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RELATIONSHIP BETWEEN SELF-CARE AGENCY, SELF-CARE PRACTICES, AND
BODY MASS INDEX AMONG NURSING PROFESSIONALS

BY

TAKARA SCHOMBERG, BSN, RN

A thesis submitted in partial fulfillment of the requirements for the degree

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South Dakota State University

2016

RELATIONSHIP BETWEEN SELF-CARE AGENCY, SELF-CARE PRACTICES, AND
BODY MASS INDEX AMONG NURSING PROFESSIONALS

This thesis is approved as a creditable and independent investigation by a candidate for the Master of Science in Nursing degree and is acceptable for meeting the thesis requirements for this degree. Acceptance of this does not imply that the conclusions reached by the candidates are necessarily the conclusions of the major department.

Linda Burdette, PhD, RN
Thesis Advisor

Date

Mary E. Minton, PhD, RN, CNS, CHPN
Associate Dean Graduate Nursing

Date

~~Dean~~, Graduate School

Date

This paper is dedicated to the friends and family who have helped to watch my daughter, my co-workers who went above and beyond to accommodate my crazy schedule, and my family. I want to make special mention of my incredible husband, John, and daughter, Keziah. They have made such sacrifices but have been a source of unwavering love and support.

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ABBREVIATIONS

BMI	body mass index
BON	Board of Nursing
BPA	bisphenol A
DSCAI-90	Denyes Self-Care Agency Instrument
DSCPI-90	Denyes Self-Care Practices Instrument
NHS	Nurses' Health Study
NHSII	Nurses' Health Study II
RN	Registered Nurse
SCA	self-care agency
SCP	self-care practices
SD	Standard Deviation
US	United States

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ABSTRACT

RELATIONSHIP BETWEEN SELF-CARE AGENCY, SELF-CARE PRACTICES, AND
BODY MASS INDEX AMONG NURSING PROFESSIONALS

TAKARA SCHOMBERG, BSN, RN

2016

Purpose: The purpose of this study is to investigate the relationship between self-care agency (SCA), self-care practices (SCP), and Body Mass Index (BMI) among Registered Nurses (RNs) living in an urban South Dakota county. These specific constructs and their relationships have not been researched among nursing professionals.

Methods: This study used a non-experimental, predictive correlational approach based on Orem's Self-Care Deficit Theory to quantify the relationship between self-care agency and self-care practices and subsequently body mass index (BMI) among nursing professionals. A tracked but anonymous online survey was sent by email via QuestionPro to 210 nursing professionals selected using systematic random sampling from a population of 3900 RNs in an urban South Dakota county. The online survey included questions about demographics, lifestyle, professional background, and biometric measurements (height and weight) as well as the Denyes Self-Care Agency Instrument (DSCAI-90) and Denyes Self-Care Practices Instrument (DSCPI-90).

Results: The sample population consisted of 31 RNs who responded to the email invitation and voluntarily enrolled in the study. Sample participants demonstrated self-care agency relating to knowledge and valuing health but reported a lack of support and an inability to give attention to self-care. The BMI distribution showed an obesity rate of 23%. The data demonstrated that SCA, as measured by the DSCAI-90, has a strong

correlation with SCP ($r = 0.838$, $p = 0.000$), as measured by the DSCPI-90. SCP had a moderate correlation with BMI ($r = -0.407$, $p = 0.025$).

Conclusions: The relationships between the study variables and laid out in Orem's Self-Care Deficit Theory were confirmed among the sample population of South Dakota RNs. However, the sample was small, limiting the generalizability of the study. Orem's Self-Care Theory can be visualized in the relationship of nursing professionals to weight management and thus can aide in the understanding of and intervention in health promotion. These results are just a start in this line of inquiry. Further research would be indicated for the potential development of interventions to promote improved weight management among nursing professionals.

Keywords: self-care, nurses, self-care agency, self-care practices, obesity, BMI

Chapter 1: Introduction

As of 2011, 68.5% of American adults were overweight or obese (Levi, Segal, St. Laurent, & Rayburn, 2014). During this time, a greater emphasis on obesity risk and recommendations for weight management have been incorporated into popular culture through reality television shows, social marketing, and community level health promotion interventions. However, the increased awareness and knowledge gained through these types of interventions has not demonstrated long-term impact (Walls, Peeters, Proietto, & McNeil, 2011). While the rate of increase appears to be slowing, the obesity rate remains elevated at an epidemic level (Levi et al., 2014; United Health Foundation, 2015). Few individuals are without barriers to self-care or risk factors for obesity. While obesity rates continue to be high in the United States (U.S.), it is not universally experienced. There is a gap in understanding related to why some individuals have been more successful than others in addressing these risk factors and barriers. Without this understanding, it is difficult to maximize health promotion interventions.

Because of their direct contact with patients, nurses are often called upon to lead interventions to address weight concerns including education and health counseling. For this reason, nurses are better educated regarding the risks factors for and effects of obesity. This also puts nurses in the position to serve as role models; however, incongruences between counseling given and personal health practices can diminish effectiveness in this role (Blake & Harrison, 2013; Zapka, Lemon, Magner, & Hale, 2009). Despite their education and awareness of health risks, the rate of overweight and obese nurses was 60% in Harvard's Nurses' Health Study (Trossman, 2013), not much less than that of the general population. The prevalence of obesity and overweight BMI

among nurses further demonstrates that knowledge alone is not sufficient to effect change in self-care practices as they relate to weight management.

Obesity research has typically focused on correlational studies related to the progression from risk factors to obesity to co-morbid diagnoses. The existing interventional studies address specific diets, exercise programs, medications or nutraceuticals, or surgical interventions. This type of research contributes to nursing and medical interventions for education and health promotion. However, these studies do not address the decision to pursue a particular intervention, adherence and commitment, or long-term engagement in an intervention. In this way, current literature does not account for what motivates an individual to utilize the knowledge or follow the recommendations that were given. The persistence of the obesity epidemic in the United States demonstrates a gap between knowledge and action as it relates to weight management self-care practices. An exploration of the factors that help or hinder the translation of knowledge into self-care practices for weight management is needed. An understanding of these factors could aid in the development of interventions that provide meaningful support for lifestyle changes and provide a new approach to abating the obesity epidemic. This study seeks to be a step in that line of research.

Background

Barriers to self-care and weight management experienced by nurses are similar to those experienced within the general population - shift work, busy schedules and competing demands for time, cost, availability of resources, unusual sleep patterns, and work-related and caregiver stress (Nahm, Warren, Zhu, An, & Brown, 2012; Zapka et al., 2009). For this reason, the self-care successes and failures observed among nursing

professionals can help to illustrate challenges and outcomes within the general population. Data from cohorts of nurses have been utilized in obesity research internationally due to higher than average survey response rates among nurses and the similarities between nurses and the general population. Such studies include longitudinal studies in the United States (Field, Manson, Taylor, Willett, & Colditz, 2004) and Japan (Lee et al., 2013), observational studies in Australia (Perry, Gallagher, & Duffield, 2015) and Canada (Smith, Fritschi, Reid, & Mustard, 2013), and as part of larger cohorts in Nigeria (Iwuala et al., 2015) and Taiwan (Chiou, Chiang, Huang, & Chien, 2014).

In the United States, the Nurses' Health Study (NHS) has been gathering data from nurses since 1976 and is now on its third cohort (Nurses' Health Study, n.d.). This data has been instrumental in obesity research, providing longitudinal and cross-sectional data for analysis, allowing for the observation of relationships between obesity and the incidence of symptoms or disease states (Alarjan, Hindawi, Judge, Aleyadh, & Bellar, 2015; Devore, Minassian, & Grodstein, 2013; Egbi, Rotifa, & Jumbo, 2015; Hu, Bhupathiraju, de Koning, & Hu, 2014; Kumar et al., 2013; Li, Han, & Qureshi, 2012; Pan, Sun, et al., 2012; Reed, Battistutta, Young, & Newman, 2014; Walter et al., 2015). Other nursing cohorts have been utilized to observe relationships between health practices, such as diet or sedentary lifestyle, and the incidence of obesity (Field et al., 2004; Pan et al., 2013; Phiri, Draper, Lambert, & Kolbe-Alexander, 2014; Qi et al., 2014; Qi, Li, et al., 2012; Zapka et al., 2009).

Nurses have also been the subject of studies examining relationships between job-related factors, such as working the night shift, and self-care practices, such as diet (Barrington, Beresford, Koepsell, Duncan, & Moudon, 2015; Buss, 2012; Griep et al.,

2014; Han, Trinkoff, Storr, & Geiger-Brown, 2011; Han et al., 2012; Kim et al., 2013; Marqueze, Lemos, Soares, Lorenzi-Filho, & Moreno, 2012; Min-Ju et al., 2013; Phiri et al., 2014; Ramin, Devore, et al., 2015). While these job-related factors are not unique to nurses, nursing cohorts are well-suited to this type of research study because of the ability to recruit, the known working environment, and nurses' willingness to participate in research for the benefit of healthcare and patients. The nursing profession also offers many job-related variables to investigate including shift work, rotating shifts, and length of shift among others.

More recent obesity research with nursing cohorts has looked into the genetic and chemical correlates of obesity, including bisphenol A (BPA) exposure and telomere damage (Hivert et al., 2011; Song et al., 2014; Stegger et al., 2013; Vaidya, Williams, & Forman, 2012; Yeung et al., 2011). This research is once again correlational in nature and does not provide guidance for specific interventions or health promotion strategies. There have been limited studies of this type including one system-level intervention, Nurses Living Fit (Speroni, Williams, Seibert, Gibbons, & Earley, 2013) and a few studies related to individual strategies (Malinauskiene, Leisyte, Romualdas, & Kirtiklyte, 2011; Perry et al., 2015; Stramiello, 2009). The body of research related to health promotion interventions and weight management among nurses is limited. Additionally, research related to the factors that impact engagement and adherence to self-care practices is limited. These areas present an important opportunity for nurse researchers. Better understanding the factors that influence engagement in self-care is foundational to health promotion and would allow nurses to capitalize on the findings of related interventional studies.

Purpose

The purpose of this study is to investigate the relationship between self-care agency (SCA), self-care practices (SCP), and Body Mass Index (BMI) among Registered Nurses (RNs) living in an urban South Dakota county. The study seeks to confirm the relationship between self-care agency and self-care practices and subsequently body mass index (BMI).

Self-care agency and its relationship with self-care practices and BMI has not been specifically studied among nursing professionals. Confirming the proposed relationship may provide guidance for the development of further studies and health promotion interventions for nurses by demonstrating the impact of self-efficacy and motivation on engagement in self-care and resultant health outcomes such as BMI. While this will not provide knowledge regarding specific barriers, it will provide an understanding of whether interventions targeted at self-care agency, as opposed to self-care practice, could have the potential to impact health outcomes, specifically BMI.

Research Question

What is the relationship between self-care agency, self-care practices, and body mass index among South Dakota RNs?

Goal

Results of this non-experimental, predictive correlational study are intended to be a beginning step in the line of inquiry regarding operationalizing self-care knowledge possessed by nursing professionals to improve engagement in self-care practices. While this study will not provide knowledge related to specific barriers or interventions, it intends to demonstrate the integral role of self-care agency in health promotion. In this

way, this study will assist in the consideration of health promotion variables and factors beyond those related to simple health education.

Information gained from this study may inspire further research related to self-care agency and self-care practices. There are several potential avenues for future research related to the findings of this study, including factors that promote or impede self-care agency among RNs. This line of inquiry related to self-care agency and self-care practices may provide information in the future that would be useful to nursing schools and employers in promoting self-care among nursing professionals, especially those related to weight management. In so doing, job productivity may be increased, burnout rates decreased, and effectiveness in health promotion enhanced.

Significance

There is a common adage that asserts that to properly care for others, nurses must first take care of themselves. Obesity research as it relates to nursing professionals support this idea. Because the nurse serves as health educator and role model in addition to caregiver, researcher, and advocate, obesity and overweight BMI impact not only the nurse but also his/her patients. An overweight or obese BMI has been found to impact nurses' job performance as caregivers (Gillen, 2014) and involvement in health behavior counseling (Blake & Harrison, 2013; Brown & Thompson, 2007; Esposito & Fitzpatrick, 2011). Interestingly, though, research has also demonstrated that nurses who are overweight or obese often view their BMI status as an asset, allowing them to better empathize and connect with their overweight patients (Aranda & McGreevy, 2014; Richards, 2012).

A lack of self-care practices among nursing staff contribute to excess weight and increased BMI, which in turn, contributes to numerous conditions - heart disease, stroke, cancer, hypertension, liver disease, kidney disease, Alzheimer's, dementia, and respiratory conditions – and contributes to approximately 200,000 deaths per year (United Health Foundation, 2015). Obesity and its co-morbidities result in greater direct health care costs, greater emergency room costs, and a greater number of sick days (Levi et al., 2014; United Health Foundation, 2015). This also means more missed time from work for doctor's appointments and health complications as well that impede the execution of essential nursing tasks. Obesity and its associated comorbidities could debilitate a significant portion of the nursing workforce in the face of an ongoing nursing shortage, putting a significant strain on an already limited staffing pool. The financial cost of obesity and its comorbidities to the nursing workforce is difficult to know, but nationally, an estimated \$190.2 billion, 21% of total medical spending, is spent on obesity-related issues every year (United Health Foundation, 2015).

The stressors and challenges posed by the work environment and its social norms have bearing on weight management and stress management alike. Weight management and stress management behaviors overlap, as do the work environment and cultural factors related to their management. Factors within the work environment are significant contributors to stress among nursing professionals and associated with depression (Gao et al., 2012b; Melnyk et al., 2013), decreased job satisfaction (Cranick, Miller, Allen, Ewell, & Whittington, 2015; Melnyk et al., 2013), anxiety (Gao et al., 2012a; Melnyk et al., 2013), and decreased beliefs regarding a healthy lifestyle (Melnyk et al., 2013). Among nurses, weight management behaviors such as eating regular meals and physical

activity are associated with decreased depression and anxiety and increased job satisfaction (Gao et al., 2012a; Gao et al., 2012b; Nahm et al., 2012). This means that an investigation into weight management behaviors also provides valuable information about stress management and the mitigation of nurse burnout.

In South Dakota, where this study takes place, the prevalence of obese and overweight BMIs is similar to the national rates. In 2015, 29.8% of adults in South Dakota were obese, and all counties within South Dakota had an obesity rate over 25% (America's Health Rankings, 2015; University of Wisconsin Population Health Institute, 2015). For this reason, the investigation into factors relating to BMI is relevant to the nursing population within this setting.

This study holds significance for the healthcare industry and the nursing profession. This study intends to demonstrate whether self-care agency might be a piece in the puzzle of health promotion and self-care. This information and the relationships observed in this study may provide improved understanding of factors that may impact engagement in self-care practices. Improved self-care and weight management would decrease the risk of chronic disease and burnout among nursing professionals, as well as assist them to better role model these behaviors. The information learned in this study and further research it may inspire could provide information that might translate to future interventions to improve weight management among nursing professionals. This study, then, is significant as it may lay a foundation for further research into self-care among nursing professionals and ways self-care might be encouraged and facilitated.

Chapter 2: Review of the Literature

This literature review was conducted to examine current literature related to self-care behaviors among nursing professionals. The following review is organized to reflect the relevant topics that emerged from the current literature. This includes weight management and health promotion on the systems level: public perceptions of nurses as role models, the relationship between weight management and professional burnout, and system-level barriers and interventions. The nurse as an individual is also explored including the nurse as a patient, as well as barriers and interventions specific to health promotion among nurses.

A search of the literature was performed using several databases - PubMed, Ovid, and EBSCOHost. The search of EBSCOHost was limited to databases with a focus on health-related research: CINAHL plus with full text, Alt HealthWatch, Health Source – Consumer Edition, Health Source: Nursing/Academic Edition, Consumer Health Complete, Science Reference Center, and EBSCO Megafire. A variety of search terms were utilized to produce a thorough review of the relevant literature. Search limits were set to include only studies that were: published in the past five years (2010-2015), in English, had adult study subjects, and were available to the researcher as a full-text article. Some distinctive works outside the date parameters that were identified as part of a previous review of literature using these same terms have been included in this literature review when relevant. The researcher reviewed the available articles to evaluate how well they fit with the topic of this study and thus their fitness for inclusion. Articles were excluded from this review if nurses were not a significant portion of the study population. Included articles also focused specifically on obesity and related health

promotion behaviors, excluding those that focused on disease specific health promotion or self-care behaviors.

An initial search using the terms “self-care and nursing” produced articles that primarily addressed educating patients. Subsequent search terms included “self-care in nursing”, “obesity in nurses”, “nurse BMI”, “self-care deficit and nurse”, “overweight obesity and nurses”, “nurses health study and obesity”, “self-care barriers and nurses”, “employee wellness and health care workers”. The researcher reviewed the resulting abstracts for inclusion. The goal of this literature search was to examine interventions and trends among nursing professionals as opposed to those implemented by nurses; so, studies researching nurse-led interventions in patient populations were excluded. Thus, the literature search was expanded to include the following search terms: “nurs* and self-care”, “weight management and nurs*”, “nurs* and healthy lifestyle”, “nurs* and health behaviors”, “health behavior and nurs*”. An additional search was completed for the terms “self-care agency and nursing” and “self-care agency and nurs*” but these did not yield relevant results to this literature review. A search for the use of this study’s tools and theoretical framework in nursing - “DSCAI-90 and nurs*”, “DSCPI-90 and nurs*”, and “Denyes and nurs* - resulted in the identification of studies that describe the instrument and norming, but no studies were identified in which these tools were used among nurses. The search of the literature was concluded when no new, relevant articles were found.

One hundred three articles were incorporated in this review of the literature. Two articles used in this review were systematic reviews. Editorial and anecdotal articles were found during the search of the literature. However, since those articles were not research

based, they were excluded from the formal review of the literature. It should be noted that the existence of the anecdotal and editorial articles demonstrates the growing interest in this topic among nursing professionals and administrators.

The purpose of this review is to examine current knowledge of self-care among nursing professionals as it pertains to weight management. This literature review will first present research related to the nurse as a health role model. It will then present the literature pertaining to promotion of weight related self-care practices both on the system level, as well as the individual level. The discussion will focus on both the barriers to and tested interventions for self-care on these levels. This literature review will then consider the relationship between weight management and burn-out. These areas of content will allow for the examination of what is known regarding weight related self-care among nurses and the gaps that exist in the current literature.

Nurses as Health Role Models

As obesity has become more prevalent in the U.S. and other developed countries, researchers have developed interest in the relationship between the role of nurse as health role model and self-care practices. Several research studies (Brown & Thompson, 2007; Esposito & Fitzpatrick, 2011; Zhu, Norman, & While, 2011) have examined how nurses' health beliefs and health practices are related to BMI and the effect these factors have on patient education regarding lifestyle choices. The focus of these studies reflects concerns within the nursing profession regarding the ability of overweight and obese nurses to effectively teach healthy behaviors (Speroni et al., 2012). Research has demonstrated that patient confidence wanes when patients encounter overweight nurses (Speroni et al., 2012). However, as this literature review will demonstrate, the relationship between the

nurse, his or her weight management, and role modeling for the patient is complex.

The expectation is that nurses are well-prepared for their role in the care of overweight and obese patients including the provision of weight management counseling. However, several factors can detrimentally impact the nurse's concept of self-efficacy. A lack of self-efficacy diminishes the nurse's willingness to provide counseling as well as her effectiveness in providing counseling. Among the factors that can diminish self-efficacy and willingness to provide counseling are attitudes toward obese people, role identity, and perceived deficits in preparation for weight management activities (Zhu, Norman, & While, 2013; Zhu, While, Norman, & Ye, 2015). In one systematic review, professional identity and self-efficacy, not weight status, were found to be closely tied to the ability of the nurse to effectively guide the care of obese and overweight individuals through assessment and referral (Zhu et al., 2011).

BMI does not directly impact engagement in obesity care and counseling, but it can do so indirectly by diminishing a nurse's self-efficacy regarding these behaviors. Normal weight nurses were found to be more likely to report being successful in helping patients lose weight and perceived themselves as being better equipped to provide meaningful interventions (Bleich, Bandara, Bennett, Cooper, & Gudzone, 2014; Hensel, 2011). Personal engagement in health behaviors, including maintaining a normal BMI, was also found to be related to a greater sense of professional adequacy and self-efficacy, which increased engagement in weight management counseling (Hensel, 2011; Zhu et al., 2011). A systematic review of studies related to obesity among African Americans compared nurses to collegiate educated lay people and found evidence to suggest that overweight and obese nurses within this specific population may avoid weight

management teaching (Johnson & Wesley, 2012). This may, in part, be related to research that suggests patients may be less inclined to follow weight management advice provided by an overweight or obese nurse (Johnson & Wesley, 2012). Research regarding self-efficacy, BMI, and weight management interventions continues to be limited, however. Only nine studies met inclusion criteria for the systematic review by Zhu et al. (2011), and limited additional resources were found for this literature review. Further research is needed to better clarify self-efficacy and the role of the nurse in health promotion among obese and overweight individuals.

Another aspect of role modeling that is important to consider is nurse perceptions of this role and their attitudes and biases regarding obesity. As discussed, attitudes about obese patients and biases can impede effective weight counseling. Blake and Harrison (2013) studied health behaviors among nursing students and their perception of the nurse as role model. In general, the sample population felt that nurses should serve as role models for health promotion activities and believed health behaviors of nurses may impact their ability to counsel patients. However, the beliefs did not translate to healthy lifestyles among participants in the study, with 24% overweight or obese, 47% physically inactive, and 73% not meeting recommended fruit and vegetable intakes (Blake & Harrison, 2013). So, belief in the value of role modeling does not necessarily translate to improved adherence to health behaviors.

Both patients and nurses perceive nurses to be role models of health behavior because of their position and background (Blake & Harrison, 2013; Speroni et al., 2012), even though obesity and other unhealthy behaviors are prevalent among nurses. Knowing that the nursing profession lends credibility to the actions of the individual nurse,

consideration should be given to how nurses approach weight management counseling and the attitudes and biases that underpin it. Weight bias is prevalent and has been found to be prevalent among students of health care disciplines including nursing (Swift, Hanlon, El-Redy, Puhl, & Glazebrook, 2013; Waller, Lampman, & Lupfer-Johnson, 2012). Only 1.4% of participants in a study of dietician, doctor, nurse, and nutritionist students conducted by Swift et al. (2013) were found to have “positive or neutral attitudes” toward obese people. Waller et al. (2012) found a strong bias against overweight individuals, especially women, among psychology and nursing students. These studies suggest that negative attitudes pervade nursing, as well as other health professions. A systematic review of the attitudes of health care professionals found that negative attitudes toward obese people persists, though improved slightly over the timeframe reviewed (1990-2007). Literature in this area is very limited, however. Budd, Mariotti, Graff, and Falkenstein (2011) identified only 15 studies in the 18-year time span reviewed, only two of which pertained to practicing nurses. Further, the above studies as well as those identified in Budd et al. (2011) utilized a variety of assessment tools and did not consistently measure demographic factors.

Even more limited is research pertaining to ways that attitudes toward obesity might be improved. Malloy, Thrane, Winston, Virani, and Kelly (2013) conducted an interventional study examining the ability to improve nursing students’ attitudes about obese patients using trigger films. They found that increasing understanding of care concerns, causality, and the presence of biases in healthcare as presented in the trigger films can help to improve attitudes toward obese patients. However, the assessment of improvement immediately after the intervention may have been overestimated due to

potential bias among participants. Students may have been tempted to answer as they believed they ought rather than to report their genuine feelings. Despite the risk of bias, a change from baseline persisted at Day 30 post-intervention, though not as marked (Malloy et al., 2013). This study demonstrates the fact that negative attitudes about obesity can be improved, which suggests that there is potential for improving therapeutic relationships between nurses and obese patients. Malloy et al. (2013) and Blake and Harrison (2013) specifically measured attitudes and biases that existed among students. Students carry their biases and attitudes forward into the workforce and the professional culture. Although it is possible that experience may produce a different mix of attitudes among more seasoned nurses.

Research regarding the impact of BMI on attitudes and therapeutic relationships has suggested that nurses in all BMI categories have anxieties about providing weight management counseling and building therapeutic relationships. Underweight or normal weight nurses worry that they may be perceived as lacking empathy or relatable experience, while overweight nurses may be perceived as being empathetic but poor role models (Brown & Thompson, 2007). For a therapeutic relationship to develop and meaningful counsel to take place, the nurse must manage their own feelings within the interaction. Some nurses feel hypocritical giving advice regarding exercise or diet that they do not practice themselves (Aranda & McGreevy, 2014). Some nurses attempt to manage the feelings of hypocrisy by adopting a professional persona while on duty, divorcing their personal and professional lives related to this topic. However, self-disclosure regarding personal experiences with weight management can build rapport and can aide the counseling process (Aranda & McGreevy, 2014; Brown & Thompson,

2007). The process of self-disclosure helps the nurse to step into the role of role model rather than merely an educator or counselor. It also provides the patient with insight about strategies and information from a more personal perspective. This would also help to enhance motivational interviewing and provide more personal and specific counseling, as opposed to the generic lifestyle counseling most often provided in primary care settings (Noordman, Koopmans, Korevaar, Van Der Weijden, & Van Dulmen, 2013).

A further challenge to the role model relationship between nurse and patient is the impact of nurses' beliefs about weight management behaviors on engagement in patient education regarding those interventions. Abundant research is not available on the topic; however, a positive relationship between beliefs and health behaviors as well as between behaviors and patient teaching has been observed (Esposito & Fitzpatrick, 2011). This means that nurses who believe in the effectiveness of a health behavior are more likely to engage in that behavior and more likely to teach patients about that behavior. Similarly, engagement in weight management and counseling is impacted by perceived knowledge of and importance attributed to lifestyle counseling. Studies in Sweden (Weinehall et al., 2014), Scotland (Presseau, Francis, Campbell, & Sniehotta, 2011), and Australia (Kable et al., 2015) found variability among nurses regarding knowledge about various lifestyle interventions, including physical activity and dietary changes, contributing to variability in perceived importance of interventions and conflicting goals. These studies further found that the variability in perceived importance was related to variable rates of engagement in lifestyle counseling with interventions such as physical activity taking precedence over dietary changes (Kable et al., 2015; Weinehall et al., 2014).

The public and nurses alike accept that nurses serve as role models of health

behaviors. However, successful navigation of this role requires the nurse to combine personal and professional behaviors. Personal beliefs, knowledge, health behaviors, and self-concept can help or hinder the therapeutic relationship and weight management counseling. Attitudes toward obesity and weight management and sensitivity about personal weight status can prevent the nurse from openly engaging in weight management counseling. Both normal weight and overweight nursing professionals can struggle with these personal factors. However, research in these areas continues to be limited primarily to cross-sectional and correlational studies.

The one interventional study included in this review (Molloy, Sabol, Silva, & Guimond, 2016) was limited to students and their beliefs regarding obese individuals and did not include the long term effects of intervention, impact on self-concept, or view of the nurse as role model. The evidence collected in this literature review demonstrated incongruence between the nurse as a professional and the nurse as a person. Research on the topic of the nurse as role model has the potential to improve health promotion among nurses through an improved understanding of self-concept and self-efficacy. This may then contribute to greater effectiveness as role models and educators.

Nurses and Self-Care Practices

System level barriers and interventions. Research regarding system level health promotion among nurses has received more attention than individual level health promotion. However, much of this research has been cross-sectional research that emphasized opportunities for intervention and the potential value of intervention. A systematic review of health promotion in the nursing workforce (Chan & Perry, 2012) found three interventional studies from 2000-2011 that met search criteria. However, the

review did find that health promotion interventions resulted in gains in fitness and reduced BMIs, suggesting that workplace interventions for nurses have great potential for impact (Chan & Perry, 2012).

It would be of benefit for employers to consider the needs specific to the nursing population in designing and implementing system-level interventions and workplace health promotion. For example, nurses have lower levels of participation in workplace health promotion lectures, talks, or clubs than other health care professions, while also having the lowest levels of participation in health behaviors including stress adaptation, eating fruits and vegetables, and engaging in physical activity (Chiou et al., 2014). BMI elevation is associated with a number of job characteristics present in healthcare settings, including working more hours, workplace harassment, and lack of job flexibility (Nelson et al., 2014). Further, a lack of flexibility in scheduling and a perceived lack of control over the schedule of tasks for the day was found to hinder physical activity (Nelson et al., 2014). The work place, then, has significant bearing on the health behaviors of nurses, providing several opportunities for intervention by employers and employee health programs.

Once in the workforce, shift work is commonly cited as a significant barrier to health behaviors in nursing and a contributor to obesity rates. Research supports the relationship between shift work and health behaviors. Rotating shifts and night shift work increase the risk of weight gain as well as a related risk of type 2 diabetes (Marqueze et al., 2012; Pan, Schernhammer, Sun, & Hu, 2011; Ramin, Devore, et al., 2015). Low physical activity and abnormal eating patterns are more prevalent among night shift workers (Wong, Wong, Wong, & Lee, 2010; Zhao, Bogossian, Song, & Turner, 2011),

resulting in an increased likelihood of elevated BMI of 15-30% (Zhao et al., 2011). Preliminary findings suggest that eating patterns and metabolic shifts follow shift work due to alterations of circadian rhythms (Yoshizaki et al., 2014). These alterations can return to normal after eight days of regular sleep (Yoshizaki et al., 2014). However, health is adversely affected each day that the circadian rhythm is altered, and work schedules may not allow for 8+ days of recovery between overnight shifts. Conclusive research has yet to be conducted regarding interventions to promote recovery and circadian rhythm stabilization.

Duration of shift work, or the number of years working rotating or overnight shifts, is correlated with increased BMI more than current work schedule (Griep et al., 2014; Min-Ju et al., 2013). Duration of shift work was also found to be related to the lack of physical activity, sleep problems, poor self-perception of health, and breakfast skipping (Min-Ju et al., 2013), which may also impact weight management. Knowing that shift work has both immediate and lingering effects on health behaviors, employers seeking to promote health within the nursing workforce must consider interventions and screening for nurses on all shifts. They should also consider a specific emphasis on addressing health concerns of those working rotating or overnight shifts. Failure to engage in self-care behaviors and elevations in BMI contribute to chronic disease, resulting in staff attrition related to disability and early retirement (Nahm et al., 2012). The challenge, then, is for administrators and managers to consider how the workplace might foster health behaviors and thus improve nurse retention.

Psychosocial variables including workplace stress and social norms as well as components of the work environment such as available food options and access to

exercise provide opportunities for system level intervention to promote health behaviors (Ferranti et al., 2013; Speroni et al., 2012; Zapka et al., 2009). Social norms impact health behaviors more than the stressful work environment itself. Social support influences whether health behaviors are utilized to cope with the stress of the work environment. For example, healthy eating is supported by social norms and social support (Ferranti et al., 2013; Zapka et al., 2009). Michael, Colditz, Coakley, and Kawachi (1999) found a dose-response relationship between number of friends and confidants and functioning. Because co-workers are part of a nurse's social network, the impact of social norms can thus significantly impact their engagement in health promotion.

The challenge for health systems, then, is to determine how to effectively impact the social milieu of the health units and the larger facility to support health behaviors. Traditional employee wellness approaches have included promotion of stair walking and incentives for weight loss (Zapka et al., 2009). Health fairs are also frequently used as an employee health intervention. A study of health fairs for hospital employees (Wynd, Cihlar, Graor, Imani, & McDougal, 2007) noted that more employees perceived the need for weight loss than were actually overweight. Weight loss was not noted over the three-year course of the study. In fact, BMI and weight increased over the course of the study (Wynd et al., 2007). While the annual health screenings and questionnaires did not demonstrate an impact on health behaviors or outcomes, the study authors noted that the screenings did provide information that nurse specialists and employee health could use to develop further interventions (Wynd et al., 2007). Further interventions might include increasing accessibility of healthy food options, creating staffing structures that accommodate a more regular eating schedule (Nahm et al., 2012), facilitating physical

activity at the workplace, and supporting healthy communication to promote stress management (Nahm et al., 2012).

A unique nurse-led intervention for health promotion among nurses - The Nurses Living Fit intervention – demonstrated that targeted interventions for nursing professionals can result in weight loss and engagement in health behaviors (Speroni et al., 2012). This 12-week intervention involved the use of monthly yoga sessions, weekly exercise sessions, monthly nutritionist sessions, journaling, and the use of a pedometer and water bottle(Speroni et al., 2012). Participants in the study engaged in health behaviors and noted significant weight loss. However, the study had a few limitations including the short duration of the intervention and potential self-selection bias. Participants were able to select the control or intervention group and a higher mean BMI was noted in the intervention group. It is very possible that individuals with more weight to lose were more motivated to lose weight and thus more inclined to select the intervention group, creating a bias. The Nurses Living Fit intervention also had limited impact related to scheduling flexibility and related participant access to the provided sessions. While a promising study and intervention, it leaves much room for further research regarding system level interventions and programs for health promotion among nursing professionals.

A common misperception is that nurses learn to participate in health behaviors during their education and training. However, a study of self-care behaviors in undergraduate nurses (Ashcraft & Gatto, 2015) found that self-care behaviors decreased among students as a whole as they progressed through the nursing curriculum. Students are taught the value of health behaviors and report feeling a sense of responsibility for

health and serving as a health role model (Ashcraft & Gatto, 2015; Blake & Harrison, 2013; Hosseini, Ashktorab, Taghdisi, Vardanjani, & Rafiei, 2015). However, as students progressed through their nursing education, their sense of responsibility increased while their self-care behaviors decreased (Ashcraft & Gatto, 2015; Hosseini et al., 2015). While self-care is a foundational component of professional identity and thus integral to the provision of effective nursing care (Hensel, 2011), nurses are not entering the workforce with the skills and preparation necessary to manage both their professional career and self-care health behaviors. On a system-level, then, interventions to promote health behavior among nursing professionals should begin within the university setting among nursing students.

Individual level barriers and health promotion. Evidence is limited regarding health promotion among nurses, especially on the individual level. In this review, few studies were identified that evaluated interventions among nurses. Those that were identified were either on the system level (Speroni et al., 2012), correlational (Zitkus, 2011), or related to improving self-efficacy in self-care as opposed to health measures (Singleton, Bienemy, Hutchinson, Dellinger, & Rami, 2011). There is a noted lack of studies to test even nurse-led interventions, found to be effective in the general population, with nurses as participants (Chan & Perry, 2012).

There is, however, a significant body of research utilizing nurses to examine barriers to weight management, most notably correlational and cross-sectional reviews of data collected as part of the Nurses' Health Study (NHS), NHS II, and the NHS III. Works derived from the NHS I, II, and III included examinations of relationships between obesity and conditions or disease states such as: rheumatoid arthritis (Lu et al.,

2014), psoriasis and psoriatic arthritis (Kumar et al., 2013; Li et al., 2012), hearing loss (Curhan, Eavey, Wang, Stampfer, & Curhan, 2013), fertility (Shah, Correia, Harris, & Missmer, 2013), endometriosis (Shah, Correia, Vitonis, & Missmer, 2013), colorectal cancer (Kuchiba et al., 2012), and skin cancer (Pothiawala, Qureshi, Li, & Han, 2012).

Additional studies analyzed the relationship between psychosocial issues with obesity among NHS study participants. Pan, Sun, et al. (2012) observed a bidirectional relationship between depression and obesity, with a moderately increased risk of depression in women who were obese at baseline and an increased risk of obesity in women with depression at baseline. Similarly, PTSD symptoms increase the risk of overweight and obese status (Kubzansky et al., 2014). Food addiction was also found to relate to increased PTSD symptoms (Mason et al., 2014), which may contribute to its relationship with obesity. Timing of trauma experiences was also a factor in the development of obesity. Trauma experienced early in life, such as childhood abuse or trauma, had a strong association with food addiction (Mason, Flint, Field, Austin, & Rich-Edwards, 2013; Mason et al., 2014; Roberts et al., 2014). Women in the NHSII cohort who had experienced childhood trauma not only had a higher incidence of obesity, but also an increased incidence of overweight and obese BMI status (Roberts et al., 2014).

Genetic markers and chemical exposures have also been explored as antecedents and mediators to obesity. The NHS cohorts have been utilized to identify the genetic variants associated with obesity, such as the neuropeptide Y gene (Yeung et al., 2011). Genetic studies have found a weak correlation between obesity and phobic anxiety, suggesting a possible common genetic predisposition (Walter et al., 2015). The NFKB1-

94ins/delATTG promoter polymorphism, however, was found to not mediate the risk of acute coronary syndrome in obese individuals (Stegger et al., 2013). Similar research found the genetic markers for obesity and type 2 diabetes did not have a strong causal relationship with shortened telomere lengths (Du et al., 2013). Meaning that the predisposition for these alterations of metabolism were not causally linked to the shortened telomeres that have been associated with aging and impaired regeneration.

Chemical markers identified through research with these cohorts include: elevated urinary 6-sulfatoxymelatonin levels in the presence of adult obesity (Ramin, Massa, et al., 2015), higher adiponectin in the presence of weight gain due to its production within healthy adipose tissue (Hivert et al., 2011), and a direct between hydroxyvitamin D and adiponectin with an inverse relationship to cardiac risk independent of BMI (Vaidya et al., 2012). An inverse relationship between urinary estrogen metabolites and BMI elevations has been observed (Xie et al., 2012), as well as a positive relationship between urinary bisphenol A and phthalate metabolite concentrations and BMI elevations (Song et al., 2014). However, each of these studies exists in isolation and a greater depth and breadth of research will be needed to understand these relationships.

The data from the NHS cohorts has been utilized to examine the longitudinal impact of obesity. These studies have demonstrated a variety of significant relationships between obesity and various morbidities and mortalities. A positive relationship was observed between obesity and rates of type 2 diabetes (Hu et al., 2014), as well as risk of sudden cardiac death (Chiuve et al., 2011). Obesity was also noted among risk factors and mediating factors for the risk of developing foot and ankle disorders (Reed et al., 2014), urinary incontinence (Devore et al., 2013), and renal cancer among individuals

with type 2 diabetes (Joh, Willett, & Cho, 2011). BMI also mediated the relationship between shift work and type 2 diabetes (Pan et al., 2011). In an NHS based study of risk of all-cause mortality, an association was noted between increased BMI or obesity and increased risk of mortality with or without other mediating risk factors (Baer et al., 2011; Tobias et al., 2014).

A 20 year longitudinal study of health care professionals found that nurses had an increase in excessive weight and alcohol consumption over the course of the study (Jardim et al., 2014). This study, however, did not address the behaviors that led to this prevalence of these health measures. Career factors such as working full-time and working in aged care as well as individual factors such as advanced age, male gender, and primiparous or menopausal status among women are related to obesity among nursing professionals (Bogossian et al., 2012). Additional research has found a relationship between age and increased BMI, with overweight status peaking between ages 30 and 39 and obesity rates peaking over age 50 (Goon et al., 2013). However, these results were correlational, and no conclusions could be drawn regarding risk factors or interventions.

Other observational studies included nursing cohorts in examining the relationship between health behaviors and obesity including plain water intake (Pan, Malik, et al., 2012) and engagement in physical activity (Biernat, Poznanska, & Gajewski, 2012). Plain water intake did not decrease risk of type 2 diabetes when confounding variables such as BMI were taken into account (Pan, Malik, et al., 2012). However, this study included BMI as a confounding or moderating variable, not an outcome; so, a relationship between plain water intake and obesity cannot be described

based on this study. Similarly, Biernat et al. (2012) demonstrate low physical activity among health care workers and an overweight BMI, especially among men. However, this is a correlational study and does not indicate the direction of the relationship. Chiou et al. (2014) noted that among all professionals in the hospital setting, nurses reported the lowest levels of engagement in health behaviors including physical activity, stress management, and 5 daily servings of fruits and vegetables. A study by Field et al. (2004) investigated preferences for weight management, finding that nurses who had a lot of variability in their weight – a cycle of gain and loss – preferred to manage their weight with dietary changes. The greater the weight variability, the less likely a nurse was to engage in physical activity and the greater the likelihood of binge eating and weight gain (Field et al., 2004). Liang et al. (2011) examined telomere length and found that sleep duration correlated with telomere length after adjustment for BMI, which suggests that a lack of sleep is associated with cellular aging; BMI was not found to be a confounding or mediating variable despite the fact that decreased sleep duration can also contribute to an elevated BMI (Nelson et al., 2014). These studies demonstrate the need for intervention and the low levels of health behaviors among nurses. However, they do not delineate causative factors that might provide opportunities for intervention.

Studies by Xie, Ho, Liu, and Hui (2014) and Wynd et al. (2007) demonstrated that nurses were aware of their current BMI status. Wynd et al. (2007) found that overweight nurses were aware of the need to lose weight, and Xie et al. (2014) found self-report of BMI and measured data to be consistent. However, not all individuals with overweight or obese BMIs have experienced negative health consequences, altering their perception of health and their category of risk. Nurses may not be aware of the various factors that put

them at risk for increased BMI. For example, nurses may know that night shift is associated with weight gain (Marqueze et al., 2012), but they may not be aware that the age at which they work night shifts as well as working nights versus rotating shifts also contribute to their obesity risk. Rotating shift work was associated with BMI elevation for nurses in early life (age 26-35) and later in life (over age 45), while working night shifts only at any age was associated with increased BMI (Ramin, Devore, et al., 2015). Associations have also been observed among nursing professionals related to lifestyle factors such as population density in their home neighborhood as well as sexual orientation. Lesbian and bisexual women in the NHSII cohort had an increased likelihood of an adverse weight gain trend (Jun et al., 2012). Similarly, NHS participants were found to have a lower BMI when they lived in a county with a greater population density (James et al., 2013).

One obesity risk factor that may be present but unknown to individuals is the presence of obesogenic alleles. Nursing cohorts have been utilized to examine how health behaviors moderate the expression of genetic markers for obesity in the form of elevated BMI. Consumption of both fried foods (Qi et al., 2014) and sugar-sweetened beverages (Qi, Chu, et al., 2012) were independently associated with increased BMI in individuals with genetic predispositions for obesity. In contrast, physical activity was found to weaken the association between genetic predisposition and increased BMI (Qi, Li, et al., 2012). While the average nurse is unlikely to know their genetic status, these studies demonstrate the value of each of these health behaviors. Each behavior impacts BMI, even in the presence of a genetic predisposition for obesity.

Further research demonstrated relationships between obesity and specific

behaviors and health practices. For example, an analysis of work hours – domestic and professional – showed that female health professionals averaged a greater number of total work hours. Increased total work hours among women was associated with excessive fried food consumption, excess coffee intake, decreased physical activity, and an associated increase in BMI (Fernandes, Portela, Rotenberg, & Griep, 2013). This research emphasized the importance of considering work-life balance in planning interventions such as physical activity or sleep.

Work-life balance needs to be considered in addition to availability of equipment and encouragement for physical activity. Alarjan et al. (2015) found that 50.5% of nurses enrolled in the study had no planned days of physical activity per week, though this was not the lowest rate. Thus, interventions related to schedules and work-life balance could impact the perceived ability and intentions to engage in health behaviors. One variable related to work-life balance is sleep duration, which has been shown to have a complex and important relationship with weight and hypertension. Nurses who sleep five hours or less per night were found to have higher rates of hypertension with BMI as a mediating factor (Gangwisch, Feskanich, Malaspina, Shen, & Forman, 2013). The relationship, however, was not mediated by shift work, menopausal status, diabetes, or hypercholesterolemia (Gangwisch et al., 2013).

The limited research available regarding correlations of health promotion interventions and rates of obesity has provided some insight into potential interventions for nursing professionals. However, for an intervention to be effective, it must account for the individual's ability to self-determine their engagement in health behaviors. The Nurses Living Fit demonstrated this with self-enrollment in the intervention group for

exercise and diet group sessions. The intervention group in this study had a significantly higher mean BMI, suggesting that individuals seeking change were more inclined to elect to be in the change group. Feedback from study participants noted that intervention sessions were more convenient for nurses on some shifts than others (Speroni et al., 2012). Additionally, participants stated that they desired the program to be year round and to have more personalized interventions for exercise and nutrition (Speroni et al., 2013). The participants' suggestions demonstrated interest in and the potential impact of individual level interventions and education. It also further emphasized the need to leverage system level interventions for the individual.

Zitkus (2011) sought to explore the impact of personality on weight loss success and whether this may contribute to a failure to engage in weight management behaviors. The study demonstrated that personality was not a factor but that those with a lower BMI were more successful at weight loss. Those who lost weight did so by utilizing common sense approaches, not a specific diet (Zitkus, 2011). These results suggest that nurses do possess the knowledge necessary to achieve successful weight loss (Zitkus, 2011).

Other correlational research has investigated incremental changes and their impact on weight management such as water intake and eating breakfast. Increased daily water intake of a cup a day was inversely associated with weight gain over a four year period, independent of other lifestyle changes (Pan et al., 2013). Similarly, eating breakfast and eating frequency were shown to have an impact on weight management and health. Mekary et al. (2013) observed an increased risk of type 2 diabetes among nurses who did not regular eat breakfast that was mediated by BMI. While BMI weakened the association, higher eating frequency among irregular breakfast eaters had a higher

incidence of type 2 diabetes (Mekary et al., 2013).

These findings beg the question of whether nurses know the significant impact that can be observed by such small choices. Education based health promotion has more often focused on larger scale interventions such as an exercise regimen, caloric restriction, or macro nutrient distribution. There is an opportunity to research and disseminate findings from studies relating to these common-sense interventions to give emphasis to the impact of everyday decisions, potentially generating interventions that feel attainable to the individual and increase adherence.

Health promotion among nurses can also be improved by intervening among the student population. Both health beliefs and intentions among nursing students increase with education and experience (Moyle et al., 2010). One study regarding the use of a self-guided intervention using a calorie count resource and food journal found that nursing students had increased self-care capacity and self-efficacy related to weight management (Singleton et al., 2011). These studies demonstrated the opportunity to impact health among nursing professionals through education. Continuing education among practicing professionals may potentially be useful as well. However, further research would need to be done to investigate the types of interventions that could be utilized in this capacity such as incorporation of physical activity into the nursing curriculum. Similarly, research has not been conducted to evaluate the longitudinal impact of these types of interventions.

Weight Management and Burn-Out

In the search performed for this review, the term “health behavior” generated studies that related to both stress management and weight management. Stress and weight

are often interconnected, but a clear sense of the direction of the relationship has not been established. One aspect of the relationship, however, is the role of coping skills in both weight management and stress management. The successful use of coping skills has bearing on job satisfaction and, subsequently, burnout rates. One cross-sectional study (Han et al., 2011), found that 45% of nurses who left their positions cited burn-out and workplace stress to have been a factor.

As mentioned previously, the milieu and culture of the workplace have significant bearing on health. Drach-Zahavy (2010) conducted a cross-sectional study to investigate whether the beliefs and practices of the individual were also a factor, as represented by the quality of service provided. Their results suggested that the culture of the unit/facility had a greater, though complicated, impact on health than the quality of service provided. In a setting with a low service climate, nurses who provided high quality service had worse physical health than their low service counterparts. In a high service climate, all workers experienced higher levels of physical health, though more so for those providing high quality service (Drach-Zahavy, 2010). Mental health was best for individuals whose service level matched the climate – low service providers in a low service climate and high service providers in a high service climate (Drach-Zahavy, 2010).

There has been a greater volume of research regarding the participation of nursing professionals in health behaviors and factors that increase or reduce stress. The work environment was identified as the most significant source of stress for nursing professionals - work relationships and job demands (Hope, Kelleher, & O'Connor, 1998). Other factors within the work environment – over commitment, poor nurse-patient relationships, and lower job rank – and workplace stress were associated with depression

(Gao et al., 2012b; Melnyk et al., 2013), decreased job satisfaction (Cranick et al., 2015; Melnyk et al., 2013), anxiety (Gao et al., 2012a; Melnyk et al., 2013), and decreased beliefs regarding a healthy lifestyle (Melnyk et al., 2013).

Working conditions and job characteristics are also associated with elevated BMI and impaired coping. Working extended hours, working consecutive night shifts, and decreased job-related physical exertion are associated with BMI elevations and obesity (Han et al., 2011). Night shift nurses identified weight gain as being one of their primary health concerns, citing the negative impact it has on their work performance (Phiri et al., 2014). Sleep disturbances and night shift work, in particular, are associated with increased appetite and food intake (Han et al., 2011; Han et al., 2012). Eating is more commonly utilized as a coping skill than other coping skills such as physical activity (Hope et al., 1998). This may, in part, relate to time constraints and lack of access to physical activity among nurses, especially those working night shift.

Sleep-wake cycle disturbances contribute to alterations in physical activity, the body's ability to efficiently utilize nutrients, and visceral adiposity (Han et al., 2011). However, nurses also cite the night shift schedule itself as contributing to issues with weight management – lack of time to prepare meals or engage in physical activity (Buja et al., 2013; Han et al., 2012), a lack of healthy cafeteria options (Phiri et al., 2014), and exhaustion (Buja et al., 2013; Phiri et al., 2014). In addition to these self-care barriers, night shift nurses reported greater job strain, but work schedule did not alter job satisfaction (Buja et al., 2013). These studies are cross-sectional and their findings are correlational, which demonstrates the impact the work environment and the demands of a nurse's job can have on his/her health behaviors including their participation in coping

strategies to prevent stress, weight gain and its associated impairments, and burn-out.

Self-care practices commonly associated with weight management have also been found to relate to stress management and mental health among nurses. Eating regular meals and engaging in physical exercise, among other factors, correlated with decreased depression (Gao et al., 2012b) and are inversely correlated with stress (Nahm et al., 2012). Job satisfaction, and related depression and anxiety, are also correlated with self-care health behaviors including adequate sleep, a healthy diet, and engagement in exercise (Gao et al., 2012a; Gao et al., 2012b). A study of nursing professionals and food choices demonstrated that breakfast consumption was associated with less stress, clearer cognition, and fewer work accidents. Snacking on chocolates, chips, and cookies were associated with the opposite result – higher stress, cognitive errors, and injuries (Chaplin & Smith, 2011). These studies demonstrate a strong association between stress and weight management health behaviors. However, these studies were all cross-sectional analyses and therefore demonstrate relationships between job satisfaction/mental health issues and weight management health behaviors, such as diet and physical exercise. Further research would be needed to determine the direction of these relationships and causation.

Summary of Review of Literature

The role of the nurse in relationship to weight management is complex, encompassing that of caregiver, educator, role model, and patient. Nurses are educated and equipped to intervene regarding obesity in some of their roles, but less so when they are the patients (Nahm et al., 2012; Zhu et al., 2011, 2013). Knowing that nurses and patients alike view the professional nurse as a health role model (Biernat et al., 2012;

Blake & Harrison, 2013), it is especially important to consider the impact the health behaviors of nurses have on their other roles.

Weight gain does not impede a nurse from being a role model. However, both normal weight and overweight nurses have anxieties related to their efficacy as a role model. Overweight nurses have anxieties about not leading by example while normal weight nurses worry they will be perceived as lacking empathy (Aranda & McGreevy, 2014; Brown & Thompson, 2007). It is not the BMI of nurses that most impacts their provision of weight management counseling, but rather their personal engagement in weight management practices. Nurses who engage in weight management behaviors are more likely to believe in the effectiveness of those interventions and thus recommend them to their patients (Bleich et al., 2014; Esposito & Fitzpatrick, 2011; Hensel, 2011).

Traditionally, interventions have been thought of primarily at the system-level through walking programs, changes to foods in the vending machines, and poster campaigns for use of the stairs. However, these interventions have not been found to be effective at decreasing BMIs or obesity rates (Wynd et al., 2007). Interventions to improve staffing to support a regular eating scheduling, facilitating breaks off of the unit for physical activity, and supporting healthy communication to reduce stress do more to broach barriers to health behavior engagement (Nahm et al., 2012). Consideration must also be given to the needs of nurses on different shifts. For example, night shift nurses have decreased access to healthy food choices as well as options for physical activity (Buja et al., 2013; Han et al., 2011; Han et al., 2012; Phiri et al., 2014). On the system-level, the goal is to create a culture that values weight management behaviors. Social norms play a significant role in health decisions of individuals (Ferranti et al., 2013;

Michael et al., 1999; Zapka et al., 2009)

Obesity research with nurses as subjects has typically focused on longitudinal effects of increased BMI including correlations between obesity and various comorbid diseases (e.g. Hu et al., 2014; Kumar et al., 2013; Li et al., 2012; Pothiawala et al., 2012). While this has contributed to our understanding of the progression of disease in obesity and an understanding of risk factors, it does not offer much in the way of potential interventions among nurses.

Changing social norms helps to translate a system level intervention to the individual. However, enrollment and engagement in any intervention is up to the individual. One intervention that attempted to do this was Nurses Living Fit, which employed guided interventions and group sessions to support individual nurses in their weight loss endeavors (Speroni et al., 2012). While very effective in bringing about change for the individuals in the study, however, the intervention was limited by schedule inflexibility, convenience of group sessions in relation to shift worked, and individual motivation and beliefs.

Common sense approaches to eating have also been found to be more effective than any other diets among nursing professionals (Zitkus, 2011). This suggests that a significant aspect of the success of the Nurses Living Fit intervention was the support provided, rather than the education given. Nursing professionals have a certain amount of foundational knowledge regarding weight management but need support for the enactment of that knowledge. Foundational knowledge provided to nursing students has been shown to make an impact in students' engagement in health behaviors (Moyle et al., 2010). Successful interventions must focus on how to engage the nurse's beliefs and

motivation, increasing the nurse's sense of self-efficacy in his/her ability to translate intentions and knowledge into practice and behaviors (Fernandes et al., 2013). Singleton et al. (2011) examined an intervention to improve self-efficacy related to exercise and health eating among nursing students. However, this study did not use a tool specifically for self-agency, and the study did not explore the impact on health. Therefore, current research does not present definitive answers about the best interventions to use among nursing professionals to improve self-care agency, practices, or related weight management.

Research related to interventions among nursing professionals has demonstrated that weight management behaviors – regular meals, physical exercise, and adequate sleep – correlate with stress as well as weight management (Gao et al., 2012a; Gao et al., 2012b). Job characteristics including long work hours, consecutive night shifts, and decreased physical exertion are associated with both burnout and increased BMI (Han et al., 2011). BMI elevations also contribute to physical restrictions and decreased job performance (Gillen, 2014). In this way, weight management behaviors not only impact the health of the individual nurse, but also impact the health care facility and profession through its effect on stress management within the workplace and nurse burnout.

Gaps in Literature

As discussed, nursing professionals have been subjects for obesity research. This body of research demonstrated risk factors for obesity, the progression of disease, and the relationship between obesity and other diseases. The research demonstrates why it is important to intervene and promote weight management behaviors among individuals, especially among nursing professionals. However, the studies identified in this review

was mostly correlation and cross-sectional studies. Very little of the research presented or tested interventions either at the system or individual level.

Searches specific to measurement of self-care agency and self-care practices among nurses included the terms: “self-care agency and nursing”, “self-care agency and nursing”, and “DSCPI-90 and nursing”. These searches produced a few articles related to self-care agency in nursing research (Kawasaki, Uchinuno, Arao, Kobayashi, & Otsuka, 2011; Kim, 2011; Laferriere & Knc, 1995; Ovayolu, Ovayolu, & Karadag, 2012; White, 2013) and use of the DSCPI-90 in nursing research (Andrews, Richard, & Aroian, 2009; Betz, Smith, & Macias, 2010; Campbell & Soeken, 1999). However, none of these studies had nursing professionals as research participants.

The researcher in this study was unable to identify a study utilizing the DSCAI-90 and DSCPI-90 among nurses. However, the study population was likely to have similar demographic characteristics to a study based on Orem’s Self-Care Theory and BMI conducted among rural Midwestern women at midlife by Burdette (2012). The study sample in the Burdette (2012) study was similar to the sample in this study in terms of geographic location and, therefore, likely to be similar in ethnic make-up. While males were not excluded from this study as they were in Burdette’s (2012) study, nursing is a female dominated profession. The study by Burdette (2012) utilized both the DSCAI-90 and DSCPI-90 for data collection. The similarities between sample populations reinforce the appropriateness of the use of these tools and the impact of this research. This research can begin to fill the gap in the literature and provide foundational information for the measurement and optimization of self-care agency and self-care practices among nursing professionals.

Definition of Terms

Self-care agency (SCA). Orem's Self-Care Deficit Theory describes self-care agency as a multi-faceted acquired ability to carry out the practices necessary to meet self-care requisites (Orem, Taylor, & Renpenning, 2001). Self-care agency encompasses the knowledge, materials, attitudes, motivation, access, and energies required to execute self-care practices (Denyes, Orem, & SozWiss, 2001).

Operational definition of self-care agency (SCA). Self-care agency was measured in this study as the possession of the essential elements for self-care, feeling equipped to engage in self-care. The Denyes Self-Care Agency Instrument (DSCAI-90) was utilized in this study to quantify self-care agency in this way. The DSCAI-90 is a 34 item self-report questionnaire that uses a ratio scale of 0 to 100 to produce a total score as well as 6 subscale scores (Burdette, 2012). In addition to a total score that demonstrates the overall possession of self-care agency by an individual, the subscales demonstrate specific self-care agency elements including ego strength, valuing of health, health knowledge and decision-making capability, energy, feelings, and attention to health (Burdette, 2012). These subscales mirror the components of self-care agency as outlined by Orem (Burdette, 2012) and give further dimension to the description of self-care agency. The DSCAI-90 is further described and discussed in the next chapter.

Self-Care Practices (SCP). The term "self-care practices" is not used by Orem, but the principal is an extension of what Orem terms "self-care." Self-care as discussed in Orem's Self-Care Deficit Theory is understood as the behaviors – or the practice of activities - carried out to achieve a desired health outcome (Orem et al., 2001). These practices are utilized to promote health and functioning, maintain life, and improve

wellness as these relate to self-care requisites identified as valuable to the individual (Orem et al., 2001).

Operational definition of self-care practices. To quantify self-care practices, this study measured individuals' engagement in self-care practices using the Denyes Self-Care Practices Instrument (DSCPI-90). The DSCPI-90 is an 18-item self-report questionnaire that uses a 0-100 ratio scale to measure an individual's engagement in a variety of health practices (Burdette, 2012). By providing a quantified measure of self-care practices, the DSCPI-90 allowed for the observation of relationships within this study between SCA, SCP, and BMI.

Body Mass Index (BMI). Body Mass Index (BMI) was utilized in this study as a measurement of health. Body Mass Index (BMI) is a measure of the amount of body fat of an individual calculated by dividing weight in kilograms by height in meters squared (Centers for Disease Control & Prevention, 2011). BMI is generally accepted by healthcare practitioners as a stronger predictor of health risk than weight alone (Burdette, 2012). As such, BMI represents a measure of attainment of a health weight, a self-care requisite of health.

In Orem's Self-Care Deficit Theory, health is viewed as the whole experience of the individual, encompassing physical, psychological, interpersonal, and social aspects of health. As such, this theory also expresses that health is not static and can change from day to day due to alterations in the experience within any of the aforementioned spheres (Orem et al., 2001). BMI represents an outcome of health, the achievement of the self-care requisite of weight management.

Operational definition of BMI. BMI is the measure of health utilized in this study

and was calculated from self-report of recent height and weight measures. BMI is analyzed by classes – underweight, normal, overweight, and obese. The classes of BMI are defined as follows: underweight is a BMI below 18.5, normal weight is BMI from 18.5-24.9, overweight is a BMI 25-29.9, and obese is a BMI above 30 or above (Centers for Disease Control & Prevention, 2011). This study utilized the classifications of BMI as outlined by the CDC were used to make comparisons and observe relationships.

Conceptual Framework

Dorthea Orem's Self-Care Deficit Theory was utilized as a conceptual framework for this study. The concepts introduced in the Self-Care Deficit Theory provide conceptual meaning for this study's variables in addition to providing a means to relate the study's concepts and results to the greater body of knowledge, especially the understanding of self-care and health promotion.

Orem's Self Care Deficit Theory. Dorthea Orem's Self-Care Deficit Theory was first introduced in 1968. Since then, Orem and her research partners have continued to develop and revise the principles of self-care and the self-care deficit theory (Hartweg & Fleck, 2010). Orem's Self-Care Deficit Theory states that in providing care to one self, an individual must have an understanding of the self-care requisites and possess sufficient self-care agency to perform the necessary self-care practices (Denyes et al., 2001). Basic conditioning factors that exist either within the individual or as part of the individual's environment may impact an individual's self-care by shifting the individual's self-care requisites, altering aspects of self-care agency possessed, or influencing the self-care practices pursued (Orem et al., 2001).

Self-care. The Self-Care Deficit Theory views individuals as both the one

providing and receiving care. Self-care, in this way, is contrasted to dependent-care and nursing care, both of which utilize another individual as the one promoting health. Self-care is a learned behavior carried out with a particular result in mind (Denyes et al., 2001). In this way, self-care is viewed through the self-care practices employed by the individual.

Self-care requisites. Self-care requisites are constructs that express the need to regulate particular actions to promote health, such as the need for adequate hydration. Self-care requisites include both essential, enduring requisites such as those universally necessary for life like hydration or adequate nutrition and functioning, developmental requisites which are specific to the challenges of a particular stage in an individual's life or a condition faced by the individual such as management of blood sugars in patients with diabetes (Denyes et al., 2001). Self-care requisites can arise from or gain prominence due to alterations in basic conditioning factors. The individual must prioritize self-care requisites based on his/her current perceived experience of health.

Self-care agency. The term self-care agency refers to the knowledge, skills, and abilities required to meet self-care requisites. Self-care agency was once thought to be inherent knowledge. It has since been established that self-care agency requires the individual to gain knowledge and skills as tools of self-care and may be hindered by situational and developmental challenges (Denyes et al., 2001). The possession or acquisition of self-care agency in its many forms may be influenced by basic conditioning factors such as disease states.

Utilizing the theory. To apply Self-Care Deficit Theory to nursing practice, a particular self-care requisite is first identified, followed by the processes necessary to

meet the requisite such as possession of necessary materials and knowledge (Denyes et al., 2001). The nurse then assesses the operations or actions needed to attain the required resources and necessary learning to improve self-care agency and promote engagement in necessary self-care practices. Deficits found in self-care agency such as the absence of key supplies or knowledge needed for a specific practice demonstrate the potential for the failure to meet a self-care requisite. This failure would be considered a self-care deficit. The self-care deficit theory allows nurses to identify the goals of self-care, the actions through which self-care may be achieved, and any gaps in that process that need to be addressed (Denyes et al., 2001). In this way, nursing professionals may utilize Orem's Self-Care Deficit Theory to identify opportunities for health promotion within a population or specific to an individual.

As a framework. A review of current literature suggests the presence of a self-care deficit in the nursing population, as evidenced by the incidence of obesity among nursing professionals. This study will utilize Orem's Self-Care Deficit Theory to gain a better understanding of the attainment of the self-care requisite of weight management among nursing professionals. In doing so, this study will examine the relationship between this self-care requisite and the self-care agency and self-care practices of nurses. Confirmation of this relationship as it relates to body mass index will aid in identifying the nature of this self-care deficit. In doing so, this study seeks to identify whether health promotion strategies targeted at self-care agency may facilitate self-care practices and help nurses to better attain the self-care requisite of weight management. The identification of such strategies would assist in improving self-care and well-being of nurses both individually and as a profession.

Chapter 3: Method

This chapter presents the study design and procedures used. The design and methodology of the study are described as well as the study setting and population. This chapter will then describe the sampling procedure and resulting study sample. A description of the data collection tools and procedures will be described as well as the ethical considerations and human subject protections. This includes Institutional Review Board (IRB) approval and informed consent and confidentiality measures.

Study Design

This study is a confirmatory study of the relationship between self-care agency, self-care practice, and body mass index among nursing professionals in an urban Midwest county. Using a non-experimental, predictive correlational approach, this study sought to quantify the relationship between self-care agency and self-care practices and subsequently body mass index (BMI) among nursing professionals. As such, variables were not manipulated for this study. Rather the data from a randomized sample was used to provide a cross-sectional view of the relationships between the study variables.

As discussed, this study was designed to confirm a relationship between nurses' self-care agency and their engagement in self-care practices and by extension their health management as measured by BMI. This study sought to confirm a positive relationship between SCA and SCP, and a negative relationship between SCP and BMI. This would indicate that greater agency correlates with greater engagement in practices and thus, a decrease in BMI. These interrelated relationships are based on the concepts described in Orem's Self-Care Theory, as described above. The significance of these relationships was a desire to understand where in these relationships interventions for health promotion

may be most meaningful, and whether a shift in focus from the engagement in practices to the elements that make up agency would be supported. The study relationships are graphically represented in Figure 1.



Figure 1. Theorized self-care relationships among nursing professionals.

Study Setting

Data was able to be collected in a natural, uncontrolled environment, since this was a non-experimental study. The data was collected via an online survey managed through Question Pro, allowing participants to access the survey at their convenience from any internet connected device. The participants were selected for the geographic location of their home address. Only nurses living in the South Dakota county of Minnehaha were eligible to participate in this study. These nurses may or may not work in the county in which they live. In this way, this study examined the nurses in their home environment rather than their work environments. In this way, the study setting was not specific to a health care setting, nor was it restricted by the rurality of the participants' homes. While the study county consists of primarily urban dwellers (84.65%) (Brooks, McCurry, & Hess, 2008), participants were not selected nor excluded based on rurality of their home, in hopes of being a more representative sampling of nurses in this county.

Because environment contributes to self-care agency through impact on access to needed resources and opportunities, it is important to consider some county data relevant to health and self-care. The study county ranks 11th for obesity among South Dakota's 66 counties with an adult obesity rate of 27% (National Initiative for Children's Healthcare

Quality, 2011a). The county has 1.3 grocery stores per 10,000 people with 28% of the zip codes within the county having access to a healthy food outlet. According to the 2011 survey of the area, there are also 1.5 fitness facilities per 10,000 people (National Initiative for Children's Healthcare Quality, 2011a). The National Initiative for Children's Healthcare Quality (2011a, 2011b) has therefore ranked the physical environment of the county 44 out of 66. Catlin, Jovaag, and Van Dijk (2015) ranked Minnehaha 28th in the state for health outcomes – quality of life and length of life. In regard to health factors – access to quality care, physical environment, health behaviors, and socioeconomic factors – the county ranked 22nd (Catlin et al., 2015). These statistics demonstrate the complex picture that is the health environment in which these nurses live. The obesity rate is slightly better than the national average, but access to a healthy environment does not appear to be optimal for the population.

The setting selected for this study was chosen, in part, due to convenience and familiarity of the researcher. The researcher resides within the studied county, which provides some perspective on the environment and resources available. This may have also impacted responses. It was hoped that recognition of the researcher and her ties to the community might produce personal connections and improve response rates. This also presented a potential sampling bias if those who knew the researcher made up the majority of the sample. However, the confidentiality measures of this study leave this unknown. The researcher was unable to identify individual participants and thus it is unknown if the researcher's relationships were a factor in the response rate. Similarly, participants were informed of their anonymity and the analysis in aggregate, which hopefully further mitigated biases in reporting.

Minnehaha county was also a favorable study setting due to the number of health care employers within the county, including two major private hospitals, a veterans administration hospital, and a state penitentiary. The job pool and the urbanicity of the county provided a larger pool of potential participants.

Study Population

This study explored the experience of nursing professionals in South Dakota, specifically licensed RNs living within the county studied. The population under study was that of RNs, professional nurses, but the sampling for this study was not designed to be representative of the entire nursing profession, nor the county or communities in which the nurses live. Rather, this study was a beginning exploration into the described relationship within this population. Demographic, lifestyle, and professional information was gathered from study participants as part of the online survey to better describe the study sample and the population it represents.

Ethical Considerations

Protection of Human Subjects. The full description of the research study methodology is included in this chapter. This same information was provided to the South Dakota State University Institutional Review Board (IRB) for expedited review. The study qualified for expedited IRB review as a survey based study not involving vulnerable populations led by a graduate student. This study was approved by the South Dakota State University IRB on July 21, 2016. A copy of the approval letter is included in Appendix F.

Of particular relevance to the IRB review process is the benefit and risk to participants. This study offered no direct benefit or compensation to the participants for

their involvement. The study had the potential to benefit participants through an opportunity to reflect on their own self-care. Reflection on self-care had the potential to raise awareness of specific barriers experienced by a participant or practices that he/she may wish to increase in his/her life. Because of this, participants may have benefited from an increased inspiration or motivation to engage in self-care. Participants could have also benefited from positive feelings about the opportunity to engage in and contribute to health research that could have a future impact on health promotion among nursing professionals.

The study posed no more than a minimal risk to participants. The same self-reflection that could produce inspiration among participants had the potential to create anxieties about self-care agency or practices. Similarly, participants could have experienced negative feelings regarding or related to the disclosure of their self-care practices or biometric measurements such as weight. To reduce risk of negative feelings, this study asked participants to disclose height and weight rather than BMI. BMI and its associated categories (normal, overweight, obese, etc.) are more likely to have negative connotations than height and weight alone. This was intended to minimize risk to participants as well as encourage more open and accurate disclosures of biometric data. The only real cost to participants in this study is that of time. The online survey was tested and took an average of 10 minutes to complete.

Confidentiality, Informed Consent. Informed consent information was shared in the initial recruitment email, as well as the reminder emails. The email delineated the potential risks of the study. As mentioned above, the only clear risk or cost of the study was the time it took to answer the survey. Self-reflection and sharing of self-care and

biometric measurements could have either a negative or positive impact on the feelings and attitudes of survey participants. Participants were also informed of broader benefits of the study including contributions to a better understanding of factors that facilitate and hinder self-care among nursing professionals. This improved understanding may potentially impact health care systems and nursing curriculum to improve health promotion among nurses, which may also improve retention rates.

The researcher removed all names and addresses from the list of potential participants prior to selecting the sample for the study. This meant that while the researcher knew the email addresses selected, names and contact information were not attached and thus not known to the researcher. The email addresses were then entered into QuestionPro for management and correspondence. QuestionPro facilitated confidentiality and anonymity of responses while also tracking respondents. QuestionPro uses unique URLs assigned to respondents to allow the researcher to view individual survey responses without identifying the individual respondent. While further information was available via QuestionPro regarding which email addresses had responded and their individual responses, the email addresses were no longer linked to names or addresses. Additionally, the researcher was not interested in individual responses and the research was to be viewed in aggregate.

In this way, the respondent could be assured of their anonymity and the confidentiality of their responses. Via the tracking application, QuestionPro allowed the researcher to send reminder emails to respondents who had not completed the survey. Participants were informed that their answers would be confidential and identity would not be known to the researcher. Respondents were also informed that the results would be

reported in aggregate and individual responses would not be shared in the study report or organizations such as the BON or health care employers. The participants were informed that they may request a copy of the final aggregated results to be provided to them at the completion of the study. Participants were encouraged to contact the IRB with concerns or questions regarding the protection of their human rights within the study. They were also provided with the researchers email and encouraged to contact the researcher with specific questions or concerns.

The e-mail stated that informed consent was implied by the participant completing the survey and opting into the study. An opt-out link, as well as a link to report the survey/email as spam or abusive were present at the end of the recruitment e-mail, providing the participant with added protections as well as the opportunity to decline participation and avoid receiving further emails. The email also explained that clicking the enrollment link does not obligate the participant to complete the survey. The participant was reminded that he/she may choose to exit the survey or withdraw from the study at any time. Information about the risks, confidentiality, and informed consent were included with the reminder emails as well as the initial recruitment email.

Survey Instruments

This study utilized an online survey delivered through QuestionPro to the recruited participants. The survey was made up of three sections - demographics, Denyes Self-Care Agency Instrument-90 (DSCAI-90), and Denyes Self-Care Practices Instrument - 90 (DSCPI-90). The DSCAI-90 and DSCPI-90 were developed by Mary Jean Denyes for the purpose of measuring self-care agency and self-care practices as variables. Permission was obtained via email on March 16, 2016 for use of these tools for

this study. A copy of the email granting these permissions is included in Appendix D.

Participants were selected at using systematic randomized sampling from a list of RNs residing in an urban Midwest county obtained from the Board of Nursing. The email addresses for the selected participants were entered into QuestionPro and a recruitment email with implied consent was sent with the link for the survey attached. Details regarding the sampling plan and the recruitment email are discussed in their designated sections of this report. A copy of this recruitment letter is included in Appendix E. Reminders were sent via QuestionPro once weekly for the three weeks following the initial invitation to those who had not completed the survey.

Demographic, lifestyle, professional background survey. The first section of the survey was a demographic, lifestyle, and professional background survey created by the researcher. The questions in this portion of the survey contained four types of questions: demographics, lifestyle factors, professional background, and biometric measurements. The demographic data collected included: age, gender, race, and ethnicity. Lifestyle factor information collected included: rurality, marital status, parenthood, and number of children living in the home. Professional background information collected included: current employment, the number of years as an RN, primary shift, length of average shift, full time/part time status, weekend shifts, and classification of current employment setting (hospital, long term care, ambulatory, home health, etc.). Answers to these questions were not required for the participant to proceed with the survey, as the data collected was intended for description of the sample population and would not be used in the data analysis.

The final portion of the demographic, lifestyle, and professional background

section was biometric measurements. These are the only questions in this section that were required for advancement in the survey. Participants were asked to self-report their most recent height and weight measurements before moving on to the next page/section of the questionnaire. BMI was not calculated within the online survey, nor were classifications offered for selection to decrease self-report bias. While the participants, as registered nurses, are aware of BMI classifications and are likely aware of their personal BMI status, seeing the BMI calculation while completing the survey may cause some to underreport weight in order to produce a lower, more socially-acceptable calculated BMI. The BMI was instead calculated by the researcher during data analysis. Limitations of this method of measurement are discussed in the limitations portion of this report. A copy of the demographics, lifestyle, and professional background survey in its entirety is included in Appendix A.

Denyes Self-Care Agency Instrument (DSCAI-90). The next portion of the survey was the 34 question DSCAI-90. Denyes Self-Care Agency Instrument is based largely on Orem's theories of self-care and was updated by Denyes in 1990 to produce the DSCAI-90. The instrument measures possession of elements of self-care agency on a visual scale from 0 meaning nothing, not at all, or none and 100 meaning everything, totally, or all (as cited in Burdette, 2012).

The online format utilized in this survey capitalized on the visual scale aspect of the DSCAI-90 by using a sliding scale input. This allowed the participant to either enter a numerical value or mark their response visually on the sliding scale. The instrument produces both a total score as well as scores for six subscales: ego strength, valuing of health, health knowledge and decision-making capability, energy, feelings, and attention

to health (Burdette, 2012). The higher the score, the greater agency demonstrated. The DSCAI-90 questions and scoring instructions are available in Appendix B. The instrument as displayed in Appendix B demonstrates the formatting utilized for the online survey in this study.

The DSCAI-90 was created to measure self-care agency, the respondent's perceived ability to engage in practices to promote his/her health. It was originally designed for and trialed among adolescent populations. However, several studies have demonstrated its usefulness and reliability in assessing self-care agency in adult populations (Burdette, 2012; Campbell & Soeken, 1999). The researcher was unable to locate any previous studies utilizing this tool among nursing professionals. However, the nursing population being primarily female, the study population was known to be similar in demographics to that of Burdette (2012).

There are other self-care agency tools that have been utilized among patients with chronic illness such as the Self-as-Carer Inventory (Ovayolu et al., 2012) and the Self-Care Agency Questionnaire, Appraisal of Self-Care Agency, and the Exercise of Self-Care Agency Instrument (as cited in Kawasaki et al., 2011). However, the researcher felt that the DSCAI-90 was best suited for this study due to its shorter length and its close relationship to Orem's definition of self-care agency. It's also important to note that the DSCAI-90 has also been found to have good test-retest reliability, internal consistency with alpha coefficients between 0.7 and 0.9, and construct validity (Denyes, 1988 as cited in Campbell & Soeken, 1999).

Denyes Self-Care Practice Instrument (DSCPI-90). The final portion of the survey was the 18 question DSCPI-90. The DSCPI-90 measures self-care activities

utilized in achieving both general and specific self-care behaviors as described by Orem (Betz et al., 2010; Burdette, 2012). Each question of the DSCPI-90 asks the participant to rate the time spent in self-care activities, using a visual scale. This scale measures scores from 0 to 100, with 0 meaning none of the time and 100 meaning all of the time. The DSCPI-90 produces a total score of self-care practice engagement, with a higher score indicating a higher level of engagement in self-care practices (Betz et al., 2010). The online format utilized a sliding scale input for the DSCPI-90 as it did with the DSCAI-90. This was to allow the participant to indicate their answer numerically or along the sliding scale. The DSCPI-90 instruments and scoring instructions are available in Appendix C. The tool as shown in Appendix C demonstrates the online formatting used for this study.

Study Sample

The study sample consisted of RNs licensed in South Dakota and living in the study county. The pool of participants from which the sample was drawn was identified by the South Dakota Board of Nursing (BON) list of RNs. The list contained the names, emails, addresses, and counties of all RNs licensed with the South Dakota BON. Nurses were considered eligible for the study based on the county in which they were living, not where they were working. Type of practice setting (clinic, hospital, long term care, clinic, etc.), shift worked, and employment status (full-time, part-time, and as needed (PRN)) were not used as inclusion or exclusion criteria. Similarly, age, marital status, ethnicity, and education were not used to determine inclusion or exclusion for this study. However, information regarding these factors was collected to allow for a more robust description of the sample population.

Sampling procedures. This study utilized a systematic random sampling plan.

The scope of this study did not allow for a representative sample to be recruited from the entire RN population in South Dakota. Instead, Minnehaha county was selected as the population setting and the pool from which participants would be selected. This county, as discussed previously, has several significant health care employers, contributing to a higher density of nursing professionals. The increased number of available participants increased the likelihood a representative sample and the generalizability of the information provided. Additionally, the county selected is where the researcher resides, increasing the likelihood of successful recruitment of participants, as well as an improved understanding of the setting of the study population. In this way, the population was chosen through convenience sampling while the participants selected from the population were selected using a systematic random sampling plan.

RNs eligible for the study were identified via the South Dakota Board of Nursing (BON). The BON keeps record of all RNs licensed in South Dakota, including their county of residence and contact information including email address. The researcher purchased a list of South Dakota RNs from the BON for \$50. The list was reduced to only those RNs in Minnehaha county, a list of 3900 individuals. All RNs registered with the BON in the study county were eligible for recruitment. Prior to selecting participants, personal identifying information was removed from the RN list, reducing it to email addresses only.

The researcher consulted a statistician regarding sample size. Because this line of inquiry is not well established, this study is investigative and correlational. The sample size was therefore calculated for a significance level of 5%, a power of 80%, and a confidence interval of 0.4. This produced a desired sample size of 42. Online survey

response rates are generally not high. The researcher hoped to achieve a 20% response rate for this study. To recruit the desired sample of 42, 210 participants would receive recruitment emails. Participants could then enroll or decline participation in the study. To identify participants for recruitment, every 18th individual was selected starting at number 12 until 210 participant emails were selected. Because email addresses were not available for all individuals, the researcher continued selection at the top of the list when 210 participants were not identified on the first review of the list. The table of the sampling plan numbers used for participant selection is included in Appendix G for reference.

A recruitment email was sent to the selected participants explaining the study's purpose, potential benefits, and the costs of participating in the study. The recruitment email included a link to the survey and a statement of informed consent. A copy of the cover letter with informed consent that made up the recruitment letter is included in Appendix E. The recruitment email stated that participants were not required to participate and could withdraw at any time. It also explained that neither the South Dakota BON nor any health care employers would be informed of who chose to enroll or decline in the study nor any individual responses. Participants were, however, encouraged to contact the researcher with any questions or concerns or if they wished to obtain a copy of the study results at the conclusion of this project. Further discussion of the informed consent procedures is included below.

The final study sample was made up of the 31 RNs who responded to the recruitment email. The demographic information collected as part of this study is used to describe the sample population. This description is included below in the discussion of the study results. A more complete description of the population was also developed from

this data and is included above in the description of the study population.

Data Collection

This study utilized an online survey through QuestionPro composed of three sections: demographics, DSCAI-90, and DSCPI-90. Specifics of the survey and its included instruments are detailed in the instrumentation section of this report. Copies of the survey questions are available in Appendix A, B, and C. The email addresses of 210 potential participants were uploaded to the QuestionPro software for recruitment. A recruitment email was sent to all 210 potential participants with a cover letter outlining the risks and benefits of the survey as well as measures for confidentiality. A copy of the recruitment email is available in Appendix E. Additional details of the risks and confidentiality measures are discussed in the ethical considerations section of this chapter.

Reminder emails were sent once per week to participants who had not had not completed the survey. An additional reminder was sent on the final day of the survey. This resulted in six emails to prospective participants. Those who had opened the survey were included in the reminder emails. However, QuestionPro did not send reminders to individuals who had unsubscribed to the survey and thus declined the study. The online survey was open to participants for four weeks. QuestionPro managed the participant email list and allowed for participants to opt-out of the study and unsubscribe from additional emails. Participants were able to save their progress and return later. Participants who had completed part but not all of the survey were included in reminder emails. This resulted in 31 participants, a response rate of 14.7%. There were 18 individuals who dropped out of the survey after starting, three that declined/unsubscribed

from the survey. An additional seven individuals viewed the survey but did not start it. The survey email invitation was not opened or responded to by 143 participants. There were eight surveys marked as undeliverable to the provided email addresses.

QuestionPro provided the researcher with a spreadsheet of the responses to be downloaded to either Excel or other statistical software for analysis. Individual responses were available to the researcher but without any identifying information - name, address. The researcher cleaned the data in an excel spreadsheet to produce a calculated BMI for each participant as well as scores for the DSCAI-90 total and subscales and DSCPI-90 total. Demographic variables collected were analyzed to create a description of the sample population. These results along with the instrument scores are outlined in the results section and sample descriptions were included in the survey population section of this paper.

Data Analysis

The raw data from the completed surveys was downloaded as an excel spreadsheet to allow for the data to be cleaned and the instruments scored. BMI was calculated for each participant using the formula utilized by the Centers for Disease Control & Prevention (2015): $\frac{\text{weight in lbs}}{\text{height in inches}^2} \times 703$. The scores and subscores of the DSCAI-90 and DSCPI-90 were calculated for each participant. Scoring directions for the DSCAI-90 and DSCPI-90 can be found in Appendices B and C, respectively.

Mean scores were calculated for each question, as well as the scores for the instrument totals and subscales. Percentages for BMI categories and demographic factors were also calculated to provide a description of the sample population. Correlations were observed for the specified variables SCA, SCP, and BMI via scatterplots as well as

Pearson's Product-Moment correlation coefficients (r). These tests were selected as the best approach to observe for correlations between each pair of variables as laid out in the research hypothesis (Pyrzack, 2010). These methods were provided a description of the correlations between the variables as positive, negative, or none. A coefficient of determination was also calculated to observe the percentage of influence of one variable on another (Pyrzack, 2010). To assess the significance of these correlations, the skew for each variable – total score DSCAI-90, total score DSCPI-90, and BMI – were calculated to observe whether the distributions had significant outliers that may skew the correlation statistics.

Chapter 4: Results

Results and Analysis

This section presents a description of the results from the study survey. It outlines the survey return rates, descriptive analysis of the results, and the correlational statistics used to answer the research question.

Survey return. The sample for this study was recruited from a pool of 210 participants selected using systematic random sampling. The initial invitation and informed consent letter utilized is available in Appendix E. The survey components are available in Appendices A, B, and C. Eight surveys were undeliverable to the provided email addresses. The survey email invitation was not opened or responded to by 143 participants. Three individuals unsubscribed from the survey emails, declining participation. Seven individuals opened but did not start the survey, and another 18 started the survey but dropped out before completing it. Answers from participants who did not complete the whole survey were not included in the data analysis. This resulted in 31 participants for a response rate of 14.7%. The sample size was smaller than desired, limiting the generalizability of the study. Analysis of these results, however, can still provide some foundational understanding to consider as further studies are planned.

One BMI result was omitted from the statistical analysis due to an error in participant entry of height (165 inches). The remainder of this data set was retained for analysis since the remainder of the survey questions had a provided range and visual scale, eliminating the opportunity for a free text typing error. The presence of this erroneous entry does raise the issue that additional erroneous or biased responses could be present but unable to be detected as they were subtle and within what would be

considered the normal range. These types of errors were unable to be detected by the researcher in this study. In preserving the anonymity of the participants via the online format, personal communication and follow-up or the verification of biometric measures were sacrificed.

Descriptive Statistics

The survey collected descriptive data regarding participants' demographics data, lifestyle factors, professional background, BMI categories, and scores for self-care agency and self-care practices. The demographic data provided a more robust description of the sample population both for considerations of generalizability and possible influences on correlational statistics. BMI calculations, while utilized in the correlational statistics, also contributed to the description of the study population and thus are included in both portions of analysis.

Demographic, lifestyle, and professional background. Demographic, lifestyle, and professional background survey questions were not required for the participant to proceed with the survey. This was intended to encourage participants to proceed in the study with the ability to skip any questions in this section that they were not comfortable answering. These answers were not used for correlational analysis; therefore, response totals less than the total number of participants would not alter the conclusions of the study. However, the data included in these statistics were limited to only participants that completed the survey in its entirety.

A complete list of the answer frequencies for the demographic, lifestyle, and professional background survey can be found in Appendix I. The number of responses (N) is included for each answer as well as totaled for each question for greater clarity.

Some questions allowed for participants to select all that apply. Therefore, the total number of responses can be greater than the total number of participants.

The mean age of the sample population was 45 years old with a range of 24-72 years old (SD = 14.9). The population was predominately female (96.77%) and urban-dwellers (77.42%). Table 1 lists the frequencies of the other personal demographic and lifestyle traits collected including race (origin) and ethnicity, marital status, parenthood, and children in the home.

Table 1

Frequencies of Selected Demographic and Lifestyle Traits

Variable	N (%)
Race (origin) and ethnicity *	31
Black/African American	0 (0%)
Hispanic/Latino	0 (0%)
Asian	0 (0%)
Native American/Alaskan Native	0 (0%)
Native Hawaiian/Pacific Islander	0 (0%)
White/Caucasian	30 (96.77%)
Other	1 (3.23%)
Current marital status. *	31
Married	20 (64.52%)
Divorced	2 (6.45%)
Widowed	2 (6.45%)
Separated	0 (0%)
Single, never married	7 (22.58%)
Do you have children?	31
Yes	21 (67.74%)
No	10 (32.26%)
Children under age 18 living in your household?	31
Yes	10 (32.26%)
No	21 (67.74%)

Note: * respondents could select all that apply

The study population had a mean of 21.5 years of experience as an RN, with a range from 2-49 years (SD = 15.7). The majority (83.87%) were currently employed as

RNs. Table 2, below, contains the frequencies of the remaining professional background traits possessed by individuals within the study population. A full table of the frequencies of professional background traits is available in Appendix I. These frequencies demonstrate that the majority of the sample population worked full-time (63.89%), did not work weekends (57.14%), and worked in the inpatient setting (53.57%). Two respondents provided a free-text response regarding length of shift worked; one reported working in a salaried academic role and another reported working 14 hour shifts. Respondents represented a variety of work settings; however, none identified themselves as working in the home health setting. Of the six respondents who reported working in a setting not listed, five reported working in an educational setting of some type.

Table 2

Frequencies of Selected Professional Background Traits

Variables	N (%)
Select your current employment status.	28
Full-Time (33-40 hrs)	24 (85.71%)
Part-Time (32 hours or less)	2 (7.14%)
As needed/PRN	2 (7.14%)
Shift(s) you currently work. *	36
Day	23 (63.89%)
Evening	3 (8.33%)
Overnight	4 (11.11%)
Rotating	6 (16.67%)
Length of shifts (in hours) that you currently work. *	37
4	4 (10.81%)
8	17 (45.95%)
10	3 (8.11%)
12	10 (27.03%)
Other	3 (8.11%)
Do you currently work weekend shifts?	28
Yes	12 (42.86%)
No	16 (57.14%)
Type of facility of current employment.	28
Inpatient/Hospital	15 (53.57%)
Ambulatory/Clinic	4 (14.29%)
Long Term Care	1 (3.57%)
Home Health	0 (0.00%)
Community Health/Public Health	2 (7.14%)
Other	6 (21.43%)

Note: * respondents able to select all that apply

BMI. Self-reported height and weight measurements were used to calculate BMI for participants. As previously mentioned, one height was excluded due to participant entry error, resulting in thirty calculated BMI data sets. The mean BMI for the study population was 26.53 with a range of 20.5-47.5 (SD = 6.208).

Figure 2 demonstrates the frequencies of each BMI category for the study population. A table of the frequencies of these BMI categories is included in Appendix J. No nurses with an underweight BMI enrolled in the study. The majority of nurses in the

study population had an overweight or obese BMI (56%), which is slightly less than national rates (68.5%) or rates found among nurses (60%) (Levi et al., 2014; Trossman, 2013). The obesity rate in the study population (23%) was below the county's obesity rate (27%) (National Initiative for Children's Healthcare Quality, 2011a).

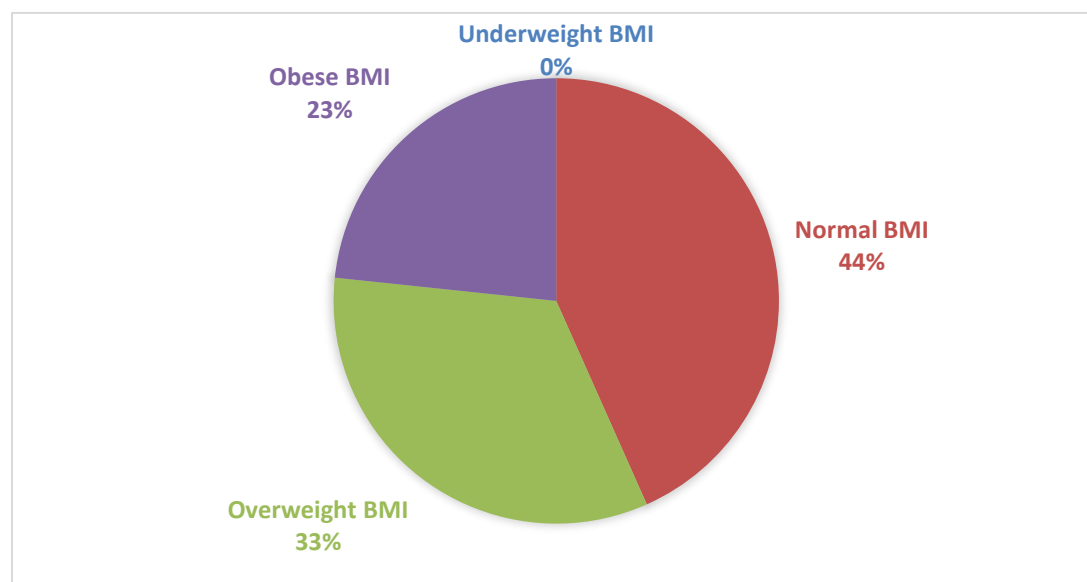


Figure 2. BMI Category Rates among Sample Participants.

There was one outlier in the study population, a morbidly obese BMI of 47.5. This was calculated based on participant self-report. So, participant entry error cannot be ruled out. However, it is not unreasonable to find morbid obesity in the general population nor the nursing population. It is also possible that this may not have remained an outlier in a larger sample population. For this reason, the outlier was retained for statistical analysis. However, this outlier affected the distribution of the results and resulted in a significant positive skew (1.781) as shown in Figure 3. The skew of this data impacts the strength and significance of correlations observed in relationship to the BMI.

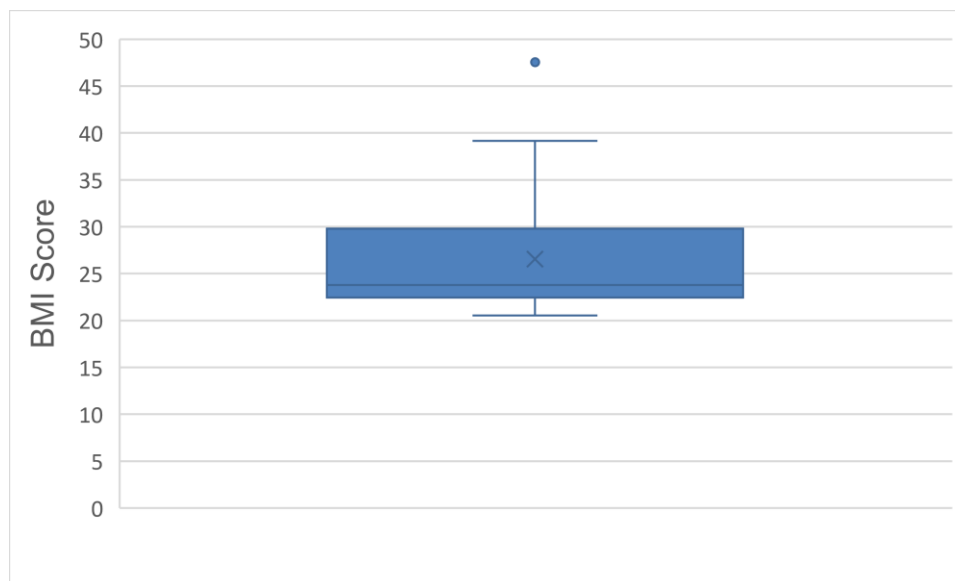


Figure 3. Distribution and Skew of BMI Scores.

Self-care agency. Each of the 34 questions on the DSCAI-90 has a minimum score of 0 and a maximum score of 100. The total score for the DSCAI-90 is the score used for the correlational analysis for this study. See Appendix B for details of the scoring procedure for the DSCAI-90. The mean total score for the DSCAI-90 was 79.3 (SD = 10.28) with a range of 56.5-95.6. The mean score for the study population is higher than that observed among rural South Dakota women (75.713, SD=10.06) (Burdette, 2012). This mean score demonstrates that the study population had a significant amount of self-care agency and feel they have knowledge and resources necessary for self-care.

The distribution of the total scores was normal, with a slight negative skew coefficient of -0.373. The distribution of the total scores for the DSCAI-90 is demonstrated in Figure 4. This supports significance of correlational statistics utilizing this data set.

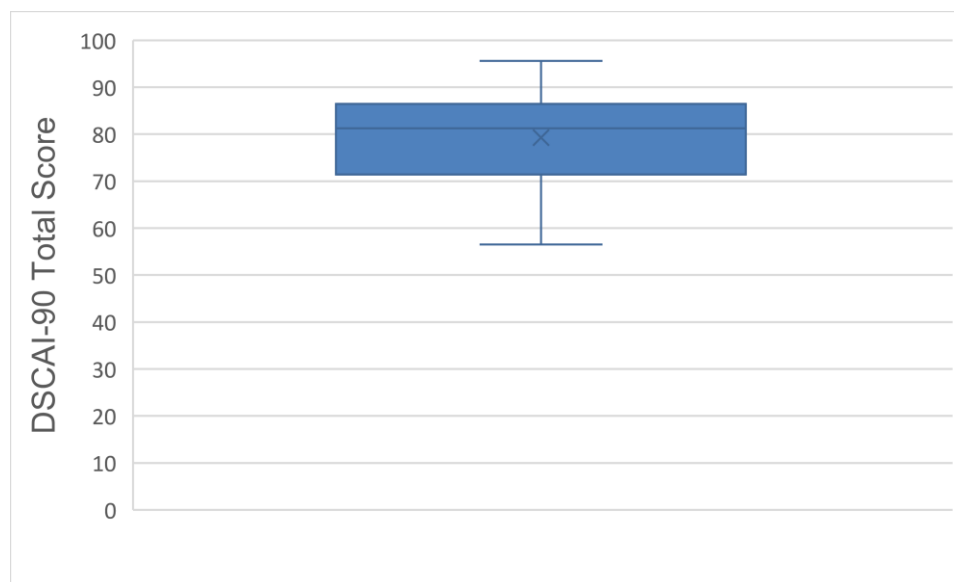


Figure 4. Distribution and Skew of DSCAI-90 Total Scores.

While the mean scores for the 34 instrument questions (Appendix H) were not used in the correlational analysis, the means scores for these individual questions does provide further information regarding the self-care agency possessed by study participants. Mean scores for all questions ranged from 45.6-96.7. This wide range demonstrates that the study population does not contain all elements of self-care agency in equal measure. The questions with the lowest mean scores were the two relating to friends and family doing or saying things to encourage the individual to care for health (mean scores of 45.806 and 45.605 respectively). The highest mean score for an individual question was the one relating to the respondent's knowledge of smoking and how it relates to health (96.774). Mean scores in the study by Burdette (2012) ranged from 37.873 to 94.804. Previous studies cited in Burdette (2012) noted question scores

ranging from 43 to 84.64.

The DSCAI-90 also produces scores for six subscales. These subscales were not utilized for correlational statistics in this study. The mean and range for each subscale score are included in Table 3 as well as Appendix H. The survey population had the highest mean score for Subscale 2: Valuing of Health. The lowest subscale score was on Subscale 6: Attention to Health. These results would suggest that the nurses in the study population placed value on health but did not possess the resources to give necessary attention to their health. This may provide some insight into perceived lack of self-care agency within this population. The ranges for these subscale scores were quite wide for several of the subscales, but these scores were not utilized in correlational data. The scores are included here to enhance our understanding of the sample population only.

Table 3

DSCAI-90 Subscale Mean Scores

Subscale	Mean	Range	SD
Ego Strength	76.0	34-97	17.232
Valuing of Health	86.7	62.7-100	8.295
Health Knowledge and Decision-Making Capability	85.0	69.1-99.7	9.203
Energy	77.2	25.75-97.5	19.285
Feelings	84.3	54.25-100	13.211
Attention to Health	60.7	33.4-94.6	19.054

Self-care practices. The DSCPI-90 has a minimum score of 0 and maximum score of 100 for each of its 18 questions. The complete list of mean question scores is included in Appendix H. The DSCPI-90 produces a total score only, a mean of the question scores. Details of the scoring method is included in Appendix C. The mean DSCPI-90 total score was 77 with a range of 34.8-98.2 (SD = 15.40). The lowest mean

question scores were doing “things to maintain or achieve balance between time alone and with others” (mean = 60.968), doing “things to get the amount of activity you think necessary for health” (mean = 61.387), and doing “things to get amount of time alone you think necessary for health” (61.613). In contrast, the highest mean score was for “eating breakfast” (89.290).

The distribution for the total DSCPI-90 scores was normal with a moderate negative skew (-0.516). As evidenced in Figure 5, the skew of this data has a slight negative skew. The mean and median do not line up for a normal distribution. However, the tails of the distribution do not demonstrate significant outliers.

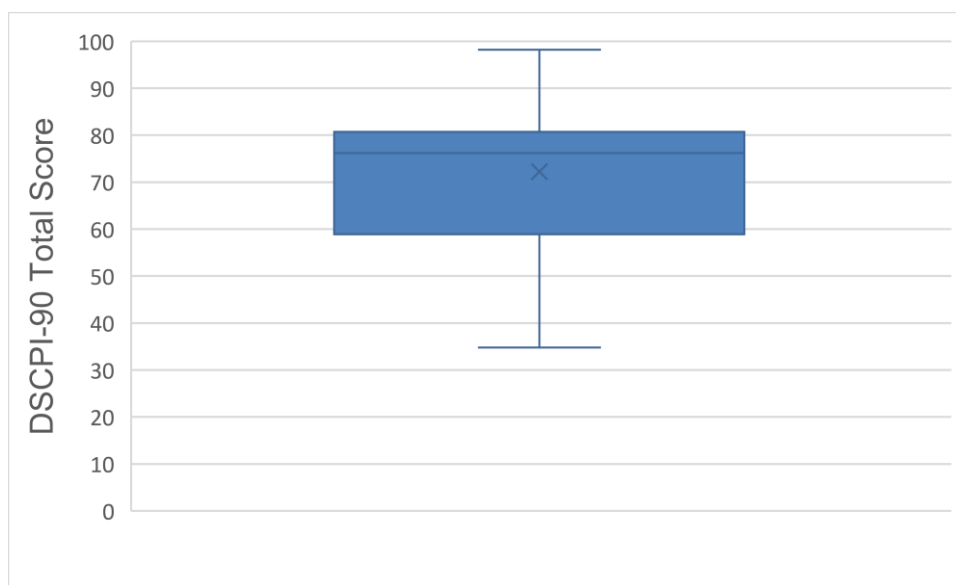


Figure 5. Box and Whisker Plot of Distribution and Skew of DSCPI-90 Scores.

Correlational Statistics

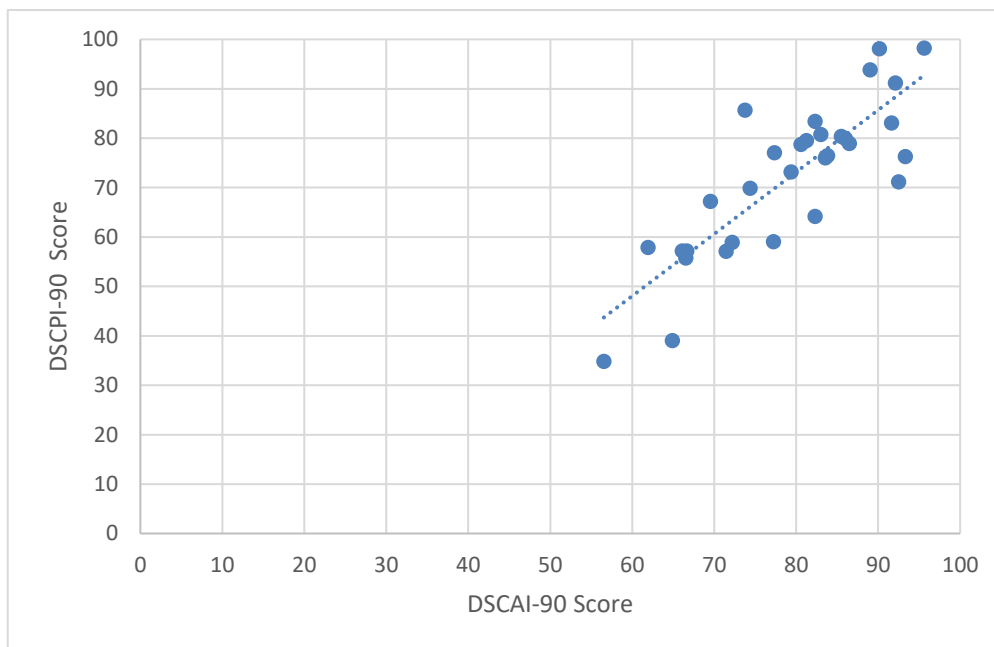
The research question for this study was: What is the relationship between self-care agency, self-care practices, and body mass index among South Dakota RNs?

Relationships between the given variables were analyzed using Pearson’s product moment correlation coefficient (r) and a significance level (p) for each pair of variables.

A confidence level of 95% ($\alpha = 0.05$) was utilized for analysis in this study. Despite a small sample size, all correlational relationships tested demonstrated statistically significant correlations.

A strong, positive relationship was found between SCA and SCP ($r = 0.838$, $p = 0.00$). The relationship between SCP and BMI was moderate and negative ($r = -0.407$, $p = 0.025$). A table of these correlations is available in Appendix K. Scatter plots were used to visually represent the relationships between SCA and SCP as well as SCP and BMI. These scatter plots are presented in Figures 6 and 7 respectively. These scatter plots not only visually reinforce the strength and direction of relationship for the given variables, but also demonstrate the impact of the skewed BMI scores. The range of BMI scores detracted from the clustering of results and thus outliers are noted in this visible representation of the relationship.

Figure 6. Relationship between DSCAI-90 and DSCPI-90 with Trend Line.



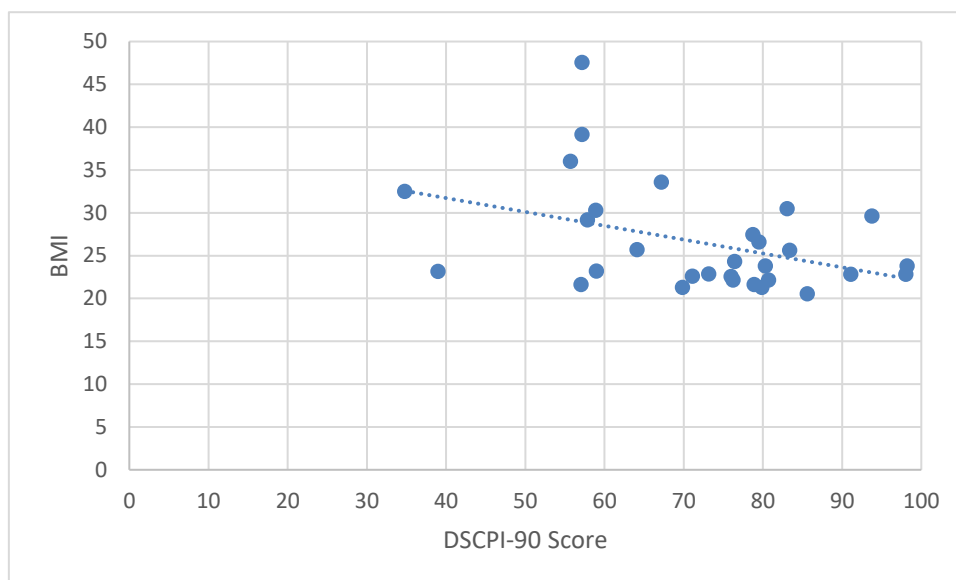


Figure 7. Relationship between DSCPI-90 and BMI with Trend Line.

The data demonstrates that SCA, as measured by the DSCAI-90, has a strong correlation with SCP ($r = 0.838$, $p = 0.00$) as measured by the DSCPI-90. SCP had a moderate correlation with BMI ($r = -0.407$, $p = 0.025$). In this way, the relationships between these variables were confirmed among the sample population of South Dakota RNs.

After observing the strong relationship between SCA and SCP and the moderate relationship between SCP and BMI, the researcher analyzed SCA and BMI to ascertain if the relationship between SCA and BMI might be equal to or stronger than that between SCP and BMI. Thus, an incidental finding of this study was a moderate negative relationship between SCA as measured by the DSCAI-90 and BMI ($r = -0.524$, $p = 0.003$).

While a relationship similar to SCP and BMI ($r = -0.407$, $p = 0.025$) was observed, neither SCA nor SCP showed a strong enough correlation with BMI to account for all variability of BMI. The data and correlational analysis in this study were not sufficient to determine whether these variables correlated with BMI independently or in

concert with one another, being strongly correlated with one another. The correlation and significance values for SCA and BMI are included in the table in Appendix K and visually represented in Figure 8.

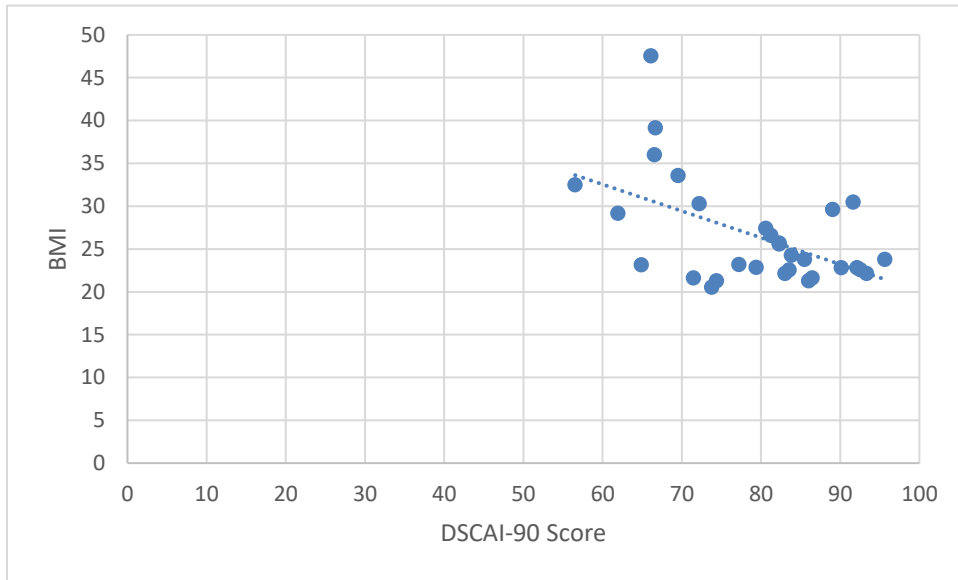


Figure 8. Relationship between DSCAI-90 and BMI with Trend Line.

Chapter 5: Discussion & Conclusions

The purpose of this study was to investigate the relationship between SCA, SCP, and BMI among RNs in an urban South Dakota county. The hypothesized relationship was that SCA would have a positive relationship with SCP, and SCP would have a negative relationship with BMI. The study went on to look at the relationship between SCA and BMI.

Discussion of Results

The results were examined to determine the relationship that existed between self-care agency, self-care practices, and body mass index among South Dakota RNs. The results included descriptive statistics that analyzed demographic, lifestyle, and professional traits of the sample as well as calculated BMI scores. The DSCAI-90 and DSCPI-90 were also analyzed to compare the sample to other populations and observe trends in mean question scores.

The sample population had a higher mean DSCAI-90 score (79.3) than observed in previous studies (75.7 in (Burdette, 2012)). Burdette (2012) utilized a rural population unlike the largely urban population of this sample. However, the sample in Burdette (2012) was the most similar population in terms of demographics and geography available for comparison. The higher mean score in this study demonstrates that the sample population possessed greater self-care agency, possessing greater knowledge and resources for the provision of self-care. The subscales for the DSCAI-90 demonstrated that the sample population placed a high value on health with a mean score of 86.7 (SD = 8.295) and felt they possessed adequate health knowledge and capability to make decisions with a mean score of 85 (SD = 9.203). However, the sample population's

lowest subscale score was attention to health, with a mean of 60.7 (SD = 19.054). This demonstrates that the sample population possessed adequate knowledge and placed value on health but felt they did not have the resources necessary to pay it adequate attention.

This is further illustrated in the individual question scores. The sample had the highest mean score on the question relating to knowledge of smoking and how it relates to health (96.774), which is consistent with the education and training provided to nursing professionals. The lowest mean scores were on the questions relating to friends and family doing or saying things to encourage the individual to care for health (45.806 and 45.605 respectively). This is the participant's perspective and the amount of support was not objectively measured. However, it demonstrates that the sample population did not feel that they had adequate encouragement to engage in self-care activities. This could potentially relate to role strain, competing demands on time, or social norms that are inconsistent with self-care. While the origins are not known within these results, the results do support a deficit in social support as it relates to self-care and presents a potential barrier to self-care agency and resulting practices.

The DSCPI-90 total score was 77 (SD = 15.399), which was considerably higher than the mean total score among rural South Dakota women (41.1) in Burdette (2012). Again, the sample in Burdette (2012) was not the same as that in this study but was the most similar population identified in the literature, with most studies utilizing sample populations dissimilar in geography, demographics, and health status. The mean scores for individual questions further highlighted the strengths and weaknesses of self-care within this population, though the exact variables that relate to these high and low scores are not known. The highest mean score was related to eating breakfast (89.29), a practice

well-supported in literature as supporting health outcomes. In contrast, the questions relating to doing things to support adequate time for self-care practices were the lowest scoring: maintain or achieve balance between time alone and with others (60.968), get the amount of activity you think is necessary for health (61.387), get the amount of time alone you think is necessary for health (61.613). This once again demonstrates a barrier to self-care being time and support for self-care practices. Participants were not investing energy into making time for self-care but meeting their immediate physical needs such as eating breakfast.

The correlational statistics demonstrated statistically significant relationships between the study variables. The following relationships were observed: a strong positive relationship between SCA and SCP ($r = 0.838$, $p = 0.00$) and a moderate negative relationship between SCP and BMI ($r = -0.407$, $p = 0.025$). These relationships support the proposed relationship the study sought to confirm - positive relationship between SCA and SCP, negative relationship between SCP and BMI.

However, the incidental finding of a moderate negative relationship between SCA and BMI ($r = -0.524$, $p = 0.003$) demonstrated the relationships to be more complex than hypothesized. Both SCA and SCP had only moderate negative relationships with BMI, meaning neither relationship could account for all variation observed in BMI. The complexity of the relationship between SCA and BMI is beyond what was measured in this study, likely with more moderating variables than SCP. Alternately, the correlations demonstrated could be related to the fact that the DSCAI-90 and DSCPI-90 are general measures of self-care and not specific to weight management behaviors.

The moderate to strong relationships and statistical significance observed for each

relationship demonstrate that these variables represent at least a portion of the factors that impact BMI. The study population had higher scores on the DSCAI-90 and DSCPI-90 than geographically similar populations, and the rate of overweight or obese BMI (56%) was less than the national rate (68.5%) or the rate among nurses (60%) (Levi et al., 2014; Trossman, 2013). The obesity rate (23%) was also less than that of the county in which the study was set (27%) (National Initiative for Children's Healthcare Quality, 2011a). While the full picture of this relationship and its many variables is not represented in this study, the results of this study support that there is a relationship between increased self-care agency, an increased engagement in self-care practices, and a lower obesity rate among nursing professionals.

Implications

The results of this study have implications for many aspects of the nursing profession including nursing practice and nursing education. Administrators, educators, and individual nurses alike could benefit from the results presented as well future research in this line of inquiry.

The research presented in this study demonstrate that self-care agency is related to self-care practices. However, it also demonstrated that scores for elements of self-care agency can vary widely. Thus, more than just knowledge of health promotion and related interventions must be present to maximize self-care agency and encourage the translation of self-care agency into self-care practices. Nurse administrators should thus consider the impact of the workplace environment and the systems around it on self-care agency as a means of promoting self-care and weight management. The lowest scores on the DSCAI-90 were in relationship to feeling supported by friends and family in caring for self. Co-

workers and the social aspects of work are an important element to consider in improving this aspect of self-care agency. Social norms and social support impact the use of coping skills for stress management as well as behaviors such as healthy eating (Ferranti et al., 2013; Zapka et al., 2009).

Nurse administrators might consider how relationships are built within the work environment and how these might be leveraged to support health behaviors. Similarly, work policies that contribute to the nurse feeling supported by administrators and their employer might also leverage this element of self-care agency. To do this, nurse administrators and health care employers will need to look at health promotion interventions beyond the traditional poster campaigns, walking incentives, and health fairs, which have not proven effective at decreasing obesity rates among nurses (Wynd et al., 2007; Zapka et al., 2009).

Nurse administrators might utilize the information gained by this study and its foundational theory to assess for deficits in self-care agency or practices within the nursing population when designing policies and practices for the unit or health system. This would allow the nurse administrator to capitalize on strengths of the population and build up areas of weakness to create a healthier work environment. Administrators may consider assisting in creating time for health during the work day through policies that ensure meal breaks off the unit, convenient access to workout facilities, or staffing policies that promote work-life balance for those on each shift. Each decision made ultimately contributes to the social milieu of the workplace and can thus communicate support for self-care or hinder self-care activities. Nurses in this study valued health but did not feel they had adequate support and resources to engage in self-care; nurse

administrators should thus encourage these health values and beliefs of nurses while working to decrease barriers to necessary resources.

The results can also impact the practices of individual nurses. The results reinforced that nursing professionals value self-care but may not feel they have adequate resources, such as time or social support, to adequately engage in self-care practices. This was consistent with the literature, which demonstrated that nurses felt health promotion activities were important as well as the role of the nurse as role model, but the presence of these beliefs did not translate to improved engagement in self-care practices (Blake & Harrison, 2013). Based on these results, it would also be valuable for individual nurses to self-assess self-care agency to identify personal or professional elements that may be hindering the actualization of self-care. This may include the work environment and its stressors or the social supports needed to cope with the stressors (Ferranti et al., 2013; Zapka et al., 2009). Similarly, psychosocial variables including psychiatric diagnoses, ineffective coping, or a history of trauma may prevent individual nurses from achieving their self-care goals (Kubzansky et al., 2014; Mason et al., 2013; Mason et al., 2014).

The results of this study demonstrate that self-care is complex and supports the constructs of Orem's Self-Care Deficit Theory. Self-care agency is not an inherent trait and thus the ability to engage in self-care practices is more complex than choosing to do so. Regardless of whether SCA is formally measured, nurses should be provided with insight related to the complexity of SCA and SCP. Nurses should understand that the environment in which they work and live, as well as the resources available to them both externally (e.g. access to facilities) and internally (e.g. knowledge) can impact their ability to practice self-care (Denyes et al., 2001). By putting weight management into

perspective as a self-care requisite within Orem's Self-Care Deficit Theory, the endeavor can be approached as a problem for which the nurse seeks to find a solution. So, just as a nurse would do for his/her patient, the barriers to self-care can be assessed and identified and solutions discovered to promote greater engagement in self-care practices. This study has begun to explore these constructs among nursing professionals. However, the individual nurse would need an awareness of this perspective and its application to utilize it for self-advocacy or to improve health promotion strategies within an employment setting.

For a reframing of self-care and more specifically of weight management to occur, nursing education must also take an interest in these concepts. Increased self-care agency was related to increased self-care practices and lower BMI among nursing professionals in this study. Many of the elements of self-care agency can be impacted by nursing education through the development of knowledge, skills, and attitudes necessary within the nursing profession. Study participants reported greater self-care agency and engagement in self-care practices related to health promotion concepts that are concrete and reinforced in nursing education programs – e.g. the harms of smoking and importance of eating breakfast. Nursing education might be utilized to further prepare nurses to care for themselves in their future role by discussing behaviors and attitudes that support important principles such as the development of positive coping skills to cope with stress, management of work-life balance, role strain and the management of multiple roles, and the value of social supports especially in the workplace. These concepts have the potential to increase self-care agency in relationship to weight management but also in the management of stress and resultant burn-out (Han et al.,

2012).

Nursing education has a unique opportunity to further the understanding of self-care and health promotion among nursing students. Currently, as nursing students are socialized, their value of health increases but self-care practices decrease (Ashcraft & Gatto, 2015; Hosseini et al., 2015). This demonstrates the opportunity to intervene during the professional formation of nurses to increase self-care agency, awareness of self-care practices, and contribute to a positive social milieu. Promoting a norm of self-care among nursing students may help to create an environment of social support for health behaviors, which has significant impact on health behaviors (Ferranti et al., 2013; Zapka et al., 2009).

This study demonstrated that nurses do possess greater self-care agency and that this appears to be, in part, related to the knowledge they possess. However, nursing professionals do not equally possess all elements of self-care agency and reported a deficit in social support. Similarly, the nurses in this sample engaged in self-care practices in general but reported lower engagement in practices related to making time for their health or balancing time for self-care against other demands. Further research would be needed to explore the relationships of these specific factors, however. This study did demonstrate that increased self-care agency is related to increased self-care practices and decreased BMI. The information from this study might be utilized by nurse administrators, individual nurses, and nurse educators to adjust the view of self-care and weight management among nurses to consider the multitude of factors that contribute to self-care agency and the perceived access to the resources necessary to engage in self-care. Future research could further identify opportunities for intervention to promote self-

care agency and thus impact the self-care practices and health of nursing professionals.

Limitations

This study was foundational to a line of research related to self-care among nursing professionals. It provided some insight and laid the groundwork for further inquiry. However, there were several limitations to the application and generalizability of this study.

The sample population was too small to be representative of the study population of nurses in Minnehaha county. The sample was also too homogenous to be representative of the general population, with the sample being predominately female, urban, and white. However, this skew was not unexpected given the setting and the study target population. The nursing profession is predominately female (91% nationally) (American Nurses Association, 2014), as was our sample (96.77%). The sample population was predominately white (96.77%), which was slightly higher than the general population of South Dakota (85.5%) (United States Census Bureau, 2016) but not unexpected. The population of the sample was predominately urban (77.42%), which is consistent with the setting from which the sample was recruited (84.65%) (Brooks et al., 2008), a significantly urban county in eastern South Dakota.

The study was not designed to control for demographic factors. Participants were not excluded based on any demographic, lifestyle, or professional variables. Information regarding gender, background, etc. was not available to the researcher prior to recruitment of participants. The list of nurses from the Board of Nursing included names and addresses but not gender, marital status, or professional background. Therefore, demographic, lifestyle, and professional background information was needed to gain

understanding of the nurses within the study population. Additionally, the study was designed to examine relationships between self-care agency, self-care practices, and BMI. Interventions currently in place in the work place are not generally tailored to an individual's gender, work schedule, marital status, or any other variable. The programs and resources available to nurses in the workplace are universal.

Further research would be warranted to examine if demographic or professional barriers played a role in the development of agency or engagement in self-care practice, and such research would advance this line of inquiry. However, for the purposes of this study, an inquiry about nursing professionals as an aggregate was desired. For this reason, the researcher decided that the most ethical decision would be to retain the data set for the one male nurse as well as the one non-white nurse. While excluding these data sets as outliers would strengthen the statistical analysis and application of results, it would also fail to include diverse voices in a line of inquiry about the experience of nurses.

The skew of the sample is expected among nurses in South Dakota and especially within the county studied, and so while not necessarily representative to other populations it is likely close to being representative of the study population. The nurses participating in this study shared cultural, socioeconomic, and geographic health barriers with their neighbors and co-workers. Therefore, the results, while unable to be generalized neither within the state nor nationally, provide some understanding of nurses within the study county. These results also helped to provide valuable information to direct future research including the need for further consideration of representation and generalizability when sampling among nursing professionals.

A further limitation of the study was the skew of the professional variables. The study had no participants from the home health setting and limited representation from long term care (3.57%), and community health (7.14%). The nursing profession encompasses a variety of professional settings. This study intended to examine the relationships of self-care variables within the nursing profession, not limited to those practicing in the inpatient setting. The inclusion of other work environments not only increases the generalizability of the results to the larger population, it also provides a better comparison to the general population, in terms of the shift lengths and timing of shifts. The study being predominately inpatient (53.57%), these results cannot be applied or generalized to the larger population. Again, future research will need to consider how to balance having a sample that is representative of the nursing population with the ability to obtain statistically significant results able to be generalized to the larger population.

The distribution of demographic and professional variables as well as the rates of the BMI categories is in part a product of the sample setting and population and in part a product of small sample size and low response rate. As discussed, the study had 31 participants, short of the 42 that had been desired for representation of the study population. The small sample size may have contributed to the skew of the descriptive variables, including BMI categories. Only one participant was found to have a morbid obese BMI. While rates of morbid obesity are not specifically reported for the nursing population in the U.S., it is likely that this elevated BMI would not have been as much an outlier with a larger sample. It is also possible that self-report bias contributed to the distribution of the gathered BMI measures. The nurses in the sample may have reported lower weights or higher heights in order to manipulate the calculated BMI. The measures

reported were unable to be confirmed by the researcher through direct measure or chart review due to the nature of the study and confidentiality measures. The small sample size also means the sample cannot be considered representative of all RNs or even all RNs in South Dakota. So, it cannot be determined whether the BMI distributions observed here would hold true in larger populations of nurses.

While the study was designed to reduce self-report bias by allowing the participant to report biometric measurements rather than the actual BMI measure, self-report or self-enrollment biases may have further contributed to a skew of descriptive variables. The study was centered around self-care and those who felt they were lacking in self-care practices or abilities may have been less inclined to enroll. Similarly, the study did not carry incentives for participation. This may have further contributed to the low response rate and skewed the types of participants interested in participating.

This study also had a limited scope and generalizability due to its design. The study did not explore all possible relationships among the collected variables. This study did not explore the impact of the DSCAI-90 subscales on DSCPI-90 scores or BMI. Similarly, the variability in answers to specific questions was not explored, nor were the relationships between demographic or professional variables and the study variables explored. A more complex analysis and larger sample may have further clarified relationships between the personal and professional traits of participants and their measured SCA, SCP, and BMI. This would provide a more robust description of the relationships present, but was beyond the scope of this study. It is unknown whether a construct within the DSCAI-90 or its subscales may have been a stronger predictor of variability in the other measures than the total score. Similarly, it is unknown if variations

in demographics or professional background may have proven influential in the relationships of the study variables.

The statistical analysis limited the generalizability of the study further by looking only at correlations and not multi-variate regressions to account for the variability within the sample. Additionally, the researcher did not control for type 1 errors in the analysis of the data. This study had a limited scope and was intended to begin a line of inquiry. Further research in this area would be strengthened through more robust statistical analysis.

The tools in this study were chosen for their usability and compatibility with the theoretical framework of the study. The DSCAI-90 and DSCPI-90 measured self-care agency and self-care practices in general among participants. The correlation with BMI might have been further explored with instruments more specific to weight-related self-care, especially weight-related self-care practices. Similarly, the study could have been strengthened with direct measures of biometrics – height and weight. It may have been further strengthened with the inclusion or use of obesity measurements other than BMI such as waist and hip ratios or bioelectrical impedance analysis for lean mass measurement.

Implications for Future Research

The above limitations present challenges for the application of the results of this study. However, they also demonstrate some of the opportunities for future research related to this topic. An expanded study of the nursing population in South Dakota could be conducted both to produce a more representative sample. Future studies might also compare these self-care variables between work environments or population

centers/regions. This could allow for analysis of specific barriers to SCA or SCP, especially as they relate to personal and professional traits.

Future studies might further analyze the factors introduced in this study – SCA, SCP, and BMI – by analyzing relationships with specific elements of SCA such as those represented by the DSCAI-90 subscales. Future research might also consider the addition of obesity measurements other than BMI such as waist and hip measurements, waist to hip ratios, or lean mass and body fat percentages measured via BIA.

To evaluate the motivations that impact weight management, future research could include tools to measure self-care practices more specific to weight management. This could be done in conjunction with or in place of the DSCPI-90 used in this study. This would allow for future researchers to analyze SCA specific to weight management as opposed to the general health measure utilized in this study. The results of these future studies could then lead to studies that relate to interventions to improve and maximize SCA and SCP within the nursing population and the potential impact on BMI in this population.

Conclusion

This study sought to begin an investigation into the factors that impact self-care as it relates to nursing professionals and BMI. The relationships demonstrated in this study were consistent with Orem's Self Care Deficit Theory (Orem et al., 2001) with weight management serving as a self-care requisite. In the study population, self-care agency was observed to have a positive relationship with self-care practices, and self-care practices had a negative relationship with BMI. Self-care agency also had a negative relationship with BMI. As described in Orem et al. (2001), these results including the

variance between DSCAI-90 subscales support that self-care agency is not an inherent attribute but rather constructed from influences of environment and self, influencing the possession of adequate resources for the execution of self-care.

Orem's Self-Care Theory, then, can be visualized in the relationship of nursing professionals to weight management and thus can aide in the understanding of and intervention in health promotion. As obesity continues to be an issue in this nation (Levi et al., 2014) including the nursing population (Trossman, 2013), opportunities for health promotion and weight management must be considered. Like those in the general population, nurses encounter several barriers to self-care, both personal and professional. This study demonstrated that the barriers impacting self-care agency outside of education or awareness are important to consider in the nursing population.

Previous obesity research had heavily focused on correlational studies related to the progression from risk factors to obesity to co-morbid diagnoses. Research related to self-care agency and the factors that empower individuals to pursue and achieve weight management have been extremely limited, even more so among nursing professionals. This study sought to contribute to an understanding of the factors that contribute to motivation and success in weight management and provide a foundation for potential interventions in this regard. This study did demonstrate that self-care agency plays a role in the actualization of self-care as it relates to weight management, although the many complexities of the relationships between self-care agency, self-care practices, and BMI were not explored. This foundational research demonstrated that the relationship between these elements of Orem's Self-Care Deficit Theory have the potential to provide insight into the factors that both help and hinder weight management among nurses. It also

provides a paradigm through which to assess for further opportunities to assess for deficits and explore potential interventions. While further research will be needed to better delineate relationships and identify effective interventions, the potential to impact health on the individual and systems level within the nursing profession is evident.

APPENDIX A**Demographics, Lifestyle, and Professional Background Survey****Directions:**

The following questions ask about factors that relate to you – your personal traits, professional background, and lifestyle.

1. Enter your age

2. Select your gender

- Male
- Female

3. Describe your race (origin) and ethnicity. *Select all that apply.*

- Black/ African American
- Hispanic/Latino
- Asian
- Native American/Alaskan Native
- Native Hawaiian/Pacific Islander
- White/Caucasian
- Other

4. In which setting is your home located?

- Rural
- Urban

5. Please describe your current marital status. *Select all that apply.*

- Married
- Divorced

- Widowed
 - Separated
 - Single, Never Married
6. Do you have children?
- Yes
 - No
7. Do you currently have children under age 18 living in your household?
- Yes
 - No
8. How many years have you been an RN?
-
9. Are you currently employed as an RN?
- Yes
 - No
10. Select your current employment status
- Full-Time (33-40 hours)
 - Part-Time (32 hours or less)
 - PRN
11. Shift(s) you currently work. *Select all that apply.*
- Day
 - Evening
 - Overnight
 - Rotating

12. Select length of shifts (in hours) that you currently work. *Select all that apply.*

- 4
- 8
- 10
- 12
- Other _____

13. Do you currently work weekend shifts?

- Yes
- No

14. Select the type of facility that best describes your current employment setting.

- Inpatient/Hospital
- Ambulatory/Clinic
- Long Term Care
- Home Health
- Community Health/Public Health
- Other _____

15. Height (inches)

16. Weight (lbs.)

your health?

_____ 4. On a scale of 0 to 100, how much do you know about sleep and rest as they relate to your health?

_____ 5. On a scale of 0 to 100, how much do you know about smoking as it relates to your health?

_____ 6. On a scale of 0 to 100, how much do you know about stress as it relates to your health?

_____ 7. On a scale of 0 to 100, how much do you know about your own personal strengths?

The questions change some; please keep filling in numbers from 0 to 100. 0 means "not at all"; 100 means "totally".

_____ 8. On a scale of 0 to 100, how aware are you of your own sexuality?

_____ 9. On a scale of 0 to 100, how aware are you of your feelings?

_____ 10. On a scale of 0 to 100, how able are you to describe the different feelings you experience?

_____ 11. On a scale of 0 to 100, how able are you to talk about your feelings?

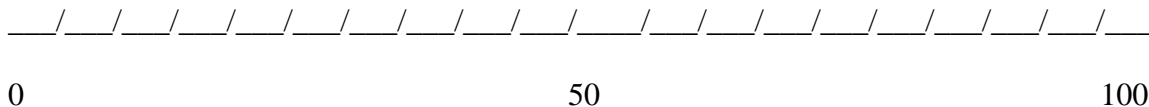
_____ 12. On a scale of 0 to 100, how much experience have you had in making decisions about your health?

_____ 13. On a scale of 0 to 100, how much do you value your health?

_____ 14. On a scale of 0 to 100, how much does your family value their health?

_____ 15. On a scale of 0 to 100, how much do your friends value their health?

For the rest of the questions please fill in a percent from 0% to 100%. 0% means "none"; 100% means "all".



_____ % 16. What percent of the time are you capable of making good decisions about your health?

_____ % 17. What percent of the time do you think clearly and logically about your health?

_____ % 18. What percent of the time are you in touch with what's going on with your health?

_____ % 19. What percent of the time do you think about your health?

_____ % 20. What percent of the time does a lack of information interfere with you taking care of your health?

_____ % 21. What percent of the time do you feel too tired to take care of your health?

_____ % 22. What percent of the time do you have good feelings about yourself?

_____ % 23. What percent of the time do you feel proud about doing things well?

_____ % 24. What percent of the time do you feel good about your body?

_____ % 25. What percent of the time do you think you have control over your health?

_____ % 26. What percent of the time do you think about what your health might be like in the future?

_____ % 27. What percent of the time do your friends say or do things to encourage you to take care of your health?

_____ % 28. What percent of the time does your family say or do things to encourage you to take care of your health?

_____ % 29. When you need health information, what percent of the time are you willing to ask for it?

_____ % 30. What percent of the time does a lack of strength interfere with you taking care of your health?

_____ % 31. What percent of the time do your peers pressure you into doing things that are not good for your health?

_____ % 32. What percent of the time do you feel good about yourself?

_____ % 33. What percent of the time do you feel good about doing things well?

_____ % 34. What percent of the time do you make good decisions about your health?

DENYES SELF-CARE AGENCY INSTRUMENT (DSCAI-90) Scoring Instructions

1. A total score and six scale scores can be obtained.
2. Recode four items: #20, 21, 30, 31. Recode by subtracting item score from 100 (e.g., original score on item #20 = 30, recode as $100-30 = 70$).
3. Determine total score: obtain mean score for items #1-34 (i.e. sum scores for items #1-34 and divided by 34). Note: Be sure items 20, 21, 30, 31 have been recoded prior to calculation.
4. Determine Six Scale Scores:
 - Scale #1: Ego Strength:** Obtain mean for items #22-24, 32-33
 - Scale #2: Valuing of Health:** Obtain mean for items #13-15
 - Scale #3: Health Knowledge and Decision-making Capability:** Obtain mean score for items #1-7, 12, 16-18, 25, 34
 - Scale #4: Energy:** Obtain mean score for items #20, 21, 30, 31 (Note these items should have been re-coded as noted above.)

Scale #5: Feelings: Obtain mean score for items #8-11.

Scale #6: Attention to Health: Obtain mean score for items #19, 26-29

Online Survey Formatting

Section 2: Self-Care Agency

In this section of the survey, we will be looking at your self-care agency - your knowledge, skills, and abilities related to engaging in health behaviors. This is not a measure of how much you engage in behaviors, but rather how prepared you feel to engage in them. General directions are listed here, but each group of questions will have more specific instructions.

General instructions:

Please fill in the number that best answers each question for you.

There are no right or wrong answers.

For all questions about your health, please answer based on what you think health is for you.

Please fill in any number from 0 to 100 that best answers each question for you. 0 means "nothing"; 100 means "everything". Numbers in between mean your answer is between nothing and everything.

On a scale of 0 to 100

0 100

How much do you know about your body and how it works?

How much do you know about eating as it relates to your health?

How much do you know about exercise as it relates to your health?

How much do you know about sleep and rest as they relate to health?

How much do you know about smoking as it relates to your health?

How much do you know about stress as it relates to your health?

How much do you know about your own personal strengths?

The questions change some, now. Please keep filling in numbers from 0 to 100. However, for the next group of questions, 0 means "not at all"; 100 means "totally".

On a scale of 0 to 100:

0 100

How aware are you of your own sexuality? *

How aware are you of your feelings? *

On a scale of 0 to 100:

0 100

How able are you to describe the different feelings you experience? *

How able are you to talk about your feelings? *

On a scale of 0 to 100:

0 100

How much experience have you had in making decisions about your health? *

How much do you value your health? *

How much does your family value their health? *

How much do your friends value their health? *

**For the rest of the questions please fill in a percent from 0% to 100%.
0% means "none"; 100% means "all".**

With 0% meaning "none" and 100% meaning "all":

0 100

What percent of the time are you capable of making good decisions about your health? *

What percent of the time do you think clearly and logically about your health? *

What percent of the time are you in touch with what's going on with your health? *

What percent of the time do you think about your health? *

What percent of the time does a lack of information interfere with you taking care of your health? *

What percent of the time do you feel too tired to take care of your health? *

What percent of the time do you have good feelings about yourself? *

What percent of the time do you feel proud about doing things well? *

What percent of the time do you feel good about your body? *

What percent of the time do you think you have control over your health? *

0 100

What percent of the time do you think about what your health might be like in the future? *

What percent of the time do your friends say or do things to encourage you to take care of your health? *

What percent of the time does your family say or do things to encourage you to take care of your health? *

When you need health information, what percent of the time are you

willino to ask for it?

What percent of the time does a lack of strength interfere with taking care of your health?

What percent of the time do your peers pressure you into doing things that are not good for your health?

What percent of the time do you feel good about yourself? *

What percent of the time do you feel good about doing things? *

What percent of the time do you make good decisions about your health?

- _____ % 5. What percent of the time do you eat breakfast?
- _____ % 6. What percent of the time do you eat the kinds of foods you think are necessary for your health?
- _____ % 7. What percent of the time do you eat a balanced diet?
- _____ % 8. What percent of the time do you do things to maintain or achieve good nutrition for yourself?
- _____ % 9. What percent of the time do you do things to get the amount of activity you think is necessary for your health?
- _____ % 10. What percent of the time do you do things to get the amount of rest you think is necessary for your health?
- _____ % 11. What percent of the time do you do things to maintain or achieve a balance between rest and activity?
- _____ % 12. What percent of the time do you do things to get the amount of time alone you think is necessary for your health?
- _____ % 13. What percent of the time do you do things to get the amount of time with others that you think is necessary for your health?
- _____ % 14. What percent of the time do you do things to maintain or achieve a balance between time alone and time with others?
- _____ % 15. What percent of the time do you do things to keep your bladder and bowel habits normal?
- _____ % 16. What percent of the time do you do things to keep yourself safe?
- _____ % 17. When you feel stressed, what percent of the time do you do things to feel less stressed?

_____ % 18. What percent of the time do you do things that help you to “be all that you can be” as a person?

DENYES SELF-CARE PRACTICE INSTRUMENT (DSCPI-90) Scoring

Instructions

1. One overall score is obtained for the DSCPI-90.
2. Recode Item #4 by subtracting the item score from 100.
3. To determine the overall score, after recoding #4, calculate a mean for item #1-18

Online Survey Formatting

Self-Care Practices:

This section of the survey asks you to reflect on how often you engage in various self-care practices.

General Instructions:

Please fill in the number that best answers each question for you.

There are no right or wrong answers.

For all questions about your health, please answer based on what you think health is for you.

Directions: Please fill in any number from 0 to 100 that best answers each question for you. 0 means “none of the time”; 100 means “all of the time”; numbers in between mean your answer is between none and all the time.

With 0% meaning "none" and 100% meaning "all of the time":

What percent of the time do you do things that are good for your health? *	0	100
What percent of the time do you take good care of your health? *		
What percent of the time do you follow through on decisions you make about your health? *		
What percent of the time do you put off doing things that would be good for your health? *		
What percent of the time do you eat breakfast? *		
What percent of the time do you eat the kinds of foods you think are necessary for your health? *		
What percent of the time do you eat a balanced diet? *		
What percent of the time do you do things to maintain or achieve good nutrition for yourself? *		
What percent of the time do you do things to get the amount of activity you think is necessary for your health? *		
What percent of the time do you do things to get the amount of rest you think is necessary for your health? *		
What percent of the time do you do things to maintain or achieve a balance between rest and activity? *	0	100
What percent of the time do you do things to get the amount of time alone you think is necessary for your health? *		
What percent of the time do you do things to get the amount of time with others that you think is necessary for your health? *		
What percent of the time do you do things to maintain or achieve a balance between time alone and time with others? *		
What percent of the time do you do things to keep your bladder and bowel habits normal? *		
What percent of the time do you do things to keep yourself safe? *		
When you feel stressed, what percent of the time do you do things to feel less stressed? *		
What percent of the time do you do things that help you to "be all that you can be" as a person? *		

APPENDIX D**Permission for Tool Use**

From: Mary Jean Denyes <m.denyas@wayne.edu> **Sent:** March 16, 2016 10:19 AM

To: Linda Burdette <linda.burdette@sstate.edu>

Subject: Re: Permission to use instruments

Linda

I would be pleased to grant you and your student permission to use the instruments. Did you send me feedback on your dissertation? This retirement steals my brains away at times. If you did, thank you; if you did not could you share that with me? Good luck to both of you as you proceed with your work. Did you tell me at what university you two are working/studying?

Mary Denyes

<copied text> On Wed, Mar 16, 2016 at 8:02 AM -0700, wrote:

Dr. Denyes, In 2009, you gave me permission to use both the DSCAI-90 and DSCPI-90 for my PhD dissertation. I have a master's student who would like to use the two tools for her thesis. Her thesis topic is: Relationship between Self-Care Agency, Self-Care Practices, BMI and Basic Conditioning Factors Present among Female Nursing Professionals.

May Takara Lynn Schomberg and I have permission to use the tools for her Master's in Nursing Education thesis?

Please contact me with any questions.

Thank you,

Linda

APPENDIX E

Survey Invitation Cover Letter

Dear _____:

I, Takara Schomberg, RN, am conducting a research project entitled "Relationship between Self-Care Agency, Self-Care Practices, and Body Mass Index among Nursing Professionals" as part of my master's thesis at South Dakota State University.

The purpose of the study is to better understand the factors that promote or prevent weight management among nursing professionals. This study will do so by confirming the impact of self-care motivation and self-efficacy on engagement in self-care practices and weight management. It is my hope that this knowledge will help to lay a foundation for interventions and policies to improve the health of nursing professionals in the future.

You as a professional nurse are invited to participate in the study by completing the attached survey. I realize that your time is valuable and have attempted to keep the requested information as brief and concise as possible. It will take you approximately 10 minutes of your time. This survey does allow you to save your place and resume later, if needed. Your participation in this project is voluntary. You may withdraw from the study at any time without consequence.

There are minimal risks to you for participating in this study. Because this study asks you to reflect on your personal health and the self-care agency and practices that contribute to it, there is a risk of negative feelings related to self-reflection.

However, this self-reflection may also be a benefit to you, as it provides the

opportunity to reflect on your strengths or identify areas in which you would like to perform better. You will also be contributing to research that may have an impact on health promotion among nursing professionals.

Your responses are strictly confidential. When the data and analysis are presented, you will not be linked to the data by your name, title or any other identifying item. Please assist me in my research and complete the attached survey. The survey will be open for the next four weeks.

Your consent is implied by the completion of the attached questionnaire. If you are agreeable to participate in this study, please begin the survey by clicking on the link below.

Please keep this email for your information. If you have any questions, now or later, you may contact me directly. My contact information is listed below. Thank you very much for your time and assistance. If you have any questions regarding your rights as a research participant in this study, you may contact the SDSU Research Compliance Coordinator at 605-688-6975, SDSU.IRB@sdstate.edu.

Sincerely,

Takara Schomberg, RN

takara.schomberg@jacks.sdstate.edu

This project has been approved by the SDSU Institutional Review Board, Approval No.:
IRB-1607011-EXP

APPENDIX F**IRB Approval – Expedited****South Dakota State University**

Human Subjects Committee/Office of Research

SAD Room 200

Box 2201 SDSU

Brookings, SD 57007

To: Takara Schomberg, College of Nursing

Date: July 21, 2016

Project Title: Relationship between Self-Care Agency, Self-Care Practices, and Body
Mass Index among Nursing Professionals

Approval #: IRB-1607011-EXP

Thank you for bringing your project to the SDSU Human Subjects Committee. The committee approved your project using expedited procedures as described in 45 CFR 46.110. The activity was deemed to be no greater than minimal risk, and the following expedited categories from 63 FR 60364-60367 were found to be applicable to your activity:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

One-year approval of your project will be dated starting 7/21/16. If you require additional time to complete your project, please submit a request for extension before 7/20/17.

Protocol changes must be approved by the Committee prior to their implementation.

Forms may be found on the Human Subjects web page.

If there are any unanticipated problems involving risks to subjects or others, or changes in the procedures during the study, contact the SDSU Research Compliance Coordinator.

At the end of the project please inform the committee that your project is complete.

If I can be of any assistance, don't hesitate to let me know.

Sincerely,

Norm

Norman O. Braaten

SDSU Research Compliance Coordinator

APPENDIX G

Numbers for Systematic Randomized Participant Selection

12	642	1272	1902	2532	3162	3792	521	1151
30	660	1290	1920	2550	3180	3810	539	1169
48	678	1308	1938	2568	3198	3828	557	1187
66	696	1326	1956	2586	3216	3846	575	1205
84	714	1344	1974	2604	3234	3864	593	1223
102	732	1362	1992	2622	3252	3882	611	1241
120	750	1380	2010	2640	3270	3900	629	1259
138	768	1398	2028	2658	3288	17	647	1277
156	786	1416	2046	2676	3306	35	665	1295
174	804	1434	2064	2694	3324	53	683	1313
192	822	1452	2082	2712	3342	71	701	1331
210	840	1470	2100	2730	3360	89	719	1349
228	858	1488	2118	2748	3378	107	737	1367
246	876	1506	2136	2766	3396	125	755	1385
264	894	1524	2154	2784	3414	143	773	1403
282	912	1542	2172	2802	3432	161	791	1421
300	930	1560	2190	2820	3450	179	809	1439
318	948	1578	2208	2838	3468	197	827	1457
336	966	1596	2226	2856	3486	215	845	1475
354	984	1614	2244	2874	3504	233	863	1493
372	1002	1632	2262	2892	3522	251	881	1511
390	1020	1650	2280	2910	3540	269	899	1529
408	1038	1668	2298	2928	3558	287	917	1547
426	1056	1686	2316	2946	3576	305	935	1565
444	1074	1704	2334	2964	3594	323	953	1583
462	1092	1722	2352	2982	3612	341	971	1601
480	1110	1740	2370	3000	3630	359	989	1619
498	1128	1758	2388	3018	3648	377	1007	1637
516	1146	1776	2406	3036	3666	395	1025	1655
534	1164	1794	2424	3054	3684	413	1043	1673
552	1182	1812	2442	3072	3702	431	1061	1691
570	1200	1830	2460	3090	3720	449	1079	1709
588	1218	1848	2478	3108	3738	467	1097	1727
606	1236	1866	2496	3126	3756	485	1115	1745
624	1254	1884	2514	3144	3774	503	1133	1763

APPENDIX H

Mean Scores

Measure	Mean
BMI	*26.5
DSCAI-90	
body and how it works	85.194
eating and how it r/t health	86
exercise and how it r/t health	86.968
sleep and rest and how r/t health	87.129
smoking and how it r/t health	96.774
stress and how it r/t health	87.839
personal strengths	84.129
aware of own sexuality	94.032
aware of your feelings	86.742
able to describe your feelings	82.613
able to talk about your feelings	73.742
experience in making decisions about your health	92.226
value your health	95.194
family value their health	84.903
friends value their health	80.065
capable of making good decisions about your health	82.871
think clearly and logically about your health	83.065
in touch with what's going on with your health	86.903
think about your health	66.968
lack of info. interfere with taking care of your health ~	83.677
feel too tired to take care of your health ~	64.065
good feelings about yourself	77.161
feel proud about doing things well	82.710
feel good about your body	63.710
think you have control over your health	72.484
think about what your health might be like in future	68.258
friends say or do things to encourage you to care for your health	45.806
family say or do things to encourage you to care for your health	45.645
willing to ask for health information	76.581
lack of strength interferes with taking care of health ~	74.129
peers pressure you into doing things not good for your health ~	87
feel good about yourself	75.742
feel good about doing things well	80.903
make good decisions about your health	73.452
Total Score	79.255

DSCAI-90 Subscales

Ego Strength Scale	76.045
Valuing of Health Scale	86.720
Health Knowledge and Decision-Making Capability Scale	85.002
Energy Scale	77.218
Feelings Scale	84.282
Attention to Health Scale	60.652

DSCPI-90

do things that are good for your health	74.484
take good care of your health	75.032
follow through on decisions you make about your health	71.968
put off doing things that would be good for your health ~ eat breakfast	64.677
eat the kinds of foods you think are necessary for your health	89.290
eat a balanced diet	77.258
maintain or achieve good nutrition for yourself	75.774
do things to get the amount of activity you think necessary for health	75.903
do things to get the amount of rest you think necessary for health	61.387
do things to maintain or achieve balance between rest and activity	73.129
do things to get amount of time alone you think necessary for health	68
do things to get amount of time with others you think necessary for health	61.613
do things to maintain or achieve balance between time alone and with others	64.710
do things to keep your bladder and bowel habits normal	60.968
do things to keep yourself safe	76.677
do things to feel less stressed	86.129
do things that help you "be all that you can be" as a person	70.871
Total Score	72.161
	72.224

Note: * data set excluded due to participant entry error

~ recoded per scoring instructions

APPENDIX I

Demographic, Lifestyle, and Professional Background Statistics

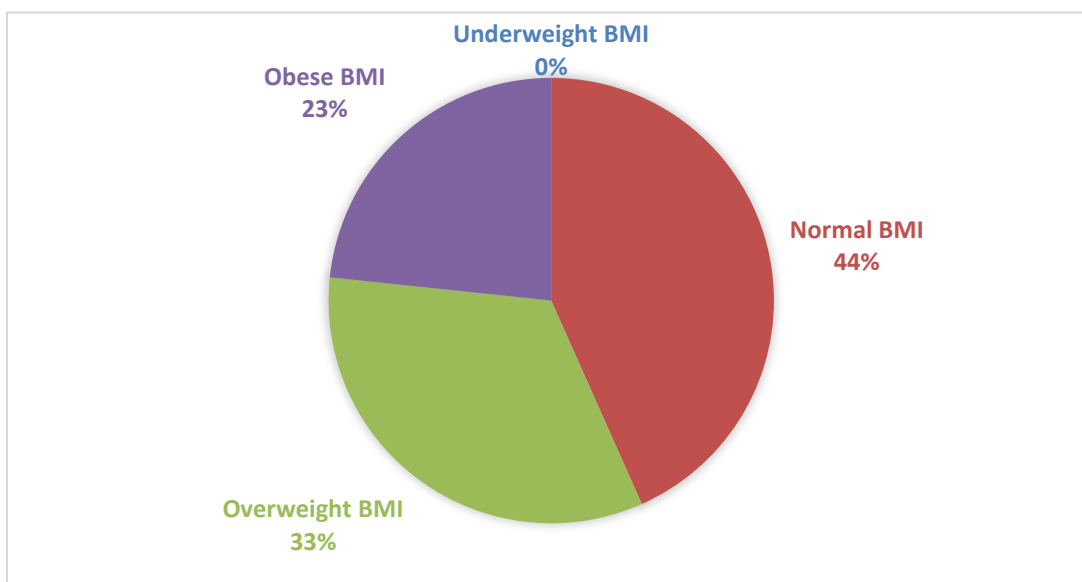
Response	N (%)
Gender	31
Male	1 (3.23%)
Female	30 (96.77%)
Race (origin) and ethnicity. *	31
Black/African American	0 (0%)
Hispanic/Latino	0 (0%)
Asian	0 (0%)
Native American/Alaskan Native	0 (0%)
Native Hawaiian/Pacific Islander	0 (0%)
White/Caucasian	30 (96.77%)
Other	1 (3.23%)
In which setting is your home located	31
Rural	7 (22.58%)
Urban	24 (77.42%)
Current marital status. *	31
Married	20 (64.52%)
Divorced	2 (6.45%)
Widowed	2 (6.45%)
Separated	0 (0%)
Single, never married	7 (22.58%)
Do you have children?	31
Yes	21 (67.74%)
No	10 (32.26%)
Children under age 18 living in your household?	31
Yes	10 (32.26%)
No	21 (67.74%)
Are you currently employed as an RN?	31
Yes	26 (83.87%)
No	5 (16.13%)
Select your current employment status.	28
Full-Time (33-40 hrs)	24 (85.71%)
Part-Time (32 hours or less)	2 (7.14%)
As needed/PRN	2 (7.14%)
Shift(s) you currently work. *	36
Day	23 (63.89%)
Evening	3 (8.33%)
Overnight	4 (11.11%)
Rotating	6 (16.67%)
Length of shifts (in hours) that you currently work. *	37
4	4 (10.81%)
8	17 (45.95%)

10	3 (8.11%)
12	10 (27.03%)
Other	3 (8.11%)
Do you currently work weekend shifts?	28
Yes	12 (42.86%)
No	16 (57.14%)
Type of facility of current employment	28
Inpatient/Hospital	15 (53.57%)
Ambulatory/Clinic	4 (14.29%)
Long Term Care	1 (3.57%)
Home Health	0 (0.00%)
Community Health/Public Health	2 (7.14%)
Other	6 (21.43%)

Note: * respondents could select all that apply

APPENDIX J**BMI Results by Category**

Category	N (%)
Underweight BMI	0 (0%)
Normal BMI	13 (43.333%)
Overweight BMI	10 (33.333%)
Obese BMI	7 (23.333%)



* one data set excluded due to participant entry error

Appendix K

Correlation and Significance Coefficients

		DSCAI	DSCPI	BMI
DSCAI	Pearson's <i>r</i>	1	0.838	-0.524*
	Significance <i>p</i>	-	0.000	0.003
	N	31	31	30
DSCPI	Pearson's <i>r</i>	0.838	1	-0.407*
	Significance <i>p</i>	0.000	-	0.025
	N	31	31	30
BMI	Pearson's <i>r</i>	-0.524*	-0.407*	1
	Significance <i>p</i>	0.003	0.025	-
	N	30	30	30

Note: * data set excluded due to participant entry error

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