrated to affect modifiable risk factors like diet, cardiovascular exercise, and sleep, including chronic disease management, which may also lead to healthier food choices and possibly benefit one’s self-efficacy in the workplace (Holden, 1991). Another approach to balancing a healthy diet consistent with the Alliance for a Healthier Generation (2016) is planning ahead and bringing nutritional meals to work. These meals should include basic nutritious foods like fruits, vegetables, and minimal items with additional fat and sugar. Healthy eating and following a recommended wholesome diet are not only essential for maintaining one’s daily health but may also increase self-efficacy in one’s everyday life (Clark & Dodge, 1999).

Finally, eating well has many long-term workplace benefits. According to Sovereign Health (2015), these long-term benefits include:

- Increased energy
• Improved mood
• Decreased stress, anxiety, and depression
• Lower disease risk and fewer health problems, including heart disease, diabetes, arthritis, and some types of cancer
• Maintenance of healthy weight
• Enhanced longevity. (p. 1)

In fact, Faghri and Buden (2015) note while gradual nutritional adjustments are the key to long-lasting success, employees will probably notice even the slightest changes when it comes to improving self-efficacy at work.

**Regular physical activity and cardiovascular exercise.**

As many as a quarter of a million (250,000) deaths due to cardiovascular disease occurring in the United States each year (Myers, 2003, p. e2), are related to a lack of regular physical activity and cardiovascular exercise. This fourth leading modifiable risk factor causes an estimated 3.2 million deaths globally (World Health Organization, 2018, p. 1). The increasing development of technology and modernization of the world perhaps has reduced employees’ opportunity to implement physical activity and, instead, has fostered a sedentary lifestyle. In addition, this inactivity has increased risk factor potential for cardiovascular disease and a widening variety of other chronic diseases including diabetes, cancer, obesity, hypertension, bone and joint diseases, stress, depression, and anxiety (Warburton, Nicol, & Bredin, 2006).

The effect of an exercise program on any risk factor may generally be insignificant. The effect of continuous, moderate exercise on overall cardiovascular risk, when combined with other lifestyle modifications, can be rather significant.
Physical activity refers to any bodily movement generated by skeletal muscles that requires energy expenditure to meet the demands of daily living (Health Status, 2017). For instance, some cardiovascular endurance exercises include swimming, biking, climbing stairs, walking briskly, jogging, running, aerobic dancing, and playing certain sports like lacrosse, soccer, basketball, and hockey. Some physical activity exercise examples include other behaviors involving physical bodily movement such as playing, working, and performing household chores and errands.

A sedentary lifestyle, the default for many corporate American workers, does little to raise the employee’s fitness energy level, self-efficacy, or general sense of health and wellness. Regular physical activity and cardiovascular exercise elevate the mood and improve self-image, which may leave employees feeling more energized with a healthier behavioral outcome. These activities might relieve employee stress, anxiety, depression and anger, and enhance their self-efficacy and confidence (Warburton, Nicol, & Bredin, 2006). Physical activity and cardiovascular exercise can be likened to a medication with no altering side effects or contraindications. Many individuals, including sedentary deskbound inactive employees, have mentioned they feel better over time as physical activity becomes a regular part of their lives (Warburton et al., 2006).

Without regular physical activity and cardiovascular exercise, Bogdanis (2012) suggests that the body slowly loses its strength, stamina, endurance, and ability to function properly. According to Centers for Disease Control and Prevention (2016), exercise not only increases muscle strength, it increases the ability to do other physical activities that can benefit employees such as:

- Create a healthier workforce
• Increase employees’ productivity
• Increase morale
• Reduce direct costs associated with healthcare expenditures
• Reduce absenteeism. (p. 1)

Being physically active is vital to improving overall health, wellness, and self-efficacy in the workplace. The American Heart Association (2016) suggests at minimum 150 minutes per week or 30 minutes a day, 5 times a week. Even two or three segments of 10 to 15 minutes per day provide the employee adequate benefit. (p. 1).

Lastly, these positive effects of engaging in regular physical activity and cardiovascular exercise are not limited to simply shaping a healthier human body. Perhaps those in-shape employees may notice an increase in energy, higher self-efficacy, and a more positive stance and attitude on everyday life. According to Ammendolia, et al. (2016), these positive effects of exercising can spill over into the workplace by sharpening mental performance, improving time-management and assessment skills, which in turn can improve the employee’s ability to meet day-to-day personal goals and challenges.

**Adequate sleep.**

In today’s well-linked, technologically advanced society, people are often spending longer hours in the workplace, sometimes to the serious detriment of required sleep. Kuhnel, Bledow and Feuerhahn (2016) indicated inadequate sleep can have a severe impact on all areas of an employee’s life and a profound influence on self-efficacy at work. The average person spends nearly 4.5 hours each week doing additional work from home on top of a 9.5 hour average workday; Americans are working more and are
trying to cope with the resulting daytime sleepiness (National Sleep Foundation, 2008, p. 1). It is not surprising how work can have a significant impact on an employee’s health. The need to sleep is physically similar to the need to eat and drink. According to American Academy of Sleep Medicine (2017), healthy adults should get a minimum of seven hours of sleep per night, with a recommended range between seven to eight hours.

Lack of sleep and/or untreated sleep disorders can have serious consequences for employee productivity, safety, health and well-being, and quality of life. Franken, Kopp, Landolt and Luthi (2009) cited that the function of sleep is for each major internal system to revitalize and restore. An employee may be lethargic while working tired because of complete or partial sleep deficiency due to forfeiting sleep for other activities, or for an uncontrollable reason like insomnia, obstructive sleep apnea, or restless leg syndrome (National Heart, Lung and Blood Institute, 2017). Sleep deficiency may be a contributory factor related to acute health issues such as hypertension, obesity, diabetes, and possibly cardiovascular disease or cancer, if undiagnosed or untreated (Pressman & Orr, 1997). Despite this, Isaacson (2015) discovered, sleep needs tend to be ignored by organizations and American culture in general. Furthermore, inadequate sleep costs businesses directly through lost productivity, compromised physical and emotional health, impaired reasoning and awareness, increased accident rates and absences; and costs businesses indirectly through deprived behavioral factors such as low morale and efficacy, stress and anxiety, and even depression (American Academy of Sleep Medicine, 2017).

The impact of sleep loss is often unrecognized. The National Heart, Lung and Blood Institute (2017) determined “some people are not aware of the risks of sleep
deficiency. In fact, they may not even realize that they have sleep deficiency. Even with limited or poor-quality sleep, they may still think that they can function well” (p. 1). Although, even when not recognized, sleep deficiency may still have a major impact on how well employees and businesses can function.

According to the National Heart, Lung and Blood Institute (2017), people who are sleep deficient are less productive at work and school. They take longer to finish tasks, have a slower reaction time, and make more mistakes (Engle-Friedman et al., 2003). Some employees believe they are saving time and being more productive at work by not sleeping, but in fact they are impacting their productivity.

An interesting contradiction to the preceding research findings is that, according to Washington State University (2017), when deprived of sleep some individuals do respond better than others. In fact, scientists have identified a particular gene associated with being resilient to the effects of sleep deprivation and sleep loss.

It is, therefore, in the best interest of organizations to pay attention to their employees’ sleep, as sleep is often one of the first things to go when employees feel pressured for time (National Heart, Lung and Blood Institute, 2017). For instance, some view sleep as a bonus and believe that the benefits of limiting the hours they spend asleep outweigh the risks.

Over time, inadequate sleep also has a profound impact on employee mood and self-efficacy (Geiger-Brown, Trinkoff, & Rogers, 2011). Teamwork and communication play a big role in corporate environments and are vital to employee success. Anxiety, stress, moodiness, irritability, and a lack of focus associated with inadequate sleep can put a significant strain on key employee relationships (Drake, Roehrs, Richardson,
Walsh, & Roth, 2004). Sleep deprivation can take a major toll on employees’ cognitive abilities such as awareness, assessment skills, reaction time, and decision-making (National Heart, Lung and Blood Institute, 2017). According to Doyle (2003), diminished cognitive performance can have huge repercussions for employees, such as surgeons, critical care nurses, pilots, firefighters, and law enforcement officers whose jobs demand critical attention to detail. Sleep loss may impair the ability to make good judgments; when combined with poor attention, employee performance on the job could lead to a catastrophic event and disaster (Akerstedt et al., 2002). Researchers also report that “having trouble sleeping is as strong a predictor of falling grades as binge drinking or smoking marijuana” (Prichard & Hartmann, 2014, p. 1). Whether it is improving workplace self-efficacy or preventing a large-scale disaster, adequate sleep is clearly better for business and employee welfare.

It can be argued that it is in the best interest of an organization to value and encourage adequate sleep, and to educate employees about the importance and good practices of sleep. Prichard and Hartmann (2014) indicated, “Well-rested students perform better academically and are healthier physically and psychologically” (p. 1); this could also apply to employees. Currently, several for profit, non-profit, state and federal small to large organizations offer some type of health and wellness or employee assistance program designed to promote healthy behaviors that reduce health risks and actively prevent disease (Aldana, 2001). In general, these health promotion programs include interventions designed to improve employee morale and reduce behavioral risk factors like: increasing physical activity, fitness, cardiovascular exercise, and proper
nutritional intake while reducing stress, high blood pressure, cholesterol, excess body weight, and tobacco, alcohol, substance use.

Healthy workplaces recognize the need to look past the bottom line to the most vital business component, the employees. O’Donnell and Bensky (2011) stated:

We also have compelling evidence that intensive health promotion programs can reverse heart disease, delay the onset of diabetes, and reduce the impact of cancer, and that modestly intensive workplace health promotion programs can help people quit smoking; reduce dietary fat consumption, heavy drinking, blood pressure, and cholesterol; and increase seat belt use, physical activity, and health risk score. (p. 11).

However, few of these programs offer interventions to identify and treat employees with lack of sleep and/or untreated sleep disorders according to the National Academy of Sciences (2006). Perhaps, if they better understood the potential employee risk/benefit outcome, employers would consider implementing educational training on better hygiene practices for good sleep habits including sleep patterns in wellness assessments.

Sleep is a vital factor for the wellbeing of workers. According to Magnavita and Garbarino (2017), both employees and employers have a vested interest in maintaining and improving a high standard of worker welfare. Employers have instant benefits in terms of higher productivity, better product quality, and decreased conflict and absenteeism (Kecklund & Alexsson, 2016).

Another way to help reduce factors contributing to inadequate sleep is to create detailed action steps directed at key stakeholders that encourage healthy behaviors such
as regular exercise, smoking cessation, proper nutrition, socialization and work-life balance (Magnavita & Garbarino, 2017). Exercise during the day or early evening can relax the body. The National Sleep Foundation (2018) suggested avoiding or limiting ingestion of foods and beverages like caffeine, alcohol, or other substances including consumption of large quantities of food prior to sleeping in order to aid in a more restful sleep.

Some businesses have instituted opportunities for on-the-job napping, and in some settings, provide napping facilities (Anthony & Anthony, 2005). A napping facility would allow employees to take a solid 10 to 15-minute power nap to boost their focus and productivity during their scheduled breaks (Weir, 2016). The National Sleep Foundation (2008) indicated that approximately one third of employees reported that their job permitted napping during breaks, and 16% reported that their employer provided a place for napping. In some cases, according to Anthony and Anthony (2005), the napping benefits to a worker’s overall health is an idea consistent with many companies’ rising interest in employee wellness initiatives. (p. 212).

Quintiliani, Poulsen and Sorensen (2010) suggest that quality sleep is as important to an employee’s health and well-being as good nutrition and exercise in the workplace, and may possibly contribute to employee self-efficacy. It makes good sense for businesses to pay attention to employee sleep needs, because well-rested workers are likely to be happier, healthier, and more productive (Milner & Cote, 2009). Engaging in regular physical activity, cardiovascular exercise, and eating a nutritious diet, may help improve quality of sleep and, perhaps, increase self-efficacy in the workplace (Schwarzer & Fuchs, 1995; Schwarzer & Fuchs, 1996). Organizations should continually look into
the many ways of boosting healthy behaviors such as nutritional dietary intake, adequate physical and cardiovascular exercise, and ample sleep in their own employees.

While there were a few similarities between my study and the research studies I reviewed, including health behavior and/or self-efficacy sampling using either diet and/or physical activity, or either multiple or single modifiable risk factor sampling (The World Health Organization, 2009; Faghri, Simon, Huedo-Medina and Gorin, 2016; and Affendi et al., 2018), no other researcher has conducted a quantitative correlational study on my topic. Currently, I have not encountered sleep as either an independent or dependent variable pertaining to self-efficacy. In Chapter 3, I present the research design and method of the study.
Chapter 3: Research Design and Method

Ontology and Epistemology

I believe the world is made up of real scientific approaches, tangibly concrete and relatively absolute structures. In this study, I followed a positivistic epistemology paradigm format that seeks to “explain and predict what happens in the social world by searching for regularities and causal relationships between its constituent elements” (Burrell & Morgan, 1979, p. 4).

It is my view that individuals possess behaviors and free will (which enables them to make separate choices); however, I subscribe to the determinist viewpoint, and agree with Burrell and Morgan (1979), specifically in regards to employee self-efficacy and health behaviors, when they claim many employee activities are “determined by the situation or ‘environment’ in which [they] are located” (p. 6). I also believe, as Pérez (2008) stated that it is “possible for individuals to balance both voluntary and deterministic viewpoints” (p. 9).

I used nomothetic theory as my research methodology for the current study. Nomothetic theory emphasizes the importance of systematic protocols and quantitative techniques for the analysis of a quantitative correlational study (McLeod, 2015). Nomothetic theory focuses on gathering methodical data by obtaining objective knowledge through scientific methods. I utilized questionnaire forms to obtain the quantitative research data. Because of my organized data collection procedures, rigorous data analysis, and well-documented and supported findings, my research may reasonably be replicated.
Sample

I pursued a voluntary sample of \((N = 102)\) health care participants. This included men \((n = 14)\), women \((n = 87)\) and gender not indicated \((n = 1)\) all ranging from ages under 24 to 74 years. This modest sample size has provided sufficient data for the correlational analyses chosen. The sample participant population consisted of health personnel in the perioperative services department at Midwestern Hospital. I recruited these health care participants through a letter sent to their Midwestern Hospital employee email account.

Midwestern Hospital is known as an atypical sample mixture that includes all healthcare individuals with varying demographic backgrounds (please see Appendix 1.2: Modifiable Risk Factor Questionnaire Form A Demographic Section). According to Campbell (1984), an atypical mixed sample is “the resolution of a mixture of two or more populations [that] may be markedly influenced by one or a few atypical values” (p. 465). I selected this atypical sample of Midwestern Hospital employees because of my interest in exploring those in the health care field and their relationship between the modifiable risk factors of diet, cardiovascular exercise, and sleep and health care employees’ perceived self-efficacy at work. In addition, I learned through the literature review that no other researcher has completed a study of a workplace with all three of these modifiable risk factors and their relationship to employees’ perceived self-efficacy.

I also targeted this atypical sample due to my personal curiosities and experiences with health care issues, hoping to improve health behaviors with health care employees’ in the workplace. Employees deeply involved with their own health care experiences tend to have better long-term after-effects, and incur lower costs when dealing with
illnesses. Employees actively engaged in their health care miss less work and have healthier outcomes when they do get sick (James, 2013). And lastly, “some 40 percent of deaths are caused by behavior patterns that could be modified by preventive interventions like reducing modifiable risk factors…. social circumstances and environmental exposure that contribute substantially to preventable illness” (McGinnis, Williams-Russo, & Knickman, 2002, p. 78) today.

Midwestern Hospital is a part of the Midwestern Health System, a non-profit organization of integrated health care. The Midwestern Health System owns and operates 11 award winning community hospitals and 55 primary care clinics. Midwestern Health System is an award-winning non-profit health care system that provides exceptional, coordinated health care—from preventing illness and injury to caring for the most complex medical conditions. Through its network of hospitals, clinics, ambulatory care programs, and affiliated physicians, Midwestern Health System offers high-quality preventive, primary, specialty, acute, and home care services in a coordinated, cost-effective manner.

Although Midwestern Health System is headquartered in a large Midwestern city, the organization has numerous primary care and specialty clinics in multiple cities across the midwestern metropolitan area and states. It has a large network of almost 4,000 doctors and providers combined, and more than 32,000 employees committed to providing excellent care. As documented in an article (Midwestern Health Services, 2018), in January 2011, Midwestern Health System was listed as “Distinguished Hospital for Clinical Excellence, with ranking in the top 5% of hospitals in the area” (p. 1). In May 2017, Midwestern Health System announced a merger with another Midwestern
Health System serving the region. After the merger, Midwestern Health System had 39,500 employees, 3,250 physicians, and operated 14 hospitals, 62 clinics, home care and a medical transportation center (Midwestern Health Services, 2018, p. 1).

**Data Collection**

I used two research methods to gather data. First, the Modifiable Risk Factor Questionnaire Form A (Appendix 1.2) consisted of thirty questions on nutrition, cardiovascular exercise, sleep pattern, health behavior, and demographic questions. Participants responded to each of the self-rating thirty questions on a 5-point, Likert-type scale ranging from frequency (1) "never" to (5) "always"; importance (1) “not at all important” to (5) “very important”; and ease (1) “very difficult” to (5) “very easy.”

Second, the Self-Efficacy Questionnaire Form B (Appendix 1.3), also known as the General Self-Efficacy (GSE) Scale, was developed based on employee self-efficacy experiences at work and consisted of ten questions (Schwarzer & Jerusalem, 1995). I used this questionnaire because it was a tool designed to assess self-efficacy. The questionnaire’s primary aim was to predict coping with daily hassles as well as adapting to life after experiencing a stressful life event (Schwarzer, 1994). The construct of perceived self-efficacy reflects an optimistic self-belief in one’s ability to complete a task (Schwarzer, 1992).

Participants responded to each of the self-rating ten items on a 5-point Likert-type frequency scale ranging from (1) "never" to (5) "always." I calculated the total score by finding the sum of all items. For the GSE, the total score ranged between 10 and 50, with a higher score indicating greater self-efficacy.
I submitted both quantitative questionnaire forms to \( N = 226 \) peri-operative employees’ Midwestern Hospital email account with a (45%) response rate of the \( N = 102 \) participants. I utilized a Qualtrics Survey Mailer link initially sent to each Midwestern Hospital peri-operative participant by email account on the same date, at the same time. The participants indicated their consent to participate in the study by completing and submitting the questionnaire forms A and B electronically, powered by Qualtrics Survey Mailer. I monitored the participant questionnaire data, in the Qualtrics Survey Mailer platform, at regular intervals and reviewed for completeness. After the participants completed both quantitative questionnaire forms A and B electronically, I analyzed the results of the forty questions for all \( N = 102 \) participants. The findings did reflect the questionnaire content within each of the participant responses.

**Data Analysis**

This correlational study has aimed to identify the nature of the relationships among variables using the following tools of analysis: trends, meanings, bivariate, multinomial logistic regression, Spearman Rho Correlation, and Analysis of Variance (ANOVA). Bivariate analysis attempts to compare the two sets of data or to find a relationship between the two variables (Hair, Black, Babin, & Anderson, 2010). Multinomial logistic regression is used to predict a nominal dependent variable given one or more independent variables (Forbes, Evans, Hastings, & Peacock, 2010). Spearman Rho Correlation, another analysis procedure, is a “non-parametric test used to measure the strength of association between two variables, where the value \( r = 1 \) means a perfect positive correlation and the value \( r = -1 \) means a perfect negative correlation” (Weaver, Morales, Dunn, Godde, & Weaver, 2017, p. 445). I believe utilizing Spearman vs.
Pearson Correlation was the best choice since involving ordinal variables and a monotonic relationship is more accurate and less sensitive to Pearson strong outliers (Gliner & Morgan, 2000).

Finally, I used Analysis of Variance (ANOVA) as the last analysis to calculate the correlation. ANOVA “is a statistical method used to test differences between two or more means” (Weaver, Morales, Dunn, Godde, & Weaver, 2017, p. 247). The analysis involved the dependent variable, health care employees’ perceived self-efficacy at work, and the independent variables of diet, cardiovascular exercise, and sleep. This was hypothesized for all ($N = 102$) participants, noting either a positive, negative, or no relationship outcome.

I used the Statistical Package for Social Science (SPSS) Premium version 25 to assess the bivariate, multinomial logistic regression, Spearman Rho Correlation and ANOVA analysis. The correlational analysis focused on the relationship between independent and dependent variables. I chose these methods of analyses because I believe these were the best tools for measuring correlational statistical outcome results.

I also used descriptive statistics to evaluate the survey participants’ modifiable risk factors and perceived self-efficacy at work to address the research question:

**RQ1**: What is the relationship between the modifiable risk factors of diet, cardiovascular exercise, and sleep, and health care employees’ perceived self-efficacy at work?

Descriptive statistics are “brief descriptive coefficients that summarize a given data set, that represent the entire population or a sample of it, and [are] broken down into measures of central tendency and measures of variability, or spread” (Weaver, Morales,
Dunn, Godde, & Weaver, 2017, p. 48). In doing so I consider the ordinal Likert variables as approximately continuous.

After receiving all participant data, I calculated the correlational data results that best elicit quantifiable responses including:

- Means
- Standard deviations
- Descriptive statistics
- Bivariate
- Multinomial logistic regression analysis
- Spearman product moment correlation coefficients
- Correlation matrix
- ANOVA
- Normal P-P plot and box plot
- Correlated independent and dependent variables
- Determined findings and formulated predictions
- Self-reported for the questionnaires.

I presented the results in tables, graphs and statistical form. I maintained detailed questionnaire notes of the data collection, analysis procedures, and overall findings to substantiate the outcome results.

**Ethical Considerations**

The University of St. Thomas IRB committee approved this study. I fully acknowledged and understood the IRB research protocols and the research responsibilities as outlined by the University of St. Thomas IRB. I maintained the
highest ethical standards throughout the entire research study, per IRB guidelines and requirements. In addition, I gained permission from all participants to be included in my study, and I used pseudonyms for the participants.

I kept all participant questionnaire forms/records confidential and, to the extent permitted by the applicable laws and/or regulations, I did not make them publicly available. I stored the study findings on my computer in accordance with local data protection laws. If the results of the study are published, the participants’ identities will remain confidential. To preserve survey participant anonymity and confidentiality, I saved the survey settings such that IP addresses did not collect locations with the survey data. The University of St. Thomas IRB and/or any other individual of interest or study participant must give me the option of receiving an acknowledgment for its sponsorship of the study in all such publications or presentations.

In Chapter 4, I present the data analysis of the study participants followed by the study results.
Chapter 4: Data Analysis and Results

Introduction

The purpose of this study was to understand how nutritious dietary intake, sufficient cardiovascular exercise, and adequate sleep relate to health care employees’ perceived self-efficacy at work. I conducted a quantitative correlation research study using bivariate, multinomial logistic regression, Spearman correlation and ANOVA analysis. I analyzed health behaviors and used demographics of gender, ethnicity, origin, education, and age to determine any differences in self-efficacy.

Demographic Information

A total sample (N = 102) of men and women health personnel in the perioperative services department at Midwestern Hospital consented to be a part of my study and received the survey through their Midwestern Hospital employee email account. I conducted statistical analysis using all the completed survey responses, and created tables and graphs to summarize the data. I also noted the few participant survey questions missed as “not indicated.” Table 1 illustrates the demographic results; I calculated the percentages and summarized the data in greater detail.
Table 1
Percentages for Demographics (N = 102)

<table>
<thead>
<tr>
<th>Demographics</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>14</td>
<td>13.9</td>
</tr>
<tr>
<td>Female</td>
<td>87</td>
<td>86.1</td>
</tr>
<tr>
<td>Gender not indicated</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Ethnicity origin (or Race)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White / Caucasian</td>
<td>94</td>
<td>93.1</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Black or African American</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>Native American or American Indian</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Asian / Pacific Islander</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Ethnicity not indicated</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Highest level of education completed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school diploma/GED</td>
<td>4</td>
<td>3.9</td>
</tr>
<tr>
<td>Technical certificate</td>
<td>12</td>
<td>11.8</td>
</tr>
<tr>
<td>Associate degree</td>
<td>27</td>
<td>26.5</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>50</td>
<td>49.0</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>7</td>
<td>6.9</td>
</tr>
<tr>
<td>Professional degree</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Doctorate degree</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 24</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>25-34</td>
<td>20</td>
<td>19.6</td>
</tr>
<tr>
<td>35-44</td>
<td>31</td>
<td>30.4</td>
</tr>
<tr>
<td>45-54</td>
<td>25</td>
<td>24.5</td>
</tr>
<tr>
<td>55-64</td>
<td>22</td>
<td>21.6</td>
</tr>
<tr>
<td>65-74</td>
<td>3</td>
<td>2.9</td>
</tr>
<tr>
<td>75+</td>
<td>a</td>
<td>_</td>
</tr>
</tbody>
</table>

*No participants were found for the 75+ age group.

As Table 1 shows, a significant majority of respondents were White/Caucasian women with bachelor’s degrees, followed by associate degrees then those with technical
certificates: the age range was evenly distributed across the sample for four age categories between 25-64.

Modifiable Risk Factor Results

Nutrition.

Table 2 summarizes the descriptive analysis of nutrition results in terms of importance, ease and frequency. I calculated the means and standard deviations to describe the sample in greater detail.

Table 2

Means and Standard Deviations of Importance, Ease and Frequency: Nutrition Results

<table>
<thead>
<tr>
<th>Nutritional Intake</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How important is it for you to eat healthy at your workplace?</td>
<td>102</td>
<td>4.04</td>
<td>0.83</td>
</tr>
<tr>
<td>Ease:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How easy is it for you to get your 5 daily servings of fruits and vegetables as recommended by the USDA?</td>
<td>102</td>
<td>3.37</td>
<td>1.13</td>
</tr>
<tr>
<td>Frequency:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over the last month, how often would you say you ate healthy foods?</td>
<td>102</td>
<td>3.83</td>
<td>0.67</td>
</tr>
<tr>
<td>Nutrition experts recommend filling half your plate with fruits and vegetables at every meal and snacking occasion. How often do you meet this goal?</td>
<td>102</td>
<td>3.18</td>
<td>0.87</td>
</tr>
<tr>
<td>Compared to your own eating habits a month ago, how often are you eating healthy foods now with fruits and vegetables at every meal and snacking occasion?</td>
<td>101</td>
<td>3.38</td>
<td>0.84</td>
</tr>
<tr>
<td>In general, how often would you say people in your organization eat healthy foods such as fruits and vegetables?</td>
<td>102</td>
<td>3.51</td>
<td>0.64</td>
</tr>
</tbody>
</table>

Frequency of Nutrition Summary Scores

102 3.48 0.58
Table 2 the study participants reported on average, that it was “important” ($M = 4.04, SD = 0.83$) to eat healthy at work, but when asked whether they get five servings of fruits and vegetables ($M = 3.37, SD = 1.13$), participants indicated they only did so “sometimes” ($M = 3.48, SD = 0.58$).

**Cardiovascular exercise.**

Table 3 summarizes the descriptive analysis of cardiovascular exercise results in terms of hours, importance, ease and frequency: I calculated the means and standard deviations to describe the sample in greater detail.

**Table 3**

*Means and Standard Deviations of Hours, Importance, Ease and Frequency: Cardiovascular Exercise Results*

<table>
<thead>
<tr>
<th>Cardiovascular Exercise</th>
<th>$N$</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hours:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On average, how often do you engage in cardiovascular exercise each week?</td>
<td>101</td>
<td>2.40</td>
<td>1.01</td>
</tr>
<tr>
<td><strong>Importance:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How important is it for you to engage in cardiovascular exercise each week?</td>
<td>101</td>
<td>3.95</td>
<td>0.97</td>
</tr>
<tr>
<td><strong>Ease:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How easy is it for you to complete your strength training exercise twice a week, in addition to, doing other activities that increase your heart rate and breathing on several days as recommended by the health experts?</td>
<td>101</td>
<td>3.00</td>
<td>1.18</td>
</tr>
</tbody>
</table>
**Frequency:**

How often do you meet your cardiovascular exercise goal each week?  
Health experts say that you should do strength training exercise twice a week, in addition to, doing other activities that increase your heart rate and breathing on several days. How often do you meet this goal each week?  
How often do you engage in any physical activities or exercises such as running, calisthenics, swimming, biking, or walking, three or more times each week for exercise, other than your regular job?  
How often do you engage in physical activities or exercises to STRENGTHEN your muscles two or more times each week? Do NOT count aerobic activities like running, swimming, biking, or walking. Count activities using your own body weight like yoga, sit-ups, or push-ups, and those using weight machines, free weights, or elastic bands.  
In general, how often do you engage in cardiovascular exercise and strengthen your muscles compared to others in your organization?

---

**Frequency of Cardiovascular Exercise Summary Scores**  
**Total Cardiovascular Exercise Summary Scores**

---

Table 3 the study participants reported on average, that it was “important” \(M = 3.95\) to engage in cardiovascular exercise each week, but when asked whether to complete strength training exercise twice a week, in addition to, doing other activities that increase the heart rate and breathing \(M = 3.00\), participants indicated they only did so “sometimes” \(M = 3.05\), averaging 1-3 hours of cardiovascular exercise each week \(M = 2.40\).
Sleep pattern.

Table 4 summarizes the descriptive analysis of sleep pattern indicating the results of hours, importance, ease and frequency: again, I calculated the means and standard deviations to describe the sample in greater detail.

Table 4

Means and Standard Deviations of Hours, Importance, Ease and Frequency: Sleep Pattern Results

<table>
<thead>
<tr>
<th>Sleep Pattern</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On average, how many hours of sleep do you usually get per a 24-hour period?</td>
<td>102</td>
<td>2.39</td>
<td>0.81</td>
</tr>
<tr>
<td>Importance:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How important is it for you to get quality sleep every night?</td>
<td>102</td>
<td>4.47</td>
<td>0.62</td>
</tr>
<tr>
<td>Ease:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How easy is it for you to get 6-9 hours of sleep per night as recommended by health experts?</td>
<td>101</td>
<td>3.36</td>
<td>1.18</td>
</tr>
<tr>
<td>Frequency:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How often do you get adequate sleep to function well throughout the day?</td>
<td>102</td>
<td>3.66</td>
<td>0.71</td>
</tr>
<tr>
<td>How often do you usually feel well rested each day after your normal night’s sleep?</td>
<td>102</td>
<td>3.48</td>
<td>0.76</td>
</tr>
<tr>
<td>In general, how often do you get the quality of sleep your body requires?</td>
<td>102</td>
<td>3.53</td>
<td>0.72</td>
</tr>
<tr>
<td>How often do you have difficulty sleeping because of any physical or emotional problems?</td>
<td>101</td>
<td>2.67</td>
<td>0.89</td>
</tr>
<tr>
<td>How often do you feel you lack sleep, take naps, or unintentionally fall asleep during the day?</td>
<td>102</td>
<td>2.56</td>
<td>0.99</td>
</tr>
<tr>
<td>In general, how often would you say people in your organization get adequate sleep every night?</td>
<td>102</td>
<td>3.19</td>
<td>0.57</td>
</tr>
</tbody>
</table>
In Table 4 the study participants reported on average, that it was “important” \((M = 4.47)\) to get quality sleep every night, but when asked whether you get 6-9 hours of sleep per night as recommended by health experts \((M = 3.36)\), participants indicated they only did so “sometimes” \((M = 3.18)\), averaging 6-7 hours of sleep per 24 hours \((M = 2.39)\).

In Tables 2, 3 and 4, the study participants reported on average, that it was “important” \((M = 3.95 - 4.47)\) to eat healthy at work, engage in cardiovascular exercise each week, and get quality sleep every night.

**Self-Efficacy Results**

Table 5 summarizes the descriptive analysis of perceived self-efficacy results; I calculated the means and standard deviations to describe the sample in greater detail. Participants responded to each of the self-rating, ten items on a 5-point, Likert-type frequency scale ranging from (1) "never" to (5) "always." I calculated the total score by finding the mean of all items. The General Self-Efficacy total score ranged between 10 and 50, with a higher score indicating greater self-efficacy.
Table 5

*Means and Standard Deviations: Self-Efficacy Results*

<table>
<thead>
<tr>
<th>Self-Efficacy in the Workplace</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>I can always manage to solve difficult problems if I try hard enough.</td>
<td>102</td>
<td>4.20</td>
<td>0.56</td>
</tr>
<tr>
<td>If someone opposes me, I can find the means and ways to get what I want.</td>
<td>100</td>
<td>3.45</td>
<td>0.73</td>
</tr>
<tr>
<td>It is easy for me to stick to my aims and accomplish my goals.</td>
<td>101</td>
<td>3.89</td>
<td>0.68</td>
</tr>
<tr>
<td>I am confident that I could deal efficiently with unexpected events.</td>
<td>101</td>
<td>4.08</td>
<td>0.58</td>
</tr>
<tr>
<td>Thanks to my resourcefulness, I know how to handle unforeseen situations.</td>
<td>101</td>
<td>4.17</td>
<td>0.58</td>
</tr>
<tr>
<td>I can solve most problems if I invest the necessary effort.</td>
<td>101</td>
<td>4.17</td>
<td>0.63</td>
</tr>
<tr>
<td>I can remain calm when facing difficulties because I can rely on my coping abilities.</td>
<td>101</td>
<td>4.12</td>
<td>0.68</td>
</tr>
<tr>
<td>When I am confronted with a problem, I can usually find several solutions.</td>
<td>101</td>
<td>4.06</td>
<td>0.69</td>
</tr>
<tr>
<td>If I am in trouble, I can usually think of a solution.</td>
<td>101</td>
<td>4.11</td>
<td>0.60</td>
</tr>
<tr>
<td>I can usually handle whatever comes my way.</td>
<td>101</td>
<td>4.17</td>
<td>0.57</td>
</tr>
</tbody>
</table>

*Total Self-Efficacy Workplace Scores*                                                                 | 102| 4.04| 0.48|

Table 5 on average, respondents’ self-efficacy rating was “Often” (*M* = 3.45 - 4.20) to solve difficult problems, get what I want, accomplish my goals, feel confident with unexpected events, handle unforeseen situations, solve most problems, remain calm when facing difficulties, find several solutions, think of a solution and handle whatever comes my way indicating greater self-efficacy.
Table 6 illustrates health care employees’ self-efficacy by age; I calculated the means and standard deviations to describe the sample in greater detail.

Table 6

Means and Standard Deviations of Health Care Employees’ Age: Self-Efficacy Results

<table>
<thead>
<tr>
<th>Employees’ Self-Efficacy by Age</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 24</td>
<td>1</td>
<td>4.00</td>
<td>.</td>
</tr>
<tr>
<td>25-34</td>
<td>20</td>
<td>3.97</td>
<td>0.49</td>
</tr>
<tr>
<td>35-44</td>
<td>31</td>
<td>4.18</td>
<td>0.43</td>
</tr>
<tr>
<td>45-54</td>
<td>25</td>
<td>4.06</td>
<td>0.56</td>
</tr>
<tr>
<td>55-64</td>
<td>22</td>
<td>3.89</td>
<td>0.46</td>
</tr>
<tr>
<td>65-74</td>
<td>3</td>
<td>3.96</td>
<td>0.05</td>
</tr>
<tr>
<td>75+</td>
<td>a</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Total</td>
<td>N=102</td>
<td>4.04</td>
<td>0.48</td>
</tr>
</tbody>
</table>

*No participants were found for the 75+ age group.

Table 6 the study participants reported on average, that it was “35 – 44 age group” ($M = 4.18$) to solve difficult problems, get what I want, accomplish my goals, feel confident with unexpected events, handle unforeseen situations, solve most problems, remain calm when facing difficulties, find several solutions, think of a solution and handle whatever comes my way indicating greater self-efficacy.

Table 7 illustrates health care employees’ self-efficacy means by age using an ANOVA analysis. The ANOVA analysis is used to compare the amount of variation between each age group, as well as the amount of variation within each age group. To compare self-efficacy among each age group, I analyzed the group means. I examined the ANOVA tests to determine whether there was statistically significant difference between the self-efficacy means among the varying age groups. A p-value of $p > .05$
indicates there is no statistically significant difference between group means, whereas a p-value of \( p < .05 \) indicates a statistically significant difference between group means (Gliner & Morgan, 2000).

Table 7

*One-Way Analysis of Means of Employees’ Self-Efficacy by Age Using ANOVA*

<table>
<thead>
<tr>
<th>Self-efficacy Mean</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>5</td>
<td>1.250</td>
<td>0.250</td>
<td>1.070</td>
<td>0.382</td>
</tr>
<tr>
<td>Within Groups</td>
<td>96</td>
<td>22.426</td>
<td>0.234</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>23.676</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7 indicated there was no significant difference in mean age category due to health care employee self-efficacy, \( [F(5,96) = 1.070, p = 0.382, \text{ns}] \).
Figure 1 illustrates a box plot graph showing the average health care employee self-efficacy means with each age group.

*Figure 1 Means Box Plot for Health Care Employee Self-Efficacy Age Group*

I analyzed the health care employees’ self-efficacy mean age levels and found no significance among each age group. I noted the same results for variance in Figure 1.
Modifiable Risk Factors and Self-Efficacy Results

Table 8 summarizes the modifiable risk factors and self-efficacy results of male and female participants; I calculated the means and standard deviations to describe the sample in greater detail.

Table 8

Means and Standard Deviations: Modifiable Risk Factors and Self-Efficacy Results

<table>
<thead>
<tr>
<th>Variables</th>
<th>Male (a)</th>
<th>Female (b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Modifiable Risk Factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutritional Intake</td>
<td>3.46</td>
<td>0.80</td>
</tr>
<tr>
<td>Cardiovascular Exercise</td>
<td>3.23</td>
<td>0.89</td>
</tr>
<tr>
<td>Sleep Patterns</td>
<td>3.09</td>
<td>1.01</td>
</tr>
<tr>
<td>Self-Efficacy in the Workplace</td>
<td>3.99</td>
<td>0.81</td>
</tr>
</tbody>
</table>

Note: $a n = 14. b n = 87$ total $N = 101.$

Table 8 the study participants reported on average, that it was relatively easy to frequently eat 5 servings of fruits and vegetables sometimes at work, engage in cardiovascular exercise each week, sometimes when asked, for 1-3 hours, and get quality sleep every night. Also sometimes when asked, averaging 6-7 hours of sleep per night. On average, the study participants further reported *often* to “solve difficult problems,” “get what I want,” “accomplish my goals,” “feel confident with unexpected events,” “handle unforeseen situations,” “solve most problems,” “remain calm when facing
difficulties,” “find several solutions,” “think of a solution and handle whatever comes my way at work”.

Table 9 illustrates a Spearman Correlation Matrix of the relationship between three independent variables – nutrition, cardiovascular exercise (CV exercise), and sleep, and the dependent variable self-efficacy.

Table 9

*Spearman Correlation Matrix Between Three Independent Variables and Self-Efficacy*

<table>
<thead>
<tr>
<th>Measure</th>
<th>V1</th>
<th>V2</th>
<th>V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1 Nutrition</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V2. CV Exercise</td>
<td>0.587**</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>V3. Sleep</td>
<td>0.379**</td>
<td>0.405**</td>
<td>-</td>
</tr>
<tr>
<td>V4. Self-efficacy</td>
<td>0.323**</td>
<td>0.235*</td>
<td>0.206</td>
</tr>
</tbody>
</table>

*Note. N =102.*

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).*

I used correlational analyses to examine the relationship between nutrition, cardiovascular exercise (CV exercise), and sleep, and self-efficacy on four psychometric measures. Results indicated a moderate correlation \( (r_s = .587, p = .001) \) between nutrition and cardiovascular exercise. Cardiovascular exercise and sleep followed at \( r_s = .405, p = .001 \). Self-efficacy and sleep had a weaker correlation at \( r_s = .206, p = .001 \) in Table 9. In general, the results suggest that employees who engage in adequate nutrition and cardiovascular exercise tend to have a healthier relationship. Self-efficacy also has a
significant, though not a strong, correlation to any of the three independent variables. Please note: I also analyzed the Pearson Correlation; however, the association was less significant and the correlation weaker.

Figure 2 illustrates a normal P-P (probability plot) of regression standardized graph assessing the dependent variable, self-efficacy mean (SEMean), and the cumulative probability (Cum Prob) of modifiable risk factors nutrition, cardiovascular exercise and sleep. I chose this method because it is more precise than a histogram, which cannot pick up subtle deviations, and does not suffer from too much or too little power, as do tests of normality (Sweet & Grace-Martin, 2012).

**Figure 2**

*Normal P-P Plot Self-Efficacy Mean and Modifiable Risk Factors*

Figure 2 illustrates the data points, approximately distributed in a straight line, indicate how normal the data correlation results are for self-efficacy mean and cumulative probability of modifiable risk factors nutrition, cardiovascular exercise and sleep.
Health Behavior Results

I assessed the health behaviors to better understand the relationship with how adequate sleep, sufficient cardiovascular exercise, and nutritious dietary intake relate to health care employees’ perceived self-efficacy at work. Table 10 illustrates the health behavior assessment of general health, special dietary necessaries and long-term medical illnesses/conditions suffered; I calculated the percentages described in greater detail.

Table 10
Percentages for Health Behavior (N = 102)

<table>
<thead>
<tr>
<th>Health Behavior Results</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe your general health.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1: Very poor</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2: Poor</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3: Fair</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>4. Good</td>
<td>43</td>
<td>42</td>
</tr>
<tr>
<td>5: Very good</td>
<td>38</td>
<td>37</td>
</tr>
<tr>
<td>Special dietary needs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>No</td>
<td>96</td>
<td>94</td>
</tr>
<tr>
<td>Suffer from long-term medical illnesses/conditions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>No</td>
<td>78</td>
<td>76</td>
</tr>
</tbody>
</table>

Over one-third (38%) of the participants (i.e. 24) expressed long-term illness/condition high blood pressure/hypertension, followed by stress and anxiety (8%). The other long-term illnesses/conditions reported were type I diabetes, polyglandular autoimmune syndrome type II, sarcoidosis, crohn’s, back pain, delayed circadian rhythm, insomnia, depression, overreactive bladder secondary to cervical cancer surgery, muscle
pain, adult asthma, temporomandibular disorder (TMJ), dysfunction-migraines, neck pain, hypothyroid, restless leg syndrome, rheumatoid arthritis, ankylosing spondylitis, older age, and pernicious anemia.

Twenty-four (24) of the study participants indicated “yes” in response to the question “do you suffer from long-term medical illnesses/conditions?” Those respondents were asked a follow-up question probing into which conditions caused the sickness absence. Half (50%) of the 24 participants reported one or more reasons. The reason for sickness absence most significantly reported was flu (33%) of the 12 participants, followed by lack of sleep/insomnia (17%). The other reasons for sickness absence were cold, stress, diabetes regulating medication, bronchitis, back injury, urinary tract infection (UTI) and symptoms without infection (pre/post-surgery), delayed circadian rhythm, asthma, migraine, intestinal disturbance, restless leg syndrome, carbo-dopa levadopa for restless legs, diabetes, and neuropathy.

Table 10 shows a significant majority of participants (79%) expressed good and very good health, followed by only (6%) who adhere to a special diet, while one-fourth of the \((n = 102)\) suffered from long-term medical illnesses/conditions.

Table 11 summarizes the health behavior assessment of general health; I calculated the mean and standard deviation and described the results in greater detail.
Table 11

*Mean and Standard Deviation: Health Behavior Results*

<table>
<thead>
<tr>
<th>Health Behavior</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe your general health</td>
<td>102</td>
<td>1.85</td>
<td>0.78</td>
</tr>
</tbody>
</table>

For the general health responses in Table 11, the study participants reported, on average, when “describing” general health in the workplace ($M = 1.85, SD = 0.78$) that they had good to very good health behavior. Seventy-eight of the participants ($n = 102$) also reported a mean work day absence of ($M = 1.13$), when asked due to personal illness/injury. Twenty-four participants did not respond to the question health behavior assessment of general health and work day absence.

Table 12, illustrates the health behavior at work of energy level, mood, concentration and stress level: I then analyzed the percentages and defined them in more detail.
Table 12

Percentages for Health Behavior at Work (N = 102)

<table>
<thead>
<tr>
<th>Health at Work</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energy Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1: Very poor</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2: Poor</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3: Fair</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>4: Good</td>
<td>53</td>
<td>52</td>
</tr>
<tr>
<td>5: Very good</td>
<td>36</td>
<td>35</td>
</tr>
<tr>
<td><strong>Mood</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1: Very poor</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2: Poor</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3: Fair</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>4: Good</td>
<td>57</td>
<td>56</td>
</tr>
<tr>
<td>5: Very good</td>
<td>36</td>
<td>35</td>
</tr>
<tr>
<td><strong>Concentration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1: Very poor</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2: Poor</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3: Fair</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>4: Good</td>
<td>56</td>
<td>55</td>
</tr>
<tr>
<td>5: Very good</td>
<td>36</td>
<td>35</td>
</tr>
<tr>
<td><strong>Stress Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1: Very poor</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2: Poor</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>3: Fair</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>4: Good</td>
<td>45</td>
<td>44</td>
</tr>
<tr>
<td>5: Very good</td>
<td>25</td>
<td>24</td>
</tr>
</tbody>
</table>

Table 12 on average, the study participants reported good to very good with respect to energy level, mood and concentration at work. However, when asked about stress level in the workplace, participants indicated a slight decline in healthy behavior.
Summary

The purpose of the correlation study was to explore the relationship between the modifiable risk factors of diet, cardiovascular exercise, sleep, and health care employees’ perceived self-efficacy at work. I invited the Midwestern Hospital perioperative employees (N = 102) to answer two questionnaire forms on health behaviors and self-efficacy regarding their current health status.

In each of the modifiable risk factor categories – nutrition, cardiovascular exercise and sleep pattern – the study participants reported on average, that it was “important” (M = 3.95 - 4.47) to eat healthy at work, engage in cardiovascular exercise each week, and get quality sleep every night. One-way ANOVA reported there was no significant difference in mean age category due to health care employee self-efficacy, [F(5,96) = 1.070, p = 0.382, ns]. When comparing men’s and women’s modifiable risk factors of nutritional intake, cardiovascular exercise and sleep patterns to self-efficacy in the workplace, I found similar results in means and standard deviations. Correlational analyses results indicated a moderate correlation (r = .587, p = .001) between nutrition and cardiovascular exercise. Cardiovascular exercise and sleep followed at r = .405, p = .001. Self-efficacy and sleep had a weaker correlation at r = .206, p = .001. In general, the results suggest that employees who engage in adequate nutrition and cardiovascular exercise tend to have a healthier relationship. Self-efficacy also has a significant, though not a strong, correlation to any of the three independent variables. Further, when looking at the average of the three measures on healthy behavior, responses were very positive (M=4.01). I present the study discussion, conclusion, limitations and recommendations in Chapter 5.
Chapter 5: Discussion, Conclusion, Limitations and Recommendations

Introduction

Understanding the relationship between modifiable risk factors such as healthy eating behaviors, routine physical activity, and adequate sleep on a daily basis and health care employees’ positive self-efficacy can play a significant role in developing future intervention strategies for employers and business organizations. These strategies can reduce employee absenteeism, boost individual and team morale, raise productivity, lower health care costs, and most importantly, improve modifiable health behaviors (O’Donnell & Bensky, 2011). Self-efficacy can, in turn, be a powerful construct when it comes to the prediction of modifiable risk factors, especially when one holds the belief that one has control over these factors (Beaulac, 2007).

Discussion

This correlational research study, using two data collection methods (literature review and participant questionnaire forms), revealed potential associations between health care employee self-efficacy at work and the modifiable risk factors of diet, cardiovascular exercise, and sleep. While I found initial exploration of these possible relationships nonexistent in my review of present scholarly literature, the results of my study provided some evidence for the existence of moderate to modest associations between healthy behaviors and self-efficacy in the health care organization.

I computed a descriptive statistical analysis for the modifiable risk factor results of diet, cardiovascular exercise, and sleep. Participants responded to prompts to understand three modifiable risk factors in the questionnaire form by marking answers related to “importance,” “frequency,” “ease,” etc. For example, participants responded to
prompts to understand the “importance” of the risk factors, e.g. how important was it that they practiced good nutrition, engaged in cardiovascular exercises or got quality sleep every night. For “frequency,” participants responded to prompts, e.g. how often did they eat healthy foods, meet their cardiovascular exercise goal, or get adequate sleep. For “ease,” participants also responded to prompts, such as how easy was it that they got their daily servings of fruits and vegetables, completed their strength training and exercises, or got 6-9 hours of sleep per night.

My final study results focused on employees’ healthy behaviors. These results revealed a significant majority of participants (79%) expressed good and very good health, followed by only (6%) who adhered to a special diet. One-fourth of the respondents (n = 102) suffered from long-term medical illnesses or conditions. For the general health responses, the study participants reported, on average, when “describing” general health in the workplace (M = 1.85, SD = 0.78) that they had good to very good health behavior. Seventy-eight of the participants (n = 102) also reported a mean work day absence of (M = 1.13), when asked due to personal illness/injury. In addition, a significant majority of participants were evenly distributed for good and very good energy level, mood and concentration. The stress level was slightly lower than other indicators of health behavior. Lastly, when looking at the average of the three measures on healthy behavior, responses were very positive (M=4.01).

Participants gave higher ratings to the importance of eating healthy (M = 4.04, SD = 0.83) than the actual frequency and ease with which they did carry out good nutrition. The cardiovascular exercise participants expressed greater “importance” to engage in cardiovascular exercise weekly (M = 3.95) rather than “ease,” “frequency” or
“hour.” The participants’ answers showed similar standard deviation responses in physical exercise and strength training. The sleep pattern responses also expressed greater “importance” to getting quality sleep every night ($M = 4.47$) rather than “hour,” “ease,” or “frequency.” However, “frequency” responses showed a stronger standard deviation score ($SD = 0.40$). For all the modifiable risk factor categories combined, “importance” reported the highest mean ($M = 3.95 - 4.47$), and “ease” the highest standard deviation ($SD = 1.13 – 1.18$). On all measures, as would be expected, participants highly rated the importance of paying attention to modifiable risk factors/healthy behaviors. Yet, respondents indicated on all factors that they did not frequently carry them out in their day to day experience.

I analyzed the perceived health care employees’ self-efficacy scores using descriptive statistics. Employees responded to ten items on a 5-point frequency scale. Scores ranged between 10 and 50, with a higher score indicating greater self-efficacy. Employees demonstrated a higher self-efficacy score ($M = 3.45$ to $4.20$) with experiences in the workplace than other individuals coping with daily hassles and adapting to life after experiencing a stressful event. However, each condition produced a similar standard deviation score ($SD = 0.48 – 0.73$). The self-efficacy scores by age categories reported slightly similar scores; the 35–44 age group expressed a higher mean score ($M = 4.18$), and the 45-54 age group had a higher standard deviation response ($SD = 0.56$). In addition, utilizing one-way ANOVA and box plot analysis, I found there was no significant difference in mean age category due to health care employee self-efficacy, $[F(5,96) = 1.070, p = 0.382, ns]$. 
In addition, I analyzed the modifiable risk factors and self-efficacy results using descriptive statistical analysis. When comparing men’s and women’s responses, I noted similar results in modifiable risk factors of nutritional intake, cardiovascular exercise, and sleep patterns with employee self-efficacy in the workplace means and standard deviations. The Spearman correlation results demonstrated only a moderate correlation at \( r_s = .587, p = .001 \) between nutrition and cardiovascular exercise. Self-efficacy and nutrition respondents had a modest correlation at \( r_s = .323, p = .001 \), however, this was the strongest correlation between any of the risk factors and self-efficacy. Furthermore, the normal P-P plot of regression, approximately distributed in a straight line, indicated how normally distributed the data correlation results are for self-efficacy mean and cumulative probability of modifiable risk factors nutrition, cardiovascular exercise and sleep.

Surprisingly, these measures and analyses I utilized did not show a strong correlation effect of perceived self-efficacy in the workplace to be an important psychosocial construct that can be directly affected by healthy behavior, reduced modifiable risk factors, and related to disease prevention. My research findings indicated a modest correlation with nutrition having the greatest impact and adequate sleep having the least independent variable influence in predicting self-efficacy. These results suggest health care employees’ nutritious dietary intake, routine engagement in cardiovascular exercise, and adequate sleep are modestly associated with self-efficacy in the workplace. As a researcher, I can take some of these results, although they possess limitations, and see their value in the organizational system. In recent years, employers have begun to
adopt business models which feature health and wellness on-site facilities used to assist employees with their daily wellbeing.

I believe my study’s quantitative correlational findings are instrumental in identifying and illustrating a modest linkage between healthy behavior and perceived self-efficacy at work. The problem is that unhealthy behaviors are affecting individual employees by putting them at a higher level of risk. Unfortunately, certain individuals are more likely to be exposed to increased risk factors and can suffer the negative effects of lower self-efficacy associated with the presence of greater risk. I believe this study produced certain results that can help business organizations, companies, employers, consultants, researchers, and practitioners better understand the effects of making healthy choices; choices that can reduce risk factors and increase perceived self-efficacy, leading to success in the workplace.

What do these modifiable risk factors and self-efficacy results mean to employees, the health care field, research, organization development, and businesses when it comes to workers not exhibiting healthy behavior in a health care setting? In addition, I will discuss my results that most surprised me. And last, the results of this study support the idea that a lifestyle healthy behavioral change is necessary and highlight the importance of conducting future research on predictors of healthy behaviors as a necessary part of improving self-efficacy in the workplace.

First, I discovered that many employees do not exhibit healthy behavior in a health care setting. In fact, many health care employees do not practice what they preach. They tend to have multiple risks factors like high levels of stress, tobacco use, drinking
excessive amounts of alcohol, working excessively, engaging in unhealthy dietary patterns, and do not exercise or sleep according to recommendations. As Johnson and Lipscomb (2006), mentioned, in today’s chaotic world, most of us are spending additional time at work and have increasingly less time to focus on our health and well-being. In fact, many employees are trying to keep their head above water, pay monthly bills and meet daily needs as their stress level continues to escalate and burnout rates climb. Johnson and Lipscomb (2006) also mentioned, “There is increasing epidemiological evidence that indicates that long work hours are an important risk factor to a number of acute and chronic health outcomes” (p. 922).

It is, therefore, in the best interest of organizations and health care facilities to pay attention to their employees’ sleep, as sleep is often one of the first things to go when employees feel pressured for time (National Heart, Lung and Blood Institute, 2017). For example, some employees view sleep as a bonus and believe that the benefits of limiting the hours they spend asleep outweigh the risks. In the health care setting, some employees are making life-threatening and critical decisions daily that any mistake may and can cause a permanent life changing event or even death, if sleep is compromised leading to poor decision making.

Second, I discovered that employee unhealthy behaviors of poor dietary choices, sedentary lifestyles, and insufficient sleep all lead to another vastly growing modifiable risk factor – obesity. Yet, their self-efficacy scores remain high. The obesity epidemic rate continues to soar at an alarming rate and can be costly not only to the employee, but the organization. Obesity can result from a combination of contributing factors including
other modifiable risk factors, as well as, individual behavior and genetics. To reverse the obesity epidemic, individuals must change their unhealthy behaviors.

Self-efficacy can be a powerful construct when it comes to change and modifiable risk factor prediction, especially when employees feel rather self-efficacious. According to Schwarzer and Luszczynskaf (2005):

Self-efficacy influences the effort one puts forth to change risk behavior and the persistence to continue striving despite barriers and setbacks that may undermine motivation. Self-efficacy is directly related to health behavior, but it also affects health behaviors indirectly through its impact on goals. Self-efficacy influences the challenges that people take on as well as how high they set their goals. (p. 1)

Employees with high self-efficacy are able to resist sacrificing healthy behaviors while still reaching for their goals. For instance, female employees may want to climb the corporate ladder to stay the course and not give up on their careers. Employees with high self-efficacy believe they can accomplish their desires and aspirations (Bandura, 1997). For others, professional status and recognition is everything, until a health crisis warrants immediate action with implementing lifestyle health behaviors, or perhaps, death may occur.

Another discovery that most surprised me was the results did not show a stronger correlation between self-efficacy and the modifiable risk factors nutrition and cardiovascular exercise. I found only a modest correlation amongst the dependent and independent variables. I anticipated the perioperative hospital employees would have chosen a much healthier lifestyle than the study demonstrated. Though self-efficacy results were found to be higher, they were statistically non-significant and modest when
linked to dietary intake, cardiovascular exercise and adequate sleep. I believe this may explain why self-efficacious health care employees, who are critical thinkers making life-threatening decisions daily, do demonstrate high self-efficacy results when faced with priorities and are not fearful of taking risks (Bandura, Caprara, Bararanelli, Gerbino, & Pastorelli, 2003). However, typically speaking, self-efficacy is a major contributor to behavior change and the fact that my findings were less robust may be explained by the measure of modifiable risk factors, which focuses only “in the last month.”

I was not surprised by the discovery and meek correlation of sleep pattern to self-efficacy. Sleep problems, especially insomnia and deprivation noted in the study, are a common complaint among adults. As a consequence, work-related sleep disorders are very common and may have significant short-term and long-term effects on health and safety (Costa, Accattoli, Garbarino, Magnavita, & Roscelli, 2013). According to Doyle (2003), diminished cognitive performance can have huge repercussions for employees, such as surgeons, critical care nurses, and other health care employees whose jobs demand critical attention to detail.

Sleep is an essential factor for the health and wellbeing of employees and allows the body to heal. Perhaps offering a healthy sleep program or nap facility through a worksite wellness center may help reduce and even eliminate the medicalization of sleep, overcome the common obstacles of sleep deprivation and insomnia, and improve the relationship of getting adequate sleep to self-efficacy.

I also believe that employees who recognize the importance and engage in healthy behavior, will rate high on self-efficacy. I believe self-efficacy plays a significant role in changing lifestyle health behaviors if an individual is willing to take control, be
responsible and accountable for their daily actions. A personal sense of control facilitates a change of health behavior (Bandura, 1997). This change may include the employee stepping out of the norm, or finding a new norm or journey to engage and connect with by implementing new everyday life changes. In addition, self-efficacy beliefs are cognitions that determine whether health behavior change will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and failures (Schwarzer & Luszczynska, 2005, p. 1). I believe if an employee wants to accomplish a goal noteworthy enough, for example, job advancement or recognition, performance standout, weight loss, healthier diet or performance training for an upcoming marathon, they must plan their strategy, implement the process and follow-up including outcome response. This may include additional training and education, as required. I believe it is the individual employee’s motivation and perseverance with purpose and determination to change, that will help achieve success.

My last discovery is that the results of this study support increased healthy behavior. The idea that a lifestyle change is vastly warranted suggests either participation in a prevention program at work or engaging in a self-guided learning program aimed at healthy, daily eating behaviors, routine physical activity, and adequate sleep on a daily basis. This change could contribute and play a significant role in improving risk factors to self-efficacy in the workplace. Worksite wellness programs benefit from developing tailored interventions that consider employees’ health-related knowledge and self-efficacy regarding change behavior. In addition, employers and businesses must focus their efforts on supporting healthy organizations, hospitals, and health care facilities that
include healthy eating, promoting cardiovascular exercise in a variety of settings, and an on-site destress and nap resting facility.

Providing an early boost to self-efficacy is feasible and can yield positive results in a lifestyle intervention program that produces significant improvements in behavioral outcomes. Employing empowerment in an early phase may be a critical strategy to improve self-efficacy and lower unhealthy risk factors in health care employees vulnerable to many illnesses including cardiovascular disease and cancer, to name a few. However, change must first begin within the employee. The employee must be motivated, ready and willing to change. Self-efficacy has influence over people's ability to learn, their motivation (Lunenburg, 2011), and their work performance, as people will often attempt to learn and perform only those tasks for which they believe they will be successful (Bandura, 1997).

Finally, experts are seeing predictors of self-efficacy and healthy behaviors of interest more than ever, as the rapid aging population continues to climb (Bokovoy & Blair, 1994). To improve self-efficacy in the workplace and maintain lifestyle healthy behavior changes, it is critical to conduct future research and predictors as a necessary part of this advancement. Even successful completion of a task enhances self-efficacy, as observing the successful behavior of others can influence self-efficacy of belief and possibly future predictors (Bandura, 1986).

**Conclusion**

In conclusion, this complex study attempted to explore a connection between healthy behavioral outcomes of diet, cardiovascular exercise and sleep and health care
employees’ perceived self-efficacy. Based upon the findings of this study, the risk factors of nutrition and cardiovascular exercise were most moderately linked. Health care employees expressed the strongest self-efficacy correlation with the modifiable risk factor of diet.

Self-efficacy matters, but ultimately it does not dictate a health care employee’s healthy behavioral outcome. A high sense of efficacy has been repeatedly linked to indicators of overall employee effectiveness. Furthermore, employees with high self-efficacy believe they can accomplish their desires and aspirations (Bandura, 1997). Self-efficacious employees are ready to rise to new challenges, seize opportunities, deal with different situations, and take responsibility for their own healthy behaviors, both personal and professional (Toker, Gavish, & Biron, 2013). Having positive self-efficacy is the key to success, especially when it comes to advancing levels of productivity and efficiency in the workplace.

This study lends moderate to modest support to the idea of creating interventions based on self-efficacy theory in order to positively influence healthy behavior in health care employees. If health care employers and organizations want to improve the health behaviors of their employees, they may need to focus more on wellness and health promotion today.

Of note, no other researcher has conducted a quantitative correlational study on this subject. While there were similarities between my subject and the research studies I reviewed, including health behavior and self-efficacy sampling, no researcher has ever completed a study of all three modifiable risk factors of diet, cardiovascular exercise, and sleep, and their connection to self-efficacy.
Limitations

Quantitative correlational research focuses on revealing the phenomenon or fact without examining why the phenomenon occurs, which presents a limitation for this study. These limitations are often the result of gathering data for broad rather than specific purposes. To truly understand the impact and significance of self-efficacy and modifiable risk factors, it would prove beneficial to include a qualitative component in follow-up studies. Also, developing additional questionnaire forms for follow-up assessment focused on the same topic of interest would be most valuable. However, I argue that the quantitative results produced by my analysis demonstrated the magnitude of the problem and allowed for the testing of some possible explanations of the phenomenon.

Another limitation I noted was that the quantitative correlational design was narrow, of modest size ($N = 102$), and confined to a single not-for-profit organization based in the Midwestern United States. The correlational research study did suggest that there is an association between several variables. It cannot prove that one specific variable may cause a change in another variable.

Other limitations included: The follow up period was relatively short; the sample was geographically limited; and the questionnaire relied on self-reporting measures, and did not include objective vs. observational indicators of modifiable risk factors or perceived self-efficacy in workplace performance. Additionally, the sample was homogeneous with primarily White/Caucasian female participants. This limits the generalizability; the clear majority of respondents were White (93%) and female (81%).
The gender was unequal in control between female respondents (87%) and male respondents (14%). Study findings could be biased by not including some of the most problematic cases, so results likely represent a best-case scenario.

Finally, I looked at the number of variable factors present to determine any level of relationship, but did not explore each healthcare employee relationship within the correlation data. It is possible that a more nuanced analysis could reveal which of these variable factors or combination of them would have a greater effect on outcomes. Perhaps, even supporting researchers, scholars, practitioners, and policy makers in developing action plans for strategic healthy behavioral interventions in the workplace could be of benefit. As a final point, there is the potential underlying confounding variable that cannot simplify health care employees’ healthy behaviors such as unpredictability and random events.

**Recommendations for Further Research**

Further research could be implemented in various approaches. First, I believe it would be useful to replicate this study with other demographic populations to expand the gender, educational and ethnic diversity of the sample. One reason for expansion would be to determine if there are differences across the types of people who work in this field.

It might also be valuable to conduct the same study at different work sites comparing and contrasting industry settings. For example, hospitals and HMOs may have an employee base that is more inherently focused on health and wellness versus other employers (manufacturing or retail industries) whose workforce might be more ethnically diverse and more susceptible to engaging in what we perceive to be unhealthy
behaviors that are more acceptable in the employee’s country of origin. Findings from such research would assist employers in determining the possible need for targeted employee education and/or incentive programs. Perhaps such research would better inform employers on needed educational offerings and lend credence to offering incentives for membership at a gym and participation in a fitness program or incentives for smoking cessation, etc.

I also believe it is important to conduct further research in yet different working environments, such as not-for-profit versus for-profit organizations. Research needs to be conducted on how various organizational variables may influence the relationship between workplace healthy behaviors and employee perceived self-efficacy.

A future research study might look more deeply at the pressures the organizational culture in health care settings puts onto health care workers. Health care employees might overly inflate their self-efficacy in spite of their lack of sleep, for example, wearing it like a badge of honor and status. My findings contradict some of the anecdotal experiences I have working in the health care field where I see so much unhealthy behavior. It is conceivable that even at a hospital, employees in clinical departments might report their efficacy differently than employees in the business office or other administrative departments.

Research is also needed to understand health care employees who experience a high degree of self-efficacy at work. They may become deeply attached to the current practices of the company and therefore become resistant to change in implementing healthy behaviors.
I also recommend exploring self-efficacy and modifiable risk factor variables using different descriptive statistics and correlations, like the Pearson coefficient and regression analysis. Although a moderate to modest association between self-efficacy and healthy behaviors was established, it may be that other variables are moderating those relationships. For instance, it may not be that perceived self-efficacy is directly impacting modifiable risk factors. It is possible that perceived self-efficacy is affecting the quantity of people with whom a person is interacting and in turn influencing healthy behaviors. It would be useful for future research to explore some of the possible moderating variables between self-efficacy and improving modifiable risk factors for a more complete understanding of the possible influences on health care employees in the workplace, as well as predictors. Additionally, it may be of interest to create and test a different model for better understanding the complex interactions between perceived self-efficacy and modifiable risk factors of diet, cardiovascular exercise and sleep, or perhaps resilience. Any number of outcome risk factor variables such as stress and cortisol levels, blood pressure, or social habits of alcohol consumption or smoking and/or adjustment could be explored as well.

Potentially most important, I believe, future research is needed to create and test predictor interventions utilizing self-efficacy theory to help health care employees increase their sense of purpose in the workplace. Employees who undergo an increased sense of purpose by boosting certain self-efficacy beliefs may experience better performance and a more satisfying workplace experience. Future studies could also measure the cost-benefit ratio of employers providing education and/or workout facilities for their employees on healthier lifestyle.
Finally, researchers, organizational development practitioners, and health professionals can utilize these results to further explore psychosocial factors as predictors of these select modifiable risk factor behaviors with perceived self-efficacy at work. Future areas of research may include analyses of how to improve and maintain positive self-efficacy throughout the health care employees’ workplace, plus strategies to strengthen individual healthy behaviors. I believe these findings may then be used to inform companies, businesses, and organizations, as well as build in-house educational programs focused on enhancing employee health and wellness. Specifically, the current research along with future research can be used to create and tailor programs targeted at health care employees with a higher risk of unhealthy behaviors within the employees’ first months of employment with the organization. Overall, I believe the findings from this study provide moderate to modest insights into perceived self-efficacy predictors and lay the groundwork for future studies about psychosocial factors as predictors of healthy behavior and modifiable risk factor reduction. Therefore, this study contributes supporting evidence to previously conducted research, sheds new light on previous predictors, and adds new knowledge that will help guide further research.
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Appendices

Appendix 1.1: Informed Consent Form

Consent Form

A Healthy Behaviors Study

Exploring the Relationship Between the Modifiable Risk Factors of Diet, Cardiovascular Exercise, Sleep, and Health Care Employees’ Perceived Self-Efficacy at Work

The purpose of this study is to determine if there is a relationship between healthy behaviors and self-efficacy at work. These results could potentially help employees with organizational improvements between workplace healthy behaviors and perceived self-efficacy, which may directly influence the individual’s health. You were selected as a possible participant because you are an employee of a Midwestern Hospital.

This study is being conducted by researcher Kara Rebeck, a doctoral student at the University of St. Thomas in the Organization Development and Research program. This study was approved by the Institutional Review Board at the University of St. Thomas.

If you agree to participate, I will ask you to answer several survey questions focused on nutrition, cardiovascular exercise, sleep pattern, health needs, demographic and health care employee self-efficacy experiences at work. I will send you this survey electronically to your Midwestern Hospital email. This survey should only take five minutes to complete.

The study has no foreseen risk. The information collected from you will remain confidential and accessible for the research purposes only. Your information will be password protected and remain secure for the research purposes only, including potential publication of the research in an academic journal. Any published information will not include any names, titles or descriptions of the individual participants. There will be no harm to anyone’s reputation and/or any way an individual could be identified in the published article.

There are no direct benefits for participating in the study.

The records of the survey will be kept confidential. In any sort of report I publish I will not include information that will make it possible to identify you.

Your participation in this study is entirely voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of St. Thomas. If you decide to participate, you are free to withdraw at any time up to and until the questionnaire forms are submitted. You may withdraw by closing the questionnaire form on your computer. You are also free to skip any questions I ask.
You may ask any questions you have now and any time during or after the survey by contacting the researcher at kmrebeck@stthomas.edu or (952) 946-0944. You may also contact the University of St. Thomas Institutional Review Board at (651) 962-6035 or muen0526@stthomas.edu with any questions or concerns.

By clicking “Agree,” I consent to participate in the study. I am at least 18 years of age.

Please print this form to keep for your records.
Appendix 1.2: Modifiable Risk Factor Questionnaire Form A

Hello! Thank you for completing this questionnaire.

Nutrition: These questions refer to your dietary nutritional intake IN THE LAST MONTH.

1. How important is it for you to eat healthy at your workplace?
   1: Not at all important.
   2: Somewhat unimportant.
   3: Neither important nor unimportant.
   4: Important.
   5: Very important.

2. Over the last month, how often would you say you ate healthy foods?
   1: Never.
   2: Rarely.
   3: Sometimes.
   4: Often.
   5: Always.

3. How easy is it for you to get your 5 daily servings of fruits and vegetables as recommended by the USDA?
   1: Very difficult.
   2: Somewhat difficult.
   3: Neither easy nor difficult.
   4: Somewhat easy.
   5: Very easy.

4. Nutrition experts recommend filling half your plate with fruits and vegetables at every meal and snacking occasion. How often do you meet this goal?
   1: Never.
   2: Rarely.
   3: Sometimes.
   4: Often.
   5: Always.
5. Compared to your own eating habits a month ago, how often are you eating healthy foods now with fruits and vegetables at every meal and snacking occasion?
   1: Never.
   2: Rarely.
   3: Sometimes.
   4: Often.
   5: Always.

6. In general, how often would you say people in your organization eat healthy foods such as fruits and vegetables?
   1: Never.
   2: Rarely.
   3: Sometimes.
   4: Often.
   5: Always.

**Cardiovascular Exercise: These questions refer to your exercise and physical activities other than your regular job duties IN THE LAST MONTH.**

7. On average, how often do you engage in cardiovascular exercise each week?
   a. Less than one hour
   b. 1-3 hours
   c. 3-5 hours
   d. 5+ hours

8. How important is it for you to engage in cardiovascular exercise each week?
   1: Not at all important.
   2: Somewhat unimportant.
   3: Neither important nor unimportant.
   4: Important.
   5: Very important.

9. How often do you meet your cardiovascular exercise goal each week?
   1: Never.
   2: Rarely.
   3: Sometimes.
   4: Often.
   5: Always.
10. How easy is it for you to complete your strength training exercise twice a week, in addition to, doing other activities that increase your heart rate and breathing on several days as recommended by the health experts?

   1: Very difficult.
   2: Somewhat difficult.
   3: Neither easy nor difficult.
   4: Somewhat easy.
   5: Very easy.

11. Health experts say that you should do strength training exercise twice a week, in addition to, doing other activities that increase your heart rate and breathing on several days. How often do you meet this goal each week?

   1: Never.
   2: Rarely.
   3: Sometimes.
   4: Often.
   5: Always.

12. How often do you engage in any physical activities or exercises such as running, calisthenics, swimming, biking, or walking, three or more times each week for exercise, other than your regular job?

   1: Never.
   2: Rarely.
   3: Sometimes.
   4: Often.
   5: Always.

13. How often do you engage in physical activities or exercises to STRENGTHEN your muscles two or more times each week? Do NOT count aerobic activities like running, swimming, biking, or walking. Count activities using your own body weight like yoga, sit-ups, or push-ups, and those using weight machines, free weights, or elastic bands.

   1: Never.
   2: Rarely.
   3: Sometimes.
   4: Often.
   5: Always.
14. In general, how often do you engage in cardiovascular exercise and strengthen your muscles compared to others in your organization?

1: Never.
2: Rarely.
3: Sometimes.
4: Often.
5: Always.

Sleep Pattern: These questions are about your sleep pattern IN THE LAST MONTH.

15. On average, how many hours of sleep do you usually get per a 24-hour period?

a. Less than six hours
b. 6-7 hours
c. 7-8 hours
d. 9+ hours

16. How important is it for you to get quality sleep every night?

1: Not at all important.
2: Somewhat unimportant.
3: Neither important nor unimportant.
4: Important.
5: Very important.

17. How often do you get adequate sleep to function well throughout the day?

1: Never.
2: Rarely.
3: Sometimes.
4: Often.
5: Always.

18. How easy is it for you to get 6-9 hours of sleep per night as recommended by health experts?

1: Very difficult.
2: Somewhat difficult.
3: Neither easy nor difficult.
4: Somewhat easy.
5: Very easy.
19. How often do you usually feel well rested each day after your normal night’s sleep?
   1: Never.
   2: Rarely.
   3: Sometimes.
   4: Often.
   5: Always.

20. In general, how often do you get the quality of sleep your body requires?
   1: Never.
   2: Rarely.
   3: Sometimes.
   4: Often.
   5: Always.

21. How often do you have difficulty sleeping because of any physical or emotional problems?
   1: Never.
   2: Rarely.
   3: Sometimes.
   4: Often.
   5: Always.

22. How often do you feel you lack sleep, take naps, or unintentionally fall asleep during the day?
   1: Never.
   2: Rarely.
   3: Sometimes.
   4: Often.
   5: Always.

23. In general, how often would you say people in your organization get adequate sleep every night?
   1: Never.
   2: Rarely.
   3: Sometimes.
   4: Often.
   5: Always.
Health Needs: IN THE LAST MONTH.

24. How would you describe your general health?
   a. Very poor
   b. Poor
   c. Fair
   d. Good
   e. Very good

25. Roughly how many days have you been absent from work due to personal illness or injury?
   a. Do you have any special dietary needs?
      i. Yes    No
   b. Do you suffer from any long-term medical illnesses or conditions (e.g. diabetes, high blood pressure, or stress?)
      i. Yes    No
   c. If yes, what long-term illness do you suffer from?
      i. (Please state_______________________________________)
   d. If yes, which conditions are the reason for most of your sickness absence?
      i. (Please state_______________________________________)

26. How would you describe the following when you are at work? (Please check.)

<table>
<thead>
<tr>
<th></th>
<th>Very good</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
<th>Very Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Level</td>
<td></td>
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<tr>
<td>Mood</td>
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<tr>
<td>Concentration</td>
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<tr>
<td>Stress Level</td>
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</tbody>
</table>
Demographic Questions:

27. What is your gender?
   a. Male
   b. Female

28. Ethnicity origin (or Race): Please specify your ethnicity.
   a. White / Caucasian
   b. Hispanic or Latino
   c. Black or African American
   d. Native American or American Indian
   e. Asian / Pacific Islander
   f. Other________________________

29. Highest level of education completed?
   a. High school diploma/GED
   b. Technical certificate
   c. Associate degree
   d. Bachelor’s degree
   e. Master’s degree
   f. Professional degree
   g. Doctorate degree

30. What is your age?
   a. Under 24
   b. 25-34
   c. 35-44
   d. 45-54
   e. 55-64
   f. 65-74
   g. 75+

Thank you for your time; it is most appreciated!
Appendix 1.3: Self-Efficacy Questionnaire Form B

**General Self-Efficacy Scale (GSE)**

<table>
<thead>
<tr>
<th>Questions</th>
<th>1-Never</th>
<th>2-Rarely</th>
<th>3-Sometimes</th>
<th>4-Often</th>
<th>5-Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I can always manage to solve difficult problems if I try hard enough.</td>
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<td>2. If someone opposes me, I can find the means and ways to get what I want.</td>
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<td>3. It is easy for me to stick to my aims and accomplish my goals.</td>
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<td>4. I am confident that I could deal efficiently with unexpected events.</td>
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<td>5. Thanks to my resourcefulness, I know how to handle unforeseen situations.</td>
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<tr>
<td>6. I can solve most problems if I invest the necessary effort.</td>
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<td>7. I can remain calm when facing difficulties because I can rely on my coping abilities.</td>
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<td>8. When I am confronted with a problem, I can usually find several solutions.</td>
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<td>9. If I am in trouble, I can usually think of a solution.</td>
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<td>10. I can usually handle whatever comes my way.</td>
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</tbody>
</table>
A Healthy Behaviors Study

You are invited to participate in a healthy behavioral research study titled Exploring the Relationship Between the Modifiable Risk Factors of Diet, Cardiovascular Exercise, Sleep, and Health Care Employees’ Perceived Self-Efficacy at Work.

This quantitative study is being conducted by researcher Kara Rebeck from the University of St. Thomas, as part of her doctoral work.

- The purpose of this study is to determine if there is a relationship between healthy behaviors and self-efficacy at work.
- These results could potentially help employees with organizational improvements between workplace healthy behaviors and perceived self-efficacy, which may directly influence your own health.
- If you agree to participate, you will be asked to answer several survey questions focused on nutrition, cardiovascular exercise, sleep pattern, health needs, demographic and employee self-efficacy experiences at work.
- The survey will be sent electronically to your Midwestern Hospital email.
- Should only take five minutes to complete.

Your participation in this study and all information collected from you will remain confidential and accessible for the research purposes only. Your participation in this study is entirely voluntary. If you decide to participate, you are free to withdraw at any time up to and until the questionnaire forms are submitted. Thank you for your time and consideration.
Appendix 1.5: IRB Letter of Intent

January 18, 2018

Kara M. Rebeck
9319 Woodridge Circle
Savage, MN 55378

Dear Kara M. Rebeck:

I have reviewed your research proposal, entitled ‘Exploring the Relationship Between the Modifiable Risk Factors of Diet, Cardiovascular Exercise, Sleep, and Health Care Employees’ Perceived Self-Efficacy at Work’, and grant permission for you to recruit (n = 100) men and women employee participants. I understand each voluntary participant will receive survey by Questionnaire Form A and B electronically to their employee Midwestern Hospital email. The Modifiable Risk Factor Questionnaire Form A consists of thirty questions on nutrition, cardiovascular exercise, sleep pattern, health needs, and demographic questions. The Self-Efficacy Questionnaire Form B, also known as the General Self-Efficacy (GSE) Scale, participants will respond to each of the self-rating ten items. The Questionnaire Form A and B will take approximately five minutes to complete.

It is understood that your study aims at is there a relationship between healthy behaviors and self-efficacy at work. This quantitative study is part of your doctoral work at the University of St. Thomas. These results could potentially help employees with organizational improvements between workplace healthy behaviors and perceived self-efficacy, which may directly influence the individuals’ own health. By better understanding the correlational relationship between modifiable risk factors and self-efficacy at work, it may benefit the organizations in the future. It is further understood that:

- Participation is completely voluntary, and the participants may withdraw from the study at any time throughout the research process without consequence.
- This study has no risks to Midwestern Hospital employee participants.
- Confidentiality of data will be maintained by you, the researcher, including all information collected from Midwestern Hospital and accessible for your research purposes only. Your information will be password protected. If the results of the study are published in an academic journal, the participant’s identity will remain confidential. There will be no harm to anyone’s reputation and/or any way an individual could be identified in your published article. The University of St. Thomas IRB and/or any other individual of interest or study participant must give the researcher the option of receiving an acknowledgment for its sponsorship of the study in all such publications or presentations. Three years after the
completion of this research study all personally identifying information will be destroyed.

- The study will begin on approximately Monday, February 12, 2018, or earlier, through Wednesday, February 28, 2018.

Sincerely,

*Official Signature*

*Name of Signer*

*Title of Signer*