A Dissertation

entitled

The Role of School Nurses in Early Detection of Eating Disorders: An Application of the Precaution Adoption Process Model and the 5A’s Approach

by

Jamie Leigh Dowling Tawes

Submitted to the Graduate Faculty as partial fulfillment of the requirements for the Doctor of Philosophy Degree in Health Education

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An Abstract of

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Background: Eating disorders are serious conditions and have the highest mortality rate of all psychiatric disorders. They most often manifest in adolescence. The severity of the health impact, typical age of onset, and challenges related to treatment, all demonstrate a need to focus on early intervention. School nurses have access and ability to monitor student well-being, and this can include eating disorders. This study assessed school nurses to measure current perceptions and practices regarding students with eating disorders.

Methods: An email survey was sent to a random sample of 3,001 members of the National Association of School Nurses (NASN). The survey used was created from a comprehensive review of the literature and was based on Precaution Adoption Process Model and 5 “A”s of intervention. The survey was reviewed by experts in the field and was tested for psychometrics using stability, reliability and Cronbach alpha.

Results: Data collection began January 2016 and 33.6% response rate was achieved. Findings indicated school nurses are not engaging in assessing and assisting students with eating disorders.
eating disorders, mostly due to lack of self-efficacy related to eating disorder assessing and minimal education on the subject.

**Discussion:** Eating disorders are serious health conditions that affect school aged youth. Early diagnosis and treatment are associated with improved treatment outcomes. School nurses monitor and screen school children for a variety of health issues. School nurses could help identify and provide resources for students with these disorders.

**Key words:** school nurses, eating disorders, PAPM, 5 A’s Approach, adolescent health

**Target Audiences:** School nurses, school dietitians, school counselors, professionals working with eating disorders
This is dedicated to my Grandma, Anna Mae Wilder. She was a teacher and instilled in me a love for learning. She called me her “eternal student.” I miss her every day.
Acknowledgements

This is my chance to truly thank everyone who pushed, prodded, pulled, and sometimes coerced me to this finish line. Four years is a long time to live in limbo, and while I gave up on this dream occasionally, you never did. Thank you to my parents (especially my Mom and Gil—the most positive, supportive people I know). Being your daughter makes me the luckiest person. Thank you to my husband, whom I met the week I was starting this program in 2008. He has only ever known me to be working towards this goal. Now that I’m finished, I can’t wait to see what else we can accomplish together. Thanks to my committee. Your support will never be forgotten and I couldn’t have reached this point without you. Last but certainly not least, a very, very special thanks to Dr. Thompson. You are the best cheerleader I could have hoped for and your confidence in me will continue to inspire me to do great things. You’re the best.
# Table of Contents

Abstract iii  
Acknowledgements vi  
Table of Contents vii  
List of Tables x  

## I. Introduction 1  
A. Statement of Problem 8  
B. Purpose of Study 10  
C. Research Questions and Hypotheses 11  
D. Definitions of Terms 17  
E. Delimitations 21  
F. Limitations 21  
G. Summary 22  

## II. Literature Review 23  
A. Definitions of Anorexia Nervosa and Bulimia Nervosa 23  
B. Prevalence of Eating Disorders 27  
C. Prevalence and Risk Factors by Demographics 30  
D. Protective Factors of Eating Disorders 32  
E. General Health-Related Consequences of Eating Disorders 33  
F. Common Comorbidities Associated with Eating Disorders 39  
G. Treatment Methods and Modalities of Eating Disorders 40
H. Recidivism and Relapse of Eating Disorders 47
I. Eating Disorders and Health Care Providers 48
J. Profile of Nursing Providers in the United States 54
K. Theories that will be Utilized in this Research 60
L. Studies Performed in This Topic Area: Weakness and Limitations 65
M. Existing Literature, School Nurses and Students with Eating Disorders 71
N. Summary 71

III. Methods 73
   A. Subjects 73
   B. Instrument 74
   C. Instrument Testing 75
   D. Procedures for Data Collection 79
   E. Data Analysis Procedures 79
   F. Using Online Surveys 80
   G. Other Research Utilizing this Sample and Method 82

IV. Results 84
   A. Response Rate 84
   B. Demographic and Background Characteristics of the Respondents 85
   C. School Nurses’ Current Practices 86
   D. School Nurses’ Education Regarding Eating Disorders 90
List of Tables

Table 1  Federal funding level comparison from the NIH ............................................... 5
Table 2  Use of the 5A’s approach with suspected eating disorders ............................. 65
Table 3  Principal Components Analysis ....................................................................... 76
Table 4  Test-Retest Internal Reliability Scores ............................................................ 77
Table 5  Statistical Tests Used ....................................................................................... 80
Table 6  Demographics and Background Characteristics of Respondents .................... 85
Table 7  School Nurses Stage of Change Regarding Assessing Students for Eating Disorders ............................................................................................... 88
Table 8  Frequency of School Nurses Utilizing the 5 A’s Method When Communicating with Students Suspected of Having an Eating Disorder ...... 89
Table 9  Eating Disorder-Related Education Received During Nursing School .......... 91
Table 10 Level of Confidence Related to Using the 5 A’s while Interacting with Students Suspected of Having an Eating Disorder ......................................... 92
Table 11 Outcome Expectations ..................................................................................... 93
Table 12 Benefits of Having School Nurses Assess Students for Eating Disorders ...... 94
Table 13 Barriers that Hinder School Nurses from Assessing Students for Eating Disorders ........................................................................................................... 95
Chapter One

Introduction

This chapter presents an overview of issues associated with this dissertation. Included are the following sections: Introduction, Costs Associated with Eating Disorders, Potential Monetary and Non-monetary Costs of Eating Disorders, and Quality of Life for People with Eating Disorders; Statement of Problem and Purpose, Prevalence of Eating Disorders and Secondary Prevention of Eating Disorders; Research Questions and Hypotheses; Definition of Terms; Delimitations of Research; Limitations of Research; and Summary.

Introduction

Impact of Eating Disorders

Eating disorders are a group of serious and potentially life-threatening conditions that affect youth and adults across the globe. Eating disorders are chronic, can last years, and most often manifest in adolescence (Favaro et al, 2009). Some studies suggest the age of onset is decreasing (Favaro et al, 2009). In addition, eating disorders collectively have the highest mortality rate of any psychiatric condition (Arcelus, Mitchell, Wales, & Nielsen, 2011; Franko D., Keshaviah A., Eddy K., Krishna M., Davis M., Keel P. & Herzog D., 2013). Eating disorders are the third most common chronic condition among adolescents and young adults, behind obesity and asthma (Austin et al., 2013). Among adolescents, eating disorders are the second most common cause of mental health disability (Allen et al., 2015).
Eating disorders have a tremendously negative impact on a person’s health. The National Association of Anorexia Nervosa and Associated Disorders (ANAD, 2014) describes the following signs and symptoms of eating disorders, all of which can leave a lasting imprint: difficulty regulating mood and comorbidity with other mental disorders; low pulse and blood pressure; shortness of breath and chest pain; imbalances of electrolytes and potassium; stunted growth and fragile bones; oral disease and swollen salivary glands; esophageal tearing, burning or rupture; and endocrine- and gastro-related abnormalities such as thyroid concerns, body temperature regulation issues and irregular bowels.

In addition, eating disorders typically present first in the teen or young adult years (NIMH, 2011), and the health consequences listed above can become severe by the time the condition is diagnosed and appropriate care is obtained. Unfortunately, care is often delayed or avoided, if it happens at all. According to a study from the National Institute of Mental Health (NIMH), around 3% of youth in the US have an eating disorder but “most do not receive treatment for their specific eating condition” (Merikangas et al, 2011). The lack of treatment follow-through for youth with an eating disorder is truly alarming. The severity of the health impact of eating disorders, paired with the early typical onset and challenges related to treatment all demonstrate a need to focus on early detection and treatment. School nurses may be underutilized because they have access to youth and could be an important figure in the care for youth with eating disorders.
Global View: Prevalence Rates of Eating Disorders

A global review of eating disorder prevalence that included studies from 1999-2009 reported rates that varied by geographic location and type of eating disorder (anorexia nervosa, bulimia nervosa, and binge eating disorder) (Qian et al, 2013). This review found that worldwide, the lifetime prevalence of having a diagnosable eating disorder is 1.01% (confidence interval of 0.54-1.89). In Western countries, this number increases to 1.29% (0.71-2.34 CI). Anorexia was found to have the lowest rates of the three types of eating disorders examined, with a global prevalence rate of 0.21% (0.11-0.38 CI) and 0.32% (0.17-0.61 CI) among Western countries. Bulimia had a global prevalence rate of 0.81% (0.59-1.09 CI) and 0.9% (0.46-1.18 CI) among Western countries. Lastly, binge eating disorder had the highest prevalence rate (2.22%, 1.78-2.76 CI)—only one rate reported. These lifetime prevalence rates included both men and women; when separated by gender, women had higher rates than men in each category (eating disorder lifetime prevalence 0.38% males, 1.59% females; anorexia 0.15% males, 0.33% females; bulimia 0.27% males, 1.05% females; binge eating disorder 1.19% males, 2.53% females).

Costs Associated with Eating Disorders

People suffering from eating disorders experience a diminished quality of life and may also experience financial-related challenges from their disorder. Having an eating disorder can lead to numerous health problems, ranging from heart conditions to dental damage to death (NEDA, 2005b). Even if medical care is not sought for the eating disorder itself, care for the health complications of the disorder can become a financial
burden. In addition, missed work due to sick days associated with complications of an eating disorder adds to the financial costs. Samnaliev et al (2014) reported that little is known regarding the costs of treating comorbidities of eating disorders. However, Samnaliev et al (2014) reviewed data from the Medical Expenditures Panel Survey (MEPS) and found that annual health care costs of individuals without an eating disorder are around $3910, while the costs for those with an eating disorder totaled around $5779 annually. When mental health-related comorbidities are included in the costs of those with an eating disorder that number increases to $7026 annually.

There is very little funded research on the condition. For comparison, there is an estimated 30 million Americans currently living with an eating disorder (Le Grange, Swanson, Crow & Merikangas, 2012). As of 2016, over five million Americans were living with Alzheimer’s (Alzheimer’s Association, 2016). Currently, around 3.5 million Americans suffer from schizophrenia (Schizophrenia and Related Disorders Alliance of America, 2016).

Additional statistics, though older, reinforce this evidence. Although many more people suffer from an eating disorder compared to Alzheimer’s disease (10 million compared to 4 million, respectively), funding for research for eating disorders is 75% less than that of Alzheimer’s disease (National Eating Disorders Association 2005b). Although anorexia is more common than schizophrenia (10 million compared to 2.2 million, respectively), research dollars per individual with schizophrenia averaged $159 compared to just $1.20 per person with anorexia (National Eating Disorders Association, 2005b). The National Institutes of Health released their Estimates of Funding for Various Research, Condition, and Disease Categories (RCDC) in 2016 and includes information
on eating disorder funding as well as Alzheimer’s disease and schizophrenia. See below for a table detailing federal funding from the National Institutes of Health for recent years (NIH, 2016). This table shows that eating disorders research receives significantly less federal funding than other conditions which affect less people.

Table 1
Federal funding level comparison from the NIH

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Quality of Life for People with Eating Disorders

Eating disorders have a strong influence on the lives of those who suffer from them, affecting professional, physical, mental and social domains (Bamford & Sly, 2009). Existing research has shown that people with eating disorders consistently report lower quality of life than those without, even after treatment (Bamford & Sly, 2009). These researchers collected self-reported data from 156 adults during treatment for eating disorders. Results were that patients with an anorexia diagnosis reported lower quality of life than other types of eating disorders, and the severity of the disorder as well as BMI were further predictors of quality of life. Duration of illness did not appear to have an impact on quality of life in the results of this research.
A more recent review on this topic reported similar findings. Jenkins et al. (2011) reviewed existing research related to quality of life among those who suffer from an eating disorder. A main finding of this review was that having an eating disorder has a tremendous impact on one’s quality of life, especially related to mental health. As the intensity of eating disorder-related symptoms increased, so did the degree of impairment (Jenkins et al., 2011). In addition, people suffering from binge-eating disorder reported lower levels of life quality than other eating disorder subtypes. However, further research on this topic especially related to individual subtypes of eating disorders was suggested by the authors.

Mitchison et al. (2015) researched the relationship between quality of life and eating disorders among Australian women. Over 800 women were surveyed, reported their height and weight (from which researchers calculated BMI), and completed various eating disorder assessment, medical outcome, and psychological distress scales. The women were followed for nine years. A main finding was that having eating disorder symptoms reduced quality of life over time and also increased psychological stress. The opposite was also true; lower reported quality of life and higher psychological distress showed to be negatively correlated with reporting eating disorder symptoms (Mitchinson et al., 2015).

Additional literature related to eating disorders and quality of life yielded similar findings. A review of literature related to eating disorders and quality of life was published in 2009 by Engel et al. and identified six themes:

1. Patients with eating disorders reported lower health-related quality of life than those without;
2. Health-related quality of life was negatively impacted among both those with a diagnosable eating disorder as well as those who engage in eating disorder-related behaviors that might not fit into an existing condition;

3. Family who care for people with eating disorders may also report reduced quality of life;

4. Health-related quality of life among those with eating disorders is “considerable”;

5. Improvements related to quality of life were reported among those who received treatment for their eating disorder;

6. There are gendered differences among patients with eating disorders related to quality of life (women reported lower life satisfaction than men).

(Engel et al., 2009).

The low quality of life reported by sufferers and costs associated with the eating disorders demonstrate the need for inclusion of eating disorders in the education of health care professionals, including nurses. By increasing awareness, referral, and treatment of eating disorders, based on the information described above, quality of life could potentially be increased and costs decreased for those living with eating disorders.

Why Involve School Nurses?

Though the exact training and licensure required varies by state (as described in the Profile of Nursing Providers in the United States section in Chapter 2), school nurses in general have the skill set required to monitor student well-being. According to the American Academy of Pediatrics, school nurses are often required to perform annual screening for hearing and vision impairment, and some schools even mandate screening
for scoliosis, diabetes, asthma and even obesity. After screening, the nurses then follow protocol and link students with appropriate services and resources as needed. Because health-related screenings are already occurring in schools performed by school nurses, it is easy to consider that screening for eating disorders be included in the process. An alternative role that the school nurse can have instead of screening would be as the eating disorder resource for the school. In this scenario, the school nurse would provide education on eating disorders to the students and/or staff, and monitor/refer students who display signs and symptoms of an eating disorder. The goal of both of these scenarios is early detection and referral to treatment to minimize the health impact of eating disorders as well as improve treatment outcomes.

**Statement of Problem**

**Prevalence of Eating Disorders**

Reported prevalence of eating disorders varies depending on the source and type of research. Regarding eating disorders in general, prevalence rates in the U.S. vary from as many as 10 million females and 1 million males (The National Eating Disorders Association, 2006), and 4% of adolescents and young adults (Franco, 2010). Other research shows a lifetime prevalence of 2.7% for 13-18 year olds (Merikangas, 2010) and 2.7% for adolescents (Raynaud et al., 2014).

In the U.S., lifetime prevalence rates of anorexia range from 0.5% to 3.7% (Franco 2010); 0.6% of adults (Hudson 2007); 0.1% to 5.7% among females (Hudson et al 2007); 0.6% of adults (Hudson et al 2007). The National Eating Disorders Association (2008) reported that as many as 15% of female American teens and women in their 20s
may be suffering from anorexia or borderline-anorexic behaviors. In the U.S., lifetime prevalence rates of bulimia range from 1.1% to 4.2% (Franco 2010; Hudson 2007); 0.6% of adults (Hudson 2007).

Secondary Prevention of Eating Disorders

Secondary prevention focuses on people at high risk for eating disorders and could include examinations, recognition of nutritional deficiencies, and self-report surveys or clinical interviewing (Morgado de Oliveira Coelho et al., 2014). It is important to a successful recovery from an eating disorder (DeBate, Tedesco & Kerschbaum, 2005). Proper secondary prevention with people suffering from eating disorders can reduce medical complications as well as lowered related health care costs and reduce deaths from eating disorder complications (Debate, Plichta, Tedesco & Kerschbaum, 2006). In this regard, nurses can work with students to identify potentially harmful eating disorder-related behaviors before the disorder has become severe; furthermore, treatment of eating disorders may be more effective in the beginning stages as well (Benedictine University, 2013).

Research shows that eating disorders are most likely to develop in adolescence, and as many as 10 out of 100 female youth suffer from an eating disorder (American Academy of Child and Adolescent Psychiatry, 2013). These eating disorders present with textbook DSM-described symptoms, or can be more difficult to categorize such as overeating due to stress, poor nutrition habits, or following unhealthy food fads. Since symptoms can be difficult to detect or the child can attempt to minimize the appearance of them, disordered eating behaviors can go unseen. Furthermore, Rosen (2010) found that eating disorders among children and adolescents has increased consistently since the
1950s. With increasing rates of childhood obesity, there has been a greater focus on children’s weight and eating habits, and this can lead to restrictive dieting. The result is the significantly more youth under the age of 12 are being hospitalized for eating disorders. From 1999-2006, there was a 119% increase in eating disorders in this group (Rosen, 2010).

In the line of prevention and identification of eating disorders, school nurses have been overlooked as potential primary or secondary prevention team members. School nurses see students who are in the most common age range for developing eating disorders. This makes school nurses an underutilized part in treatment teams to help students with eating disorders, as well as clinicians that can recognize signs and symptoms of eating disorders and lead to early help. Existing published research shows there is a gap of knowledge regarding eating disorders and amount of eating disorder-specific education in various school health education programs.

**Purpose of Study**

The purpose of this study was to determine current practices and beliefs of school nurses regarding assessing and referring students with eating disorders. The study surveyed school nurses, and the following objectives were explored:

- What, if anything, are school nurses currently doing regarding assessing students for eating disorders;
- What benefits and/or barriers school nurses identify regarding assessing students for eating disorders;
- Frequency of school nurses’ use of the 5 A’s with students suspected of having an eating disorder;
- Perceived impact of school nurses’ involvement with students suspected of having an eating disorder;
- Level of confidence regarding use of the 5 A’s with students suspected of having an eating disorder;
- Amount of education school nurses received regarding the 5 A’s, eating disorders in general, and how to assess students for eating disorders.

**Research Questions and Hypotheses**

The following are the research questions and hypotheses were explored in this study:

1. School nurses are in what stage of readiness (PAPM) regarding assessing for eating disorders among students?

   **Dependent Variable = PAPM Stage of Assessing for Eating Disorders**

   1.1: The majority of school nurses are not currently assessing their students for eating disorders.

   1.2: There is no statistically significant difference in PAPM stage by the amount of education received in nursing school (none versus minimum versus moderate versus extensive.)

   1.3: There is no statistically significant difference in PAPM stage by type of nurse (LPN vs. RN vs. NP).
1.4: There is no statistically significant difference in PAPM stage by school nurses’ level of confidence in “Asking” their students about suspected eating disorder behaviors.

1.5: There is no statistically significant difference in PAPM stage by school nurses’ outcome expectations regarding “Asking” students about their eating behaviors.

1.6: There is no statistically significant difference in PAPM stage by the number of perceived benefits to assessing students for eating disorders.

1.7: There is no statistically significant difference in PAPM stage by the number of perceived barriers to assessing students for eating disorders.

2. **How frequently are school nurses implementing the 5A’s method when communicating with students that have a suspected eating disorder?**

*Dependent Variable= Frequency of school nurses implementing the 5A’s method*

2.1: The majority of school nurses are not ASKING their students about eating disorders.

2.2: The majority of school nurses are not ADVISING their students with a suspected eating disorder to seek professional help.

2.3: The majority of school nurses are not ASSESSING their students’ willingness to be referred to professional help.

2.4: The majority of school nurses are not ASSISTING their students in their attempts to change their eating behaviors through counseling.
2.5: The majority of school nurses are not ARRANGING follow up appointments for their students with a suspected eating disorder.

3. **How confident are school nurses in using the 5A’s method of communication with students with a suspected eating disorder?**

*Dependent Variable= School nurses’ confidence in using the 5A’s*

3.1: The majority of school nurses are not confident in using the 5A’s with students suspected of an eating disorder.

3.2: There is no statistically significant difference in confidence of using the 5A’s method by the amount of education that school nurses received on eating disorders in nursing school.

3.3: There is no statistically significant difference in confidence of using the 5A’s method by the amount of education that school nurses received on the 5A’s in nursing school (none versus minimum versus moderate versus extensive).

3.4: There is no statistically significant difference in confidence of using the 5A’s method by the stage of readiness (PAPM).

4. **Do school nurses perceive benefits to having their profession involved in assessing students for eating disorders?**

*Dependent Variable= School nurses’ perceived benefits of assessing students for eating disorders*

4.1: The majority of school nurses do not perceive benefits to assessing students for eating disorders.
4.2: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not by how much education on eating disorders that they received in nursing school.

4.3: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not by belief it is the nurse’s responsibility to refer students with a suspected eating disorder to a mental health counselor.

4.4: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not by whether or not the nurse ever had a family member or close friend with an eating disorder.

4.5: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not by gender of nurse.

4.6: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not by PAPM stage of readiness.

5. **Do school nurses believe that there are specific barriers to being involved in the secondary prevention of eating disorders?**

*Dependent Variable = School nurses’ perceived barriers of assessing students*

5.1: The majority of school nurses do not perceive barriers to assessing students for eating disorders.
5.2: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by how much education on eating disorders that they received in nursing school.

5.3: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by belief it is the nurse’s responsibility to refer students with a suspected eating disorder to a mental health counselor.

5.4: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by whether or not the nurse ever had a family member or close friend with an eating disorder.

5.5: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by gender of nurse.

5.6: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by PAPM stage of readiness.

6. **How much education did school nurses receive on eating disorders in nursing school?**

*Dependent Variable= Amount of eating disorder education received in nursing school*
6.1: The majority of school nurses did not receive education on eating disorders in nursing school.

Regarding individual topics related to eating disorders, the following are sub-hypotheses and their results.

6.1a: Use of the 5 A’s method in eating disorder screening (Ask, Advise, Assess, Assist, and Arrange).

6.1b: Health consequences of eating disorders.

6.1c: Signs and symptoms of eating disorders.

6.1d: How to assess students for eating disorders.

6.1e: How to refer students with a suspected eating disorder to a mental health counselor.

6.1f: How to talk to students about eating disorders.

6.1g: How to assess the student’s attitudes toward food/eating.

6.1h: How to assess the student’s eating behaviors.

6.1j: The impact of eating disorders on cognitive health.

6.2: There is no statistically significant difference in amount of education received in nursing school by stage of readiness (PAPM).

6.3: There is no statistically significant difference in amount of education received in nursing school by type of nursing degree obtained.

Definition of Terms
5 A’s: Five-step intervention process that utilizes the following “A’s” in helping the practitioner to change an undesirable behavior in a patient (Fiore M., Bailey W., Cohen S., et. al 2000):

- **Ask:** Systematically identify any students suspected of suffering from an eating disorder at every visit. Implement an office-wide system that ensures that, for every patient at every clinic visit, eating disorder status is examined and documented. Expand the vital signs to include assessment of eating disorder behaviors.

- **Advise:** Strongly urge all students with eating disorders to discontinue disordered eating habits or seek professional help.

- **Assess:** Determine willingness to quit disordered eating behaviors or seek professional help; determine if patient is ready to do so within next 30 days.

- **Assist:** Aid the patient in changing disordered eating behaviors by way of creating a plan with patient; provide counseling, problem solving, or education; provide treatment social support; provide supplementary materials.

- **Arrange:** Provide referrals to patient regarding treatment of eating disorder and arrange for a follow up appointment.

**Accredited nursing program:** There are two national organizations that accredit nursing programs, the National League for Nursing Accrediting Commission (NLNAC) and the Commission on Collegiate Nursing Education (CCNE).

**Anorexia:** A potentially terminal disorder including starvation of self, extreme weight loss, and poor body image (American Psychiatric Association, 2013).
**Barriers:** One’s opinion of the tangible and psychological costs of the advised plan (Glanz et al, 2002).

**Benefits:** One’s belief in the efficacy of the advised action to reduce risk or serious impact (Glanz et al, 2002).

**Bulimia:** A disorder involving patterns of binge eating followed by purging-type behaviors in an effort to control calorie intact or body size (American Psychiatric Association, 2013).

**Case Management:** A collaborative process that assesses, plans, implements, coordinates, monitors, and evaluates services in order to meet patient needs (Case Management Society of America).

**Co-Morbidity:** A disease or condition that occurs at the same time as another disease or condition (NIH, 2010).

**Eating disorders:** Syndromes characterized by severe disturbances in eating behavior and by distress or excessive concern about body shape or weight. Often occur with severe medical or psychiatric co-morbidity. Major classifications include anorexia nervosa, bulimia nervosa, and eating disorder not otherwise specified. Many students demonstrate a combination of both anorexia and bulimia (The Cleveland Clinic).

**Health Belief Model:** a health behavioral model that helps to explain and predict health behaviors using the following constructs: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy (Glanz et al, 2002).

**Majority:** For the purpose of this study, a majority is considered over 50% of the population.
Morbidity: Illness, conditions, diseases of a person or population (NY State Dept. of Health, 1999).

Mortality: Death, often measured by rate in a given population (NY State Dept. of Health, 1999).

Precaution Adoption Process Model: Created by Weinstein (1988), this is a model that is relatively new and can be applied in place of the more commonly used Stages of Change Model (SOC). Like SOC, PAPM consists of ordered stages that contain common issues associated with behavior change that affect people within the same stage, and these stages describe the state of readiness that lead to behavior change. One importance and clear difference, however, is that PAPM accounts for people who are aware of an issue but are unconcerned or unengaged in the idea of change. In the SOC/TTM, this person would be lumped into the “precontemplation” stage, which does not accurately describe the person’s thought process.

Prevalence: The number of cases of a specific disease (CDC, 2012).

Protective/Preventive factor: Something that prevents or reduces vulnerability of developing a certain disease; “positive countering events” (SAMHSA, 2015).

Primary prevention: Aims at ensuring the behavior (i.e. eating disorder) does not occur (CDC, 2013).

Quality of life: As defined by the World Health Organization: “Individuals’ perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad ranging concept affected in a complex way by the person’s physical health, psychological state,
level of independence, social relationships, personal beliefs and their relationship to salient features of their environment.” (WHO, 1997)

**Readiness**: Willingness or preparedness regarding performing a certain action (Glanz, 2002).

**Registered Nurse**: A licensed professional that provides and coordinates patient care, education, advice and support to patients and their families (US Dept. of Labor, 2014).

**Risk factor**: Something that increases a person’s chance of developing a certain disease (SAMHSA, 2015).

**Secondary prevention**: Preventive measures that lead to early diagnosis and treatment, lessening potential severity of the diagnosis (CDC, 2013).

**Self-efficacy**: Confidence in one’s ability to perform a specific behavior in a specific context (Glanz, 2002).

**Severity**: Harshness or seriousness of an issue.

**Signs**: Observable characteristics of a patient as recognized by the practitioner.

**Social Cognitive Theory**: SCT was developed when Bandura added to the existing Social Learning Theory. SCT involves an interactive process where factors (such as personal, environmental, and behavioral) influence each other. The likelihood that someone will change a behavior is greatly influenced by several constructs: self-efficacy, the confidence in one’s ability to perform a specific action (this is the construct added to SLT by Bandura); reciprocal determinism, the interaction of personal, behavioral, and environmental factors; behavioral capability, the knowledge and skill needed to perform a specific behavior; modeling or observational learning, transpires when watching other’s actions and related outcomes; and reinforcements, which are the responses to the action
that will increase or decrease the likelihood of that action occurring again (*Theory at a Glance*, 2005).

**Statistically significant difference:** Mathematical term that indicates that the difference between two or more results is greater than the difference you might observe due to chance.

**Symptoms:** Characteristics reported by the patient.

**Tertiary prevention:** Refers to a range of activities aimed at addressing the medium and long-term effects of eating disorders, including therapy and other rehabilitation efforts (*CDC, 2013*).

**Delimitations**

This research was delimited by several aspects. School nurses who were currently practicing in high schools and residing in the United States were a delimitation of the research. Also, results were delimited to the attitudes, perceptions, and beliefs of the respondent. Respondents were all school nurses who were English-speaking. Results were also delimited because a power analysis was performed to determine a sample size to survey; the entire population of school nurses in the United States was not surveyed.

**Limitations**

There are numerous limitations to this research because of the nature of the study. The survey was written in a closed format so respondents are not able to write in alternative responses. Also, due to the monothematic nature of the survey, respondents may have viewed items in a unique manner and therefore may have produced biased survey results.
from some respondents. Data collected from surveys as self-reported and therefore subject to social desirable responses or recall errors. Because practicing school nurses may not accurately recall what they were taught in nursing school, recall bias was a potential limitation of this study. Furthermore, surveys were taken at one given point in time and therefore are cross-sectional, and may only reflect the respondents’ viewpoint at that particular time. Since the survey response rate was less than 100%, it is possible that the results were limited in their externally validity.

**Summary**

School nurses surveyed provided insight to the current perceptions and practices regarding students with eating disorders. Due to the prevalence of eating disorders and the destruction that the disorders play on one’s health, it is crucial that every avenue is addressed in order to help assess, identify and refer affected individuals. Furthermore, school nurses have access to school aged children which is the population where eating disorders typically manifest. It is clear that school health professionals can play a vital role in the recognition, referral, and treatment of eating disorders. They have the opportunity to serve as important members of a secondary prevention team in order to help students who suffer from these debilitating mental health conditions. Chapter Two of this dissertation provides a summary of research that shows the negative impact that eating disorders have on health, and examine the existing research to demonstrate how school nurses can help to lessen that negative impact.
Chapter Two

Literature Review

This chapter focuses on the existing literature pertaining to eating disorders, the impact of eating disorders on health, and the role of school nurses and their education. The following sections are included: Anorexia Nervosa, Bulimia Nervosa, Prevalence of Eating Disorders, Prevalence and Risk Factors by Demographics, Protective Factors of Eating Disorders, Health-Related Consequences of Eating Disorders, Common Comorbidities Associated with Eating Disorders, Treatment Methods and Modalities of Eating Disorders, Recidivism and Relapse of Eating Disorders, Eating Disorders and Health Care Providers, Profile of School Nurse Providers, Theories that will be Utilized in this Research, Studies Performed in This Topic Area: Weaknesses and Limitations, Existing Literature Regarding School Nurses Serving on Eating Disorder Health Care Teams, and Summary.

Although there are several different diagnosable eating disorders, this research focused on the most prevalent and well known: anorexia nervosa and bulimia nervosa (Ritter, 2006). Psychological issues are almost always the underlying cause of eating disorders. Extreme emotions, attitudes, and behaviors regarding food and weight issues are the crux of eating disorders (Robles, 2011). Therefore, eating disorders are considered a psychiatric condition (APA, 2013).

Definitions of Anorexia Nervosa and Bulimia Nervosa

Anorexia Nervosa
Anorexia nervosa is a psychiatric disorder featuring extreme abnormal eating behaviors. This is a serious disorder that has the highest mortality rate of all psychiatric disorders (Stein, 2009; Arcelus, Mitchell, Wales, & Nielsen, 2011). Anorexia is the third most common chronic illness among adolescents and young adults (male and female) (Debate, Plichta, Tedesco & Kerschbaum, 2006). Prevalence rates peak at ages 14 and 17 and puberty is viewed as an influential factor in the occurrence of eating disorders in teens (Ximenes, 2010). Other research has found the median age of onset for anorexia is 12.3 years (Swanson et al, 2011).

For individuals suffering with anorexia, eating behaviors are impacted by self-imposed starvation due to an intense fear of weight gain and an irrational emphasis on body shape (Robles, 2011). The patient will most likely experience excessive weight loss and choose an extremely restricted diet in order to lose weight (Mayo Clinic, 2009). Common signs and symptoms of anorexia include amenorrhea, lanugo, low blood pressure and irregular heart rhythms, and dehydration (Mayo Clinic, 2009). In addition, avoidance of meal time is common (Ritter, 2006) as well as lethargy, a reoccurring feeling of being cold, severe constipation (NIMH, 2011), unusual eating behaviors and choosing a narrow range of acceptable food (Marzola, 2013). Other signs and symptoms of anorexia include brittle or dry nails, skin and hair and abnormal blood counts (Mayo Clinic, 2009).

The recent release of the DSM-V has slightly modified the diagnostic criteria for anorexia. Eating disorder classifications have been reorganized in the DSM-V in attempt to “enhance clinical utility”, or broaden the diagnostic criteria of anorexia and bulimia in order to reduce the number of EDNOS/OSFED diagnoses (Thomas et al., 2014).
Previously in the DSM-IV TR (2000), there were four main diagnostic criteria for anorexia including failure or refusal to maintain a minimally normal body weight; extreme or irrational fear of weight gain; distorted body image or excessive self-preoccupation with weight; amenorrhea.

In the current DSM version, DSM-V (2013), there are three main diagnostic criteria for anorexia:

1. Restricting food intake leading to a considerable weight loss or failure to gain weight, resulting in a significantly lower body weight than what would be expected;
2. Fear related to becoming fat or weight gain, regardless if patient is already underweight;
3. Distorted view of self and condition, including denial of seriousness of disorder.

(DSM-V, 2013).

**Bulimia Nervosa**

Bulimia nervosa is a disorder characterized by compulsive overeating followed by self-induced purging (Ritter, 2006). Bulimia is distinguished by recurrent binge eating, occurring at least twice per week for three months; a negative compulsive reaction to weight gain or fear of weight gain that results in use of laxatives, vomiting after eating, use of stimulants or excessive exercise in an attempt to lose the weight; an obsession with body shape and/or weight; and absence of anorexia (Mayo Clinic, 2010). Other symptoms of bulimia include having a negatively distorted body image, abnormal bowel movements, and menstrual irregularities or cessation (Mayo Clinic, 2010). Caucasian
females with callused knuckles are likely to be diagnosed with bulimia due to the incisors scraping the skin as the patient tries to force vomiting in order to purge (McCreedy, 2006). Many students with bulimia will exhibit no obvious signs of illness and are often at an average weight (or even slightly above average weight). Some research has identified the median age of onset for bulimia to be 12.4 years (Swanson et al, 2011).

The release of the DSM-V has slightly modified the diagnostic criteria for bulimia as well. Previously in the DSM-IV TR (2000), there were five main diagnostic criteria for bulimia including: repeated episodes of binge eating; repeated episodes of some type of purging following binging episodes in attempt to avoid weight gain (i.e. vomiting, use of laxatives, use of stimulants, excessive exercise, etc.); episodes of binge eating and purging must occur at least twice a week for three months to be diagnosed; excessive preoccupation on weight in self-evaluation; disordered eating episodes must occur separately from episodes of anorexia.

In the current DSM version, DSM-V (2013), there are five similar main diagnostic criteria for bulimia:

1. Reoccurring episodes of binge eating where the eating occurs within a discrete period (such as two hour time) and involves large amounts of food, along with a lack of control over the eating;
2. Reoccurring inappropriate compensatory behavior intended to purge and prevent weight gain, such as self-induced vomiting, laxative use, other medications, and excessive exercise.
3. The bingeing and purging behaviors occur at least once a week for three months;
4. Body shape and weight greatly influence self-evaluation;
5. Disturbance does not exclusively occur during episodes of anorexia.

**Prevalence of Eating Disorders**

Eating disorder prevalence rates vary by the source of data, and may be underreported. In addition, DSM-IV criteria for diagnosing an eating disorder are more restrictive than the DSM-V edition, and therefore may account for the different rates (Forman, 2014). A significant proportion of the American population engages in disordered eating behaviors. Dieting in order to control weight along with other weight-loss practices are common among adolescents, and these behaviors can develop into more severe eating disorders (Johnson et al., 2015). Although these behaviors may not be severe or frequent enough to diagnose a disorder, they may still require medical attention (Hunt & Rothman, 2007). Eating disorders may go undiagnosed due to health care providers’ unfamiliarity with signs and symptoms, ambiguous symptoms, and comorbid conditions which may mask the signs of an eating disorder (Hunt & Rothman, 2007).

Hoek (2013) reported lifetime prevalence rates using DSM-V criteria to be up to 4% for anorexia, 2% bulimia, and 2% binge-eating disorder. Rhode, Stice & Marti (2016) examined prevalence of eating disorders using recent DSM-V criteria, which suggests that 13% of female adolescents demonstrate some form (threshold or subthreshold) of eating disorder by age 20. Marzola et al (2013) reported that 0.7% of female adolescents suffer from anorexia, and lifetime prevalence for anorexia is 0.3%. Suokas et al. (2013) reported lifetime prevalence rates of anorexia (0.45-0.6%) and bulimia (0.51-1.0%). Welch et al (2015) reports a prevalence rate for eating disorders to be around 6%, and
when including binge eating, that figure increases to over 10%. Stice et al. (2012)
reported a lifetime prevalence rate by age 20 of 0.8% for anorexia and 4.4% for bulimia.

Research by Swanson et al (2011) examined lifetime prevalence rates of types of
eating disorders as well as issues surrounding identifying this prevalence. This study used
the National Comorbidity Survey Replication Adolescent Supplement (NCS-A), a
nationally representative sample of youth aged 13-18 years in the US, and conducted over
10,000 in-person interviews. The study concluded the lifetime prevalence estimate for
anorexia (0.3%), bulimia (0.9%) and binge-eating disorder (1.6%) but acknowledged that
these rates are lower than those reported from similar studies focused on adults. The
researchers concluded that the age of onset for these disorders was found to be much
lower in this study than others, and therefore suggest that adults may overestimate their
age of onset in retrospective studies.

Other research by Wade, Keski-Rahkonen & Hudson (2011) found that 20 million
women and 10 million men in the US experience at least one type of eating disorder at
some point in their life. Worldwide, eating disorders are most prevalent in the U.S. and
Canada, Europe, Australia and New Zealand, and South Africa (Franco, 2010). Research
shows that prevalence rates of eating disorders are increasing in countries that are
becoming more “Westernized” such as Japan and China (Franco, 2010; Jung & Forbes,
2007). Historically, being slender has been viewed as undesirable in many Asian
countries because of the association with infertility and poverty (Jung & Forbes, 2007).
However, more recent research has shown that many Asian women express discontent
with their bodies similar to Western women. For example, South Korea has one of the
highest plastic surgery rates in the world (Jung & Forbes, 2007). Part of this
“Westernized” culture can be attributed to media and cultural influence. Body dissatisfaction and low self-esteem may generate from media and peer influences, as well as fashion magazines and advertisements. Such influences may contribute to the development of an eating disorder (Robles, 2011).

The National Eating Disorders Association polled American college students to measure the awareness and prevalence of eating disorders on campuses nationwide and found some startling results. This poll surveyed 1,000 college students nationwide and found that almost 20% of college students reported suffering from an eating disorder, and 75% of that group never received treatment (National Eating Disorders Association, 2006). Youth who report disordered eating habits that are not clinically severe should be considered when totaling prevalence rates as well. One in three girls and one in five boys reported trying to lose weight, some by self-induced vomiting or laxatives (around 16% for both girls and boys) (Ackard, 2007). This statistic is concerning because of the likelihood that these behaviors will worsen over time and develop into a diagnosable eating disorder (Ackard, 2007). Furthermore, Smolak (2011) found that girls begin to express fears about their weight around age 6, with 40-60% of elementary school girls expressing weight-related concerns including fear of becoming fat.

When expanding prevalence rates of eating disorders to include disordered weight control behaviors (DWCB), numbers increase dramatically (Wang et al., 2012). These behaviors include vomiting and use of laxatives or diet pills without prescriptions. These are found to be around twenty times more prevalent than clinically diagnosed eating disorders (up to 28% prevalence rate), and participants suffer from many of the same negative health consequences as those with clinical eating disorders (Wang et al., 2012).
Prevalence and Risk Factors by Demographics

Eating disorders can affect any demographic group in the US, though some groups have an increased risk. Firstly, research shows that females are more likely to engage in eating disorder behaviors than men. Welch et al. (2015) describes the differences that exist in research regarding the number of men who suffer from an eating disorder. Those numbers vary, from about 10% of people with anorexia are male; a male/female ratio of anorexia determined to be 1:2; about 25% of adolescents diagnosed with an early onset eating disorder were male; and just over one-quarter (26.65) of adolescents screened positive for eating disorders in an emergency department were male (Welch et al., 2015). Males account for about 5-15% of students with either bulimia or anorexia (National Institute of Mental Health, 2007). Interestingly, homosexual men are potentially at higher risk than heterosexual men due to increased body image pressure (Academy of Nutrition and Dietetics, 2006).

Racial and ethnic risk differences may exist as well. Hispanic women report the highest rates of bulimia, and Caucasian women report the highest level of anorexia (Swanson et al., 2011). Blacks are less likely to suffer from anorexia or bulimia than whites, but have equal or higher rates of binge-eating disorder than whites (Taylor et al., 2013). Prevalence rates for blacks are reported for anorexia (0.15%) and bulimia (1.31%), which are both lower rates than whites (Taylor et al., 2013). Black women who do develop an eating disorder are most likely to have binge/purge-type bulimia (Franco, 2010).

There are many risk factors that predispose individuals to developing anorexia. A family history of anorexia is a predisposing factor (Franco, 2010). First-degree female
relatives and twins of students with anorexia have higher rates of both anorexia and bulimia (Franco, 2010). Some research finds that 40-60% of eating disorder cases have a genetic factor (Crow & Ecket, 2016). Other factors that increase the risk of developing an eating disorder include being female, having a “perfectionist” or Type A personality, experiencing consistent difficulty communicating or resolving conflict, poor self-esteem, and associating thinness with societal view of beauty (Mayo Clinic, 2012). For female athletes, risk factors for eating disorder are the same as above, and also include starting sport-related training at a young age, sudden increase in training intensity, and long periods of sports-related training (Lambrinoudaki, 2010). Caucasian race also is considered a predictive factor of anorexia (Swanson et al., 2011).

Risk factors that predispose to bulimia may vary by sources. Swanson et al., (2011) found that early teenage years and Hispanic race were strong predictive factors of bulimia. Research indicates that females are more likely to develop an eating disorder due to experiencing greater conflict regarding body shape, weight, and food than males (Ximenes, 2010). Austin et al. (2013) found that adolescents of a sexual minority were more likely to report disordered eating behaviors such as purging or diet pill use compared to heterosexual adolescents. Families that are hostile, chaotic, isolated, and lacking empathy or nurturing are more likely to produce offspring with eating disorders (Franco, 2010).

Occupations such as athletes and models are considered at higher risk for developing an eating disorder because they tend to be goal-oriented, driven to be successful, persistent, and able to withstand pain (Robles 2011). Lambrinoudaki and Papadimitriou (2010) reported that one-quarter of elite female athletes suffer from an
eating disorder, compared to around 9% of the general population. Professions that value thinness have higher prevalence of eating disorders, such as ballet dancers. Dancers have a three times higher risk of developing an eating disorder than the average population (Arcelus et al., 2013). Of male and female athletes, it is estimated that 10-20% suffer from an eating disorder, most commonly bulimia (Academy of Nutrition and Dietetics, 2006).

In addition to these risk factors, Puhl et al (2016) identified being the victim of bullying as a possible contributing factor to developing an eating disorder. Though bullying is not a new issue among youth, the advent of social media has provided bullies with another avenue to utilize. Bullying based on an adolescent’s weight is the most common form of harassment in schools and one consequence of experiencing this type of bullying is mal-adaptive eating behaviors, which could develop into a full disorder (Puhl et al, 2016). Additional research by Puhl et al (2014) reports that weight-related stigma and discrimination is comparable to racially-related stigma and discrimination in the U.S., most notably among females, and can be emotionally damaging.

**Protective Factors of Eating Disorders**

Although much research has been done on the risk factors of eating disorders, less attention has been placed on preventive or protective factors (Gustafsson, 2009). Research that has been done on this topic demonstrates that having a genetic predisposition to being thin, being accepting of diverse body shapes, having high self-esteem, having healthy emotional well-being, feeling highly competent at a certain task or skill, and having a healthy relationship with eating in early adolescence are all
protective factors against developing an eating disorder (Gustafsson, 2009). Girls with high self-esteem and who report emotional well-being are less likely to develop an eating disorder because they are less likely to feel pressures from society to be thin (Gustafsson, 2009). Other protective factors of eating disorders include perceived satisfaction regarding one’s life (including body image), people who use perceived positive qualities to “serve the greater good”, and those who find positive and significant meaning in their lives (Gongora, 2014).

**General Health Consequences of Eating Disorders**

*Mortality in People Suffering from Eating Disorders*

People suffering from eating disorders have mortality rates that range from 10% to 20% (Debate, Plichta, Tedesco & Kerschbaum, 2006). Mortality ratios range from 5.9-6.2 with a mean follow-up duration of 12.8 years and 13.54 years, respectively (Franko et al., 2013). Other research reports similar statistics. Sufferers of anorexia have a mortality rate six times that of the general population (Lambrinoudaki & Papadimitriou, 2010; Suokas et al., 2013). People suffering from bulimia were found to have a three times higher mortality rate than those without the disorder (Suokas et al., 2013). More specifically, anorexia is a severe mental illness with a mortality rate that ranks among the highest of any psychiatric illness among women (Suokas et al., 2013). The risk of death for someone with anorexia is three times higher than that of someone with depression, schizophrenia, or alcoholism (Simon, Schmidt, & Pilling, 2005). Morality rates of bulimia are much lower than that of anorexia (Simon, Schmidt & Pilling, 2005; Suokas et al., 2013). Other research reports crude mortality rates of anorexia (4%), bulimia (3.9%) and EDNOS (5.2%) (Crow et al., 2009). The differences in these mortality rates found
can be explained due to the negative health consequences of eating disorders; sufferers often die from heart attacks, suicide, or malnutrition but may not be reported as being related to an eating disorder (National Association of Anorexia Nervosa and Associated Disorders, 2014).

The premature deaths of people with an eating disorder are primarily due to complications of their disorder. Causes of mortality among students with anorexia are most often due to complications of anorexia (50%), suicide (24%), unknown causes (15%), lung disease (6%) and other disorders or accidents (6%) (Eating Disorder Review, 2008). Welch et al (2015) reports that suicide attempts among those with an eating disorder are “frequent”, and as many as 40% of adolescents with an eating disorder engage in suicidal behavior. Standardized mortality ratios for anorexia and bulimia are reported as 5.9 and 1.9, respectively (Stice et al., 2013). Related to suicide, standardized mortality ratios for anorexia and bulimia are 4.7 and 6.5, respectively (Stice et al., 2013). In addition, eating disorders are considered a risk factor for youth suicide due to high rates of body dissatisfaction (Johnson et al., 2015). Other research shows that the majority of deaths from anorexia are due to cardiac arrest or suicide (Franco, 2010). Suicidality was also researched by Swanson et al (2011) and found that each type of eating disorder in their study was associated with higher levels of suicidal ideation than those without an eating disorder. Furthermore, this research found that more than half of the adolescents in the study with bulimia were significantly more likely than adolescents without an eating disorder to seek treatment or care for mental health issues.
Complications of eating disorder are numerous and can be serious. People who suffer from an eating disorder condition have stronger relationships with suicide attempts, in- and out-patient treatment, and impaired functioning than other psychiatric conditions (Stice et al., 2013). Other issues include constipation, delayed puberty in adolescents, abnormal heart rate and body temperature, chronic metabolic acidosis or alkalosis (due to laxative use or vomiting), esophageal or gastric rupture, increased risk of heart failure, and fatigue are all common negative health effects of eating disorders (Ritter, 2006). Bone loss is a significant concern for people suffering from an eating disorder as well. Bone metabolism is affected by participation in disordered eating behaviors, bone formation is often reduced, and bone absorption is often increased in this population (Lambrinoudaki & Papadimitriou, 2010).

Other health complications of eating disorders include multiple organ failure, depression, digestive problems, kidney damage and even death (Mayo Clinic). People suffering from anorexia are more likely to choose a vegetarian diet or one that consists of self-identified “safe foods”, which can lead to inadequate consumption of an appropriate calorie content, essential fatty acids, and amino acids (Marzola et al., 2013). The more severe the disorder is or the longer it lasts typically means the worse the complications (Mayo Clinic).

Disordered eating behaviors can led to a plethora of oral health-related problems as well, including gingivitis (inflammation of the gums), mucositis (inflammation of the lining of the mouth and digestive tract), bruxism (the habitual, involuntary grinding and clenching of the teeth), yellowing of the teeth, hypersensitivity to cold, dry, cracked
mouth or lips, and dental cavities (Ritter, 2006; Ximenes, 2010). The vast majority of people suffering from bulimia display signs of tooth erosion. Tooth erosion often leads to thinning of the incisors, chipping of these teeth, and increased sensitivity to temperature (Burkhart, Roberts, Alexander & Dodds, 2005). Bulimics are typically more appearance conscious and have a more realistic self-image, so they are more likely to follow proper dental hygiene than anorexics and less likely to have poor oral health (Aranha, Eduardo & Cordas, 2008).

Trauma to the soft palate, mucus membranes, and pharynx is easily recognized and is common among those who engage in self-induced vomiting (Aranha, Eduardo & Cordas, 2008). Due to the nutritional deficiencies caused by eating disorders, sufferers are more likely to experience oral mucosal lesions and impair regeneration of new tissue (Aranha, Eduardo & Cordas, 2008). In addition, regular vomiting for 5 years or more is likely to lead to structural damage of the face and jaw, which can lead to a widened and squared appearance to the mandible (Aranha, Eduardo & Cordas, 2008).

People living with an eating disorder are also more likely to engage in non-suicidal self-injury (NSSI), as reported by Islam et al (2015). This research found that prevalence of NSSI among people living with an eating disorder was 20.6% (17.3% of persons with anorexia reported and 23.5% of persons with bulimia). As a comparison, in the general population approximately 17.2% of adolescents, 13.4% of young adults, and 5.5% of adults engage in NSSI behaviors (Cornell University, 2016).
Impact of Eating Disorders on Learning

The National Eating Disorders Association (NEDA) released an Educator Toolkit designed to provide vital information on eating disorders to parents and educators (2007). In this toolkit, the negative effect that eating disorders have on cognition are discussed. This is important because malnutrition can have a profound impact on a child’s learning. In addition, the comorbid conditions that can coexist with eating disorders such as anxiety and depression can further distract a student from learning (NEDA, 2007).

NEDA surveyed 1,000 people with clinical diagnosed eating disorders within their clinical practice. Their findings indicated that people with anorexia spend the majority of their time thinking about food, weight, and hunger (respondents with anorexia reported that 90-100% of awake time and additional time sleeping was spent with these preoccupations). In addition, people with clinically diagnosed bulimia reported 70-90% of their time was spent thinking about food and weight, and people with disordered eating reported that 20-65% of their time was spent thinking about food. This is in comparison to the average woman who spends 10-15% of their time thinking about food, weight, and hunger (NEDA, 2007).

This topic is also discussed in The BodyWise Eating Disorders Information Packet for Middle School Personnel, which was created by Office on Women’s Health (United States Department of Health and Human Services) and its’ third edition was released in 2005. This handbook describes the effect that even mild under-nutrition has on learning: students who are hungry can be distracted from learning by irritability, nausea, and a lack of energy. They may have reduced attention spans and be less able to
concentrate than their peers. These issues are compounded by nutritional deficiencies such as iron, which impacts memory and ability to concentrate.

*Potential Monetary and Non-monetary Costs of Eating Disorders*

The person suffering from an eating disorder might seek medical care for the disorder or for any of the presenting signs and symptoms associated with the disease. In doing so, this could increase their insurance premiums if they have insurance, or use tax money if the person does not have insurance or relies on Medicare or Medicaid. If the person is paying out of pocket for health care related to their eating disorder, this is another expense. Also, the person suffering from the eating disorder may experience impaired work functioning and wages lost due to facets of the disorder.

Eating disorders are “notoriously difficult” to treat and may persist for years (Alderman, 2010). Some treatment plans may require hospitalization of the patient. Hospitalizations due to issues associated with eating disorders skyrocketed 119% for children under 12 from 1999 to 2006 (Alderman, 2010). Costs associated with residential eating disorder treatment programs can average $30,000 a month and may not be covered by insurance. Often, care needs to continue on an outpatient basis, long after hospitalization which increases costs incurred by the patient and their family. Unfortunately, some insurers do not cover long term treatment of eating disorders, citing a lack of evidence of treatment best practices (Alderman, 2010).

There are also non-monetary costs associated with eating disorders. The person suffering from an eating disorder may experience poor social adjustment, greater illness severity, impaired personal relationships, decreased quality of life, as well as perception
of body pain and emotional well-being (Hay & Mond, 2005). Eating disorders can produce negative social costs due to the impact on the surrounding people of the person suffering from the disorder. Moreover, increased perception of stigma related to an eating disorder diagnoses is associated with decreased well-being, increased disordered eating behaviors, increased depressive symptoms, and reduced self-esteem (Griffiths et al., 2014).

Common Comorbidities Associated with Eating Disorders

Among patients with eating disorders, there are many potential comorbid afflictions. Patients with diagnosed disorders from the DSM-V (including depression, anxiety, chemical dependency and borderline personality disorder, respectively) are more likely to be diagnosed with an eating disorder than those who do not have these disorders (Academy of Nutrition and Dietetics, 2006). Substance abuse is highly associated with eating disorder diagnoses. Harrop & Marlatt (2010) found that substance abuse is four times more common among those with an eating disorder than those without. Other common comorbid conditions include anhedonia (Pollert et al., 2016), attention deficit hyperactivity disorder (ADD), oppositional defiant disorder (ODD) and obsessive compulsive disorder (OCD) (Rojo-Moreno et al., 2015).

There are many common comorbid conditions of anorexia including oral health afflictions such as xerostomia (dry mouth) and atropic mucosa (degenerating epithelial and glandular cells), loss of head hair due to starvation and malnutrition, changes in vital signs, increased risk for dry skin, hypercarotenemia (yellow or orange coloring of the skin), and lanugo (fine hair that covers the body in attempt to reserve body heat), and gastrointestinal stress including constipation and decreased intestinal mobility (Debate,
Bulimia can result in negative comorbid conditions such as dehydration which impacts various body systems, severe oral health issues such as tooth erosion or decay, amenorrhea, digestive rack issues such as a dependence on laxatives, mental health issues such as depression and anxiety, and bruises, calluses, scarring and abrasions of the finger may occur (also known as Russell’s Finger) (Mayo Clinic, 2016).

Half of women with anorexia have bone density that is two standard deviations below normal levels and can occur after only six months of anorexic behavior (Academy of Nutrition and Dietetics, 2006). Loss of lean body mass is also a concern for people with anorexia and can occur due to dehydration and malnutrition. The person suffering from anorexia may also experience bone pain with exercise (Academy of Nutrition and Dietetics, 2006). Cardiac complications such as prolonged cardiovascular output on EKG and decreased ventricular mass and mitral valve prolapse are common among people with anorexia (Debate, Plichta, Tedesco & Kerschbaum, 2006). Other cardiac abnormalities as a result of anorexia include changes in left ventricular mass and its ability to function, slow heart rate, and low blood pressure (Sachs et al, 2015) as well as electrolyte disorders, hypervolemia, increased peripheral vascular resistance, and even congestive heart failure or sudden cardiac death (Casiero & Frishman, 2006).

**Treatment Methods and Modalities of Eating Disorders**

The DSM-V is used by medical and mental health professionals to diagnose anorexia nervosa and bulimia nervosa. However, diagnosis of an eating disorder is challenging. Patients often cover and deny symptoms (House, 2008). People receiving
treatment for anorexia may drop out of treatment because of continued disordered eating behaviors (Marzola et al., 2013). Some of the disordered eating-related symptoms people experience may be difficult to label or people suffering from an eating disorder may not receive adequate treatment (House, 2008). Therefore, medical professionals should be more proactive in facilitating treatment when an eating disorder is suspected (Becker, 2003).

Treatment teams can consist of a variety of professionals including dietitians, physicians, and mental health professionals. Research by Swanson et al (2011) found that the majority of adolescents with an eating disorder had received some type of treatment related to behavior or emotional issues, ranging from 77.6% of adolescents with anorexia to 88.2% of adolescents with bulimia. The number of adolescents who had received treatment for disordered eating-related issues was significantly lower, from 27.5% of adolescents with anorexia to 21.5% of adolescents with bulimia). Interestingly, of the adolescents who did seek treatment, 40.4% (anorexia-related) and 45.4% (bulimia-related) received help from school-related services (Swanson et al., 2011).

An example of how treatment can vary is related to theories of eating disorder origin. Some medical experts have called eating disorders “brain disorders” because symptoms such as bingeing or purging can be caused by an underlying anomaly or chemical imbalance in the brain (Harris & Steele, 2014). Within this model, treatment for eating disorders should be focused on correcting brain pathology abnormalities (Harris & Steele, 2014). Viewing these disorders as having biopsychosocial causes helps researchers to determine best course of treatment. In addition, if eating disorders are thought of more as brain-related instead of behaviorally-related, stigma surrounding
treatment may be reduced and people may be more likely to seek treatment (Harris & Steele, 2014).

Discussed in this section are assessments and scales related to diagnosis of eating disorders including EDE (Eating Disorder Examination), DAWBA (Development and Well-Being Assessment), the Eating Attitudes Test (EAT-26), SCOFF (Sick, Control, One Fat, Food), and the Yale-Brown-Cornell Eating Disorder Scale.

Assessment of Eating Disorders

One scale used in diagnosing eating disorders is the Yale-Brown-Cornell Eating Disorder Scale. It was adapted in 1994 by Mazure, Halmi, Sunday, Romano and Einhorn from a previously existing scale that measured obsessive compulsive disorder. This scale is designed as a clinical interview to determine presence, type, and severity of anorexia (Jordan, Joyce, Carter, McIntosh, Luty, McKenzie, Frampton & Bulik, 2008). Items are measured on a Likert-type scale and ask about preoccupations related to food and one’s weight, as well as a 65-item checklist of food and body-related “preoccupations” and rituals (Jordan, Joyce, Carter, McIntosh, Luty, McKenzie, Frampton & Bulik, 2008). This scale has been useful in distinguishing between healthy/non-dieting research participants (the control group), those who are dieting restrictively, and those who are recovering from an eating disorder (Jordan, Joyce, Carter, McIntosh, Luty, McKenzie, Frampton & Bulik, 2008). However, this type of scale may be inconvenient for oral health care providers to use, given the length of the checklist (65 items) and the need for interview time. Research by Mazure, Malmi, Sunday, Romano & Einhorn (1995) demonstrates an
internal consistency score of .87 and a positive correlation with the Beck Depression Inventory ($r=.63$).

Research by House, Eisler, Simic, and Micali (2008) compared two more types of eating disorder diagnostic scales. The Eating Disorder Examination (EDE) is designed to identify eating disorders in adults via a standardized interview-type structure and is often used in clinical settings. There is also a version for use in children as young as 8-years-old. Reliability of the EDE is reported to range from .71-.75 for the Restraint subscale, .75-.90 for the Eating Concern subscale, .67-.70 for the Weight Concern subscale, and .70-.82 for the Shape Concern subscale (Byrne, Allen, Lampard, Dove & Fursland, 2010). Also, the test-retest of the EDE was found to be satisfactory over a 7-day period ($rs >.70$), and inter-rater reliability was found to exceed .90 (Byrne, Allen, Lampard, Dove & Fursland, 2010).

The other eating disorder scale discussed by House and colleagues (2008) is the Development and Well-Being Assessment (DAWBA), which consists of multiple questionnaires, interviews, and ratings scales for various psychiatric issues. There is an eating disorder-specific section of the DAWBA and it can be completed in person (interview format) or online. When these two scales were compared in a research setting, the level of agreement (mutual diagnosing of participants) was deemed moderate. However, the DAWBA scale was able to diagnose an eating disorder in 17 of the 20 cases in which the EDE was not able to diagnose an eating disorder. Much of the difference was attributed to the fact that the DAWBA has an online option and people may be more honest when not face-to-face for a variety of reasons. Researchers concluded that due to the online option of the DAWBA and its brevity (5-10 minutes
versus 60 minutes for the EDE), the DAWBA may be the better scale for diagnosing an eating disorder (House, Eisler, Simic & Micali, 2008).

One method used to identify suspected eating disorders in students is called the “SCOFF” (Sick, Control, One, Fat, Food) questionnaire. It was introduced by Morgan, Reid, and Lacey in 1999 in the United Kingdom. It has been found to have a sensitivity of 84% (proportion of actual positives that were actually identified as such); specificity of 89.6% (proportion of actual negatives that were correctly identified); positive predictive value of 24.4%; negative predictive value of 99.3% (Luck, Luck, Reid, O’Brien, Brunton, Price, Perry & Lacey, 2002). The SCOFF questionnaire is used to identify anorexic and bulimic behaviors—two or more “Yes” answers to the following questions means a likely case of bulimia or anorexia (Gurenlian, 2002).

-“Do you make yourself SICK because you feel uncomfortably full?”
-“Do you worry you have lost CONTROL over how much you eat?”
-“Have you recently lost more than ONE stone (14 pounds) in a three month period?”
-“Do you believe yourself to be FAT when others say you are too thin?”
-“Would you say that FOOD dominates your life” (Gurenlian, 2002).

The use of such scales in identifying students suspected of an eating disorder would be helpful to school nurses, who see students who are in the age range most at risk for eating disorders. Since the SCOFF questionnaire is brief and easy to remember, using this scale or a similar scale along with training and education may help increase diagnosis and recognition of bulimia and anorexia.
Possibly the most commonly used measure of eating disorder symptoms, the Eating Attitudes Test (EAT-26), was developed in 1979 and used in the 1998 National Eating Disorders Screening program (Robles, 2011). This scale consists of 26 items answered with the following responses: always, usually, often, sometimes, rarely, and never. Each response is given a score and the scores are summed. There are also four behavioral questions that examine the previous six months of life of the person being tested. The test indicates that a person achieving a score of 20 and higher should interview with a professional for an official diagnosis. The creator of the scale, David M. Garner, describes this test further in Eating Attitudes Test (EAT-26): Scoring and Interpretation (2010). Garner explains that while the EAT-26 has been found “highly reliable and valid”, it serves as an initial screening tool rather than a diagnostic tool because no instrument has been found to be highly accurate as a sole means for diagnosing an eating disorder (Garner, 2010). Research indicates high agreement between the long (40 items, created in 1979) and short (26 questions, updated in 1982) version of the EAT (correlation coefficient of .98) and test-retest reliability ranging from .84-.89 (Rivas, Bersabe, Jimenez & Berrocal, 2010).

Treatment related to bulimia is similar. Antidepressants have also been proven useful in the treatment of bulimia (Academy of Nutrition and Dietetics, 2006). Of those with bulimia, 15.6% are receiving treatment in a given 12-month period. Lifetime treatment rate for people suffering from bulimia is 43.2% (Hudson, 2007). The lifetime treatment rate for those with anorexia is reported to be 33.8% (Hudson, 2007). In addition, Mond and colleagues (2007), reported that women with bulimia were more likely to seek medical or professional help for their perceived weight problem, not for the
eating disorder. People with bulimia were also found to visit a physician more frequently than someone with no psychiatric disorder (Mond, Hay, Rodgers & Owen, 2007). This demonstrates that people with bulimia are not necessary aversive to medical care, but may require unique intervention by the health care provider.

Once someone with an eating disorder seeks help, it is important that they are able to receive quality care. A research study by de la Rie, Noordenbos, Donker, and van Furth (2008) examined 73 therapists who currently work with students, 156 students currently being treated for an eating disorder, and 148 students who have recovered from an eating disorder. The goal of the study was to address the quality of treatment for those with an eating disorder, as well as identify characteristics that students and practitioners value in a treatment program. Both respondents in this study and therapists named treatment focus, alliance between patient and therapist, and communication skills as being traits of high quality treatment of an eating disorder. Nonetheless, respondents in this study and therapists differed in that while therapists more highly valued changes in symptoms and behaviors due to therapy, the respondents more highly valued the relationship between patient and therapist as well as dealing with underlying issues. Understanding what both respondents and therapists want from treatment of eating disorders will likely improve treatment outcomes.

People suffering with eating disorders are often not treated and even with treatment, they may not fully recover. Around one in seven people suffering from anorexia lives with the full condition and its range of symptoms for at least a decade (Robinson et al., 2015). Furthermore, only one in ten people who have an eating disorder receive treatment (Schumann & Hickner, 2009). Some research reports that one third of
individuals with eating disorders fully recover; one-third retains symptoms, and one-third retains a chronic eating disorder (Franco 2010). Successful treatment is individualized to the patient. Since eating disorders are viewed as being out of the realm of control of the patient, it is vital that treatment involves restoring a sense of control within the patient (Eating Disorder Review, 2008).

Some factors are associated with poor outcomes for treatment or recovery. Failure to respond to previous treatments and a disturbed family dynamic will also contribute to a poor recovery (Franco, 2010). Indicators of patients who will be successful in treatment of anorexia include those who are willing to admit hunger, those who have reduced denial of disease, and those with increasing self-esteem (Franco, 2010). For those struggling with bulimia, there is less long-term follow-up information about indicators of students who are likely to be successful in treatment available, but research suggests short-term success ranges from 50-70% (Franco, 2010).

**Recidivism and Relapse of Eating Disorders**

Eating disorders are difficult to treat and patients are at risk of relapse. For anorexia, long-term follow-up suggests a recovery rate ranging from 44% to 76% over 57-59 months (Franco, 2010). Relapses are common with 30-50% of people with bulimia after a six month period and are likely to include people who are hospitalized, more likely to vomit, have poor social skills, are highly impulsive, and delay treatment (Franco, 2010). About 20% of people suffering from anorexia continue to have issues with food after recovery (National Eating Disorders Association, 2008).
Eating Disorders and Health Care Providers

Physicians

The National Eating Disorders Association (NEDA) has described the physician’s role in primary, secondary, and tertiary prevention of eating disorders (NEDA, A Physician’s Role in Preventing Eating Disorders). Physicians can engage in primary prevention of eating disorders by providing education to patients; encouraging healthy physical activity and positive body image; helping families to have healthy communications, relationships, and self-esteem; and assisting parents and adolescents in successful navigation of the changes in development and puberty. Secondary prevention can include noticing physical changes in their patients related to growth, weight, and vitals; sharing concerns and counseling patients on those concerns; providing education the importance of adequate nutrition and eating habits; serving as a consultant to youth groups such as schools and athletic organizations. Tertiary prevention comes in the form of the physician referring to appropriate professionals when needed; providing patient with the history of their disorder and consequences; education on treatment of eating disorders; monitoring of medical status while receiving treatment; communication with mental health treatment teams; and advocating for patient with insurance payment issues. There are also behaviors that physicians should avoid when treating patients with eating disorders, including setting low body weight goals; self-disclosing their own weight and food issues; sharing negative views of overweight people; not working with the eating disorder treatment teams; and being supportive of restrictive eating behaviors (NEDA, A Physician’s Role in Preventing Eating Disorders).
Professional associations of physicians have also voiced their opinions on the role of physicians and patients with eating disorders. The American Medical Association (AMA) released two policy statements that specifically related to eating disorders. The first is D-150.984 “Eating Disorders and Promotion of Healthy Body Image”, which discusses sharing a report on eating disorders and body image with primary care physicians and other health care providers to better help them identify and treat eating disorders. It also states AMA’s support of increased funding to study many aspects of eating disorders including school-based primary prevention for students and parents. The other policy statement from AMA, H-150.965 “Eating Disorders”, states that an “overemphasis of thinness” is as harmful to one’s health as obesity; encourages its members to help patients to find their ideal body weight; supports training of school-based professionals including nurses to recognize unhealthy dieting/disordered eating behaviors in adolescents and appropriate referral systems; and distribution of appropriate educational materials regarding eating disorder behaviors.

The American Academy of Pediatrics has also released a Policy Statement called “Identifying and Treating Eating Disorders”. This statement emphasizes the importance of early detection, evaluation, and management of eating disorders by physicians. Screenings for eating disorders should be included in routine annual office visits. Children and adolescents with an eating disorder should be treated rapidly and aggressively for best prognosis (AAP, 2003).

In addition, the Society for Adolescent Health and Medicine (SAHM) also released a position paper on this topic called “Eating Disorders in Adolescents: Position Paper of the Society for Adolescent Medicine”. This paper discusses diagnostic criteria,
medical complications of eating disorders, when hospitalization should occur to a patient with a severe eating disorder; treatment guidelines and barriers; and the impact of today’s internet society on eating disorders including “pro-ana and pro-mia” websites.

Furthermore, in this position paper SAHM supports further research to address eating disorders among adolescents, interdisciplinary treatment teams, and ongoing management of eating disorders.

In summary, a review was completed involving the role of a physician in diagnosing, treating, and managing patients with eating disorders. Existing research and announcements from prominent professional physician organizations demonstrate public support of early and multi-disciplinary care of eating disorders, as well as further research in this field.

Psychologists

The American Psychological Association (APA) discusses how psychologists can help people with an eating disorder ("Eating Disorders", 2011). Psychologists can be vital members of an interdisciplinary treatment team, serving as the mental health expert while physicians deal with medical concerns and dietitians approach nutrition education. The psychologist identifies important issues and develops treatment plans based on those issues to change the patient’s unhealthy behavior and thoughts. Also, the psychologist can work with the patient to identify any underlying causes of the disorder. Other therapies may include group therapy and medication.
The APA has not released a professional statement or position paper regarding eating disorders, but has released policy many statements on children’s mental health, guidelines for psychological wellness, and the impact of obesity.

School Counselors

School counselors can also play an important role in identifying and treating students with eating disorders. Buser (2012) discusses this topic in her review article, “The School Counselor’s Role in Addressing Eating Disorder Symptomatology Among Adolescents”.

School counselors are involved with a population most at risk for developing an eating disorder and therefore assist with early detection. Furthermore, students with eating disorders may be more accepting of school-based inventions and having school counselors as an eating-disorder resource than traditional health care scenarios (Buser, 2012). Also, school counselors can help to create and deliver eating disorder-related prevention programs to students and parents, while including other school staff such as nurses and teachers.

Harshbarger et al (2011) did a follow-up to a 1991 study that examined the knowledge of school counselors related to eating disorders. The current study surveys school counselors in a metropolitan area and found that 55% of respondents felt eating disorders were a problem in their school. However, only 8% felt very confident identifying or helping students with an eating disorder. While the current study’s respondents were more likely to be able to identify basic symptoms of an eating disorder
than the original group, this study revealed that there still needs to be education to school counselors on identifying and helping students with eating disorders.

The American School Counselor Association (ASCA) has not released policy or position statements on eating disorders, but has included this topic in other statements. For example, “The Professional School Counselor and the Identification, Prevention, and Intervention of Behaviors That Are Harmful and Place Students At-Risk” was last revised in 2011 and details support for helping students who engage in risky behaviors. Many of these recommendations could be translated to helping students with an eating disorder, including: providing classroom education to increase knowledge and awareness of harmful behaviors; appropriate community referrals for students and family; collaborating with school staff to identify students in crisis; and advocating for school resources. Another position statement that could apply to school counselors and their role in helping students with an eating disorder was adopted in 2009 and is called “The Professional School Counselor and Student Mental Health”. This statement discusses the importance of the school in a student’s life, as school may be the first place where students are identified as needing help. It also discusses the importance of the school counselor serving as a resource and referring agent for students in need.

School counselors clearly have the access and ability to identify and help students at-risk for an eating disorder or who already have an eating disorder. However, school counselors would benefit from increased education on eating disorders including signs and symptoms so that they can better help students with this need.
Dietitians

Dietitians and nutritionists are experts in the field of food and nutrition (US Dept. of Labor, 2014). They are specially trained to prescribe individualized diets and help with nutritional needs of a variety of patients. Because of this, they could be an important team member in eating disorder treatment. The national association for dietitians, Academy of Nutrition and Dietetics, has released a position paper and press release about the position paper that demonstrate the need for a dietitian in treatment of an eating disorder. “Position of the Academy of Nutrition and Dietetics: Nutrition Intervention in the Treatment of Eating Disorders” was published in 2011 and discusses the roles and responsibilities of a registered dietitian involving eating disorders; diagnostic criteria of eating disorders; and a range of nutritional interventions of eating disorder treatment. Because of their dietary expertise, it is clear that dietitians should be included in any treatment team involving eating disorders.

Health Teachers

Health teachers include a variety of health-related topics in their curriculum, and eating disorders are often incorporated into lessons on mental health or nutrition. Puhl (2016) reports that up to 97% of educators surveyed believed that eating disorder symptoms could seriously impact students’ health, and up to 94% of educators surveyed expressed support for policies that included eating disorder prevention in school curriculum. Alternately, 45% of educators surveyed believed that schools should conduct eating disorder screenings among students. Burden of responsibility on school personnel
to perform such screenings or uncertainty of how these screenings would affect school operations are cited as potential reasoning behind this finding.

A study done by Thompson, et al (2006) researched specifically how health teachers were teaching or including activities about eating disorders in the classroom, as well determining the teacher’s role in addressing disordered eating habits of students and perceived disordered eating prevalence in their schools. Most teachers (76%) reported a perception that disordered eating is as important as any other health topic. About half (45%) thought that disordered eating was a problem in their school. However, only 55% reported being trained in eating disorder prevention and even less (36%) reported that their school had a cooperative plan established to handle students with eating disorders. The results of this study demonstrate a clear need for school professionals to improve their processes related to students with eating disorders.

**Profile of Nursing Providers in the United States**

*Nurses in the U.S.*

There are various levels of nursing that depend on educational level, certification, and state laws and regulations. Nursing education varies from certifications to advanced degrees, and prepares nurses to work in health care settings across the country.

Nursing assistants (NA) generally have at least a high school diploma in addition to completing a state-approved program and competency exam. NAs can perform basic care tasks for patients in hospitals and long-term care facilities. The Occupational Outlook Handbook of the Bureau of Labor and Statistics (2014) reports that employment
of NAs is expected to grow 21% from 2012-2022, due at least in part to the aging population. There were almost 1.5 million NAs estimated in the US workforce in 2012.

LPNs or Licensed Practical Nurses are another type of nurse. They often work under supervision of RNs and physicians in a variety of health care settings. Like NAs, LPNs are required to complete a state approved educational program and pass state licensure exam to practice. The program for LPN education is typically one year. The Occupational Outlook Handbook of the Bureau of Labor and Statistics (2014) reports that employment of LPNs is expected to grow 25% from 2012-2022. There were over 730,000 LPNs estimated in the US workforce in 2012.

Registered Nurses, or RNs, are the most common type of nurse. RNs have earned at least an associate’s degree but most have a bachelor’s degree in nursing, from an approved nursing program. RNs become licensed to practice by passing the National Council Licensure Examination, and additional licensing and certifications vary by state and specializations. The Occupational Outlook Handbook of the Bureau of Labor and Statistics (2014) reports that employment of RNs is expected to grow 19% from 2012-2022. There were over 2.7 million RNs estimated in the US workforce in 2012.

A nurse practitioner (NP) is a nurse who has received advanced nursing practice education (at least a Master’s degree). State laws vary, but in some states NPs are permitted to write prescriptions and work in clinics without physician supervision. Licensure for NPs also vary by state, but national certification is available through organizations such as the American Nurses’ Association (ANA) (Mannheim, 2012). The Occupational Outlook Handbook of the Bureau of Labor and Statistics (2014) reports that
employment of NPs is expected to grow 31% from 2012-2022. There were over 100,000 NPs estimated in the US workforce in 2012.

School Nurses in the U.S.

In some states such as Ohio, there is a Licensed School Nurse (LSN) licensure that is required to practice as a school nurse. In Ohio, it is licensed by the state department of education and requires a Bachelor’s degree, RN designation, and completion of a state department of education post-baccalaureate program focused on school nursing. This gives the LSN the skills and preparation to work in the school setting with its unique health care-related issues (OASN). There is also a national certification available for school nurses offered by the National Board for Certification of School Nurses (NBCSN) in conjunction with NASN, but is not required for practice (regulations vary by state) (NASN, 2012).

The National School Health Association (NASN) defines school nursing as “a specialized practice of professional nursing that advances the wellbeing, academic success, and life-long achievement of students.” (NASN, 2014). This practice could include ensuring compliance with immunization requirements, caring for children with chronic health issues, monitoring safe administration of medications, providing health education and wellness for students and staff, and identifying specific school health needs. School nurses are hired by boards of education, departments of health, public health agencies, hospitals, private schools, and universities. School nurse positions are often funded by local school district budgets, state budgets, Early Periodic Screening,
Diagnosis, and Treatment Centers (EPSDT, a child health component of Medicaid), Medicaid, or community organizations.

The Health Resources and Services Administration (HRSA) reports that in 2010 there were 73,697 RNs working as school nurses. About 15,000 of these are members of NASN. Also, the National Sample Survey of Registered Nurses done by HRSA in 2008 reported that less than 7% of RNs are in school and occupational health settings. This report also found that nurses working in school health settings reported the fewest hours worked per week, with an average of 39 hours for full time and 18.9 hours for part time work weeks (HRSA, 2010).

Role of the School Nurse

Recent research by Puhl et al (2013) reported that policies related to school-based curriculum including eating disorder education, training of school coaches on this subject, and implementing anti-bullying policies in schools related to students’ weights were supported by both the general public and professionals who work with eating disorders. Both a high impact and feasibility of these policies were reported. This support demonstrates the appropriateness of having a school nurse involved in eating disorder education, assessments, and refers of students.

The NASN released a position paper on the Role of the School Nurse in 2011, detailing the profession’s importance in schools. According to NASN, “the registered professional school nurse is the leader in the school community to oversee school health policies and programs” (NASN, 2011). The organization also listed five specific roles
that school nurses have related to the school environment, which are discussed below along with rationale how this can include eating disorder management:

- “School nurses facilitate normal development and positive student response to interventions.” Eating disorders can impede normal physical development due to restrictions of nourishment or poor nutrition and mental development by fostering negative self-thoughts. School nurses can work with students to provide education on healthy eating and self-image when students present with disordered eating symptoms. In addition, nurses can provide resources and referrals for students who need additional support.

- “School nurses provide leadership in promotion health and safety, including a healthy environment.” School nurses are a health education resource to staff and students. They can provide education in one-on-one or group settings, with the goal of improving the overall health of the school community. In this vein, they can also provide education on eating disorders so both the staff and students can recognize signs and symptoms and know where to go for help.

- “School nurses provide quality health care and intervene with actual and potential health problems.” School nurses are responsible for proper administration of medicine to students, developing health care plans, and other health care procedures that need to take place while the students are at school. This can include screenings for conditions such as hearing loss or scoliosis. However, school nurses can also include eating disorders in their normal screenings of students. Examples of specific eating-disorder related screening tools are included in this chapter.
“School nurses use clinical judgment in providing case management services.”

School nurses can develop Individualized Healthcare Plans (IHPs) and Emergency Care Plans (ECPs) for students of various health needs. This can include students known to have a diagnosed eating disorder or who exhibit disordered eating behaviors.

“School nurses actively collaborate with others to build student and family capacity for adaptation, self-management, self-advocacy and learning.” School nurses can be a link among the student, their family, and their primary care physician. School nurses are an important member of treatment teams, including students with eating disorders. In addition, if a school nurse suspects that a student has an eating disorder, she can help the student get the help they need by reaching out to the student’s family and existing health care providers.

Though there have not been official Position Papers or Position Statements released by NASN or ANA on the topic of eating disorders, both organizations have release statements related to obesity and the role of nursing. ANA released “Advocating for the Prevention of Childhood Obesity: Call to Action for Nursing”, which discussed the importance of healthy eating in childhood (Berkowitz B & Borchard M, 2009). While obesity is a different issue than anorexia or bulimia, all are centered on patterns of disordered or unhealthy eating. Many of the recommendations discussed in this Call to Action can be translated to nurses working with students and eating disorders. These recommendations include examining the literature and following evidence-based practices, parental involvement changing in the student’s behaviors, and addressing environmental influences.
NASN released a position statement titled “Overweight and Obesity in Youth in Schools—The Role of the School Nurse”. This position paper could be expanded to include eating disorders or used as a guideline for a new paper on eating disorders, as many of the recommendations provided also related to disordered eating. For example, this paper describes the school nurse’s collaboration with families, school personnel and other health care providers to promote healthy weight and identify at-risk students; school nurses’ ability to refer and follow up with students that need additional care; school nurses are able to reach a large number of youth and children spend much of their day in a school environment, so the schools have an opportunity to promote healthy eating (NASN, 2013).

In sum, the role of the school nurse is multi-faceted, but definitely vital in detection, referral, and management of students with eating disorders. As the NASN stated in their position paper, healthy students are successful learners. School nurses have an impact on the health and success of their students with eating disorders.

**Theories that will be utilized in this Research**

In the current study the Precaution Adoption Process Model (PAPM), created by Weinstein (1988), was be used. This is a model that is relatively new and can be applied in place of the more commonly used Stages of Change Model (SOC). Like SOC, PAPM consists of ordered stages that contain common issues associated with behavior change that affect people within the same stage, and these stages describe the state of readiness that lead to behavior change. There are seven main stages to this model (see Figure 1 below).
Weinstein and Sandman (1992) published an updated, revised version of the model and discussed PAPM further. At the core of the PAPM are stages 1, 2, 3, 5, and 6. Stage 4 was added to account for situations when the conclusion of the decision-making stage leads the person considering change to decide that action is not necessary. Also, the seventh stage, Maintenance, was added to recognize that behavior changes may need to be repeated after initial actions were first performed, e.g. continuing to employ refusal skills after someone has quit smoking.

The PAPM is admittedly similar to the SOC/TTM (Weinstein and Sandman, 1992). One importance and clear difference, however, is that PAPM accounts for people who are aware of an issue but are unconcerned or unengaged in the idea of change, i.e. someone who is not interested in losing weight but knows they are obese. In the SOC/TTM, this person would be lumped into the “precontemplation” stage, which does not accurately describe the person’s thought process. Also, the addition of Stage 4 to the PAPM separates itself from the SOC/TTM, as this stage accounts for people who engage in the decision making process but decide action is not necessary (Weinstein & Sandman, 1992). The SOC/TTM offers no stage to accurately account for such persons.
In Stage 1 of the PAPM, the person is uninformed about the need for change or the problem (*Theory at a Glance, 2005*). In this research, this would indicate that a school nurse is not aware of the impact of eating disorders on students’ health, the importance of including eating disorder education in school health settings, and/or the potential for secondary prevention of eating disorders by the school health team.

Stage 2 describes a person who is aware but not interested in the problem or behavior change (*Theory at a Glance, 2005*). For example, a school nurse is aware of the important role they can play regarding eating disorders, but not interested in including eating disorder-related education in school communities or conducting eating disorder-related screening of students.

A person in Stage 3 of PAPM is deciding if they want to act on the behavior change (*Theory at a Glance, 2005*). A school nurse may be weighing the costs and benefits of including eating disorder education in school communities or conducting eating disorder-related screening of students. They may or may not decide to make that change.

Next, an individual may move directly to Stage 4, where they have decided not to act (*Theory at a Glance, 2005*). A school nurse may decide it will be too much trouble to begin eating disorder-related screening of students, or s/he may receive negative feedback from peers, so no change is made. Conversely, if it has been decided that the change should be made, the individual will move on to Stage 5. Here, a school nurse has weighed the costs and benefits and decided to include education on eating disorders to the school community or begin screening students for eating disorders.
If an individual has decided not to act or make the behavior change, then their journey stops at Stage 4. If the change was made, then the person progresses to Stage 6, where the action takes place. This would include the school nurse adding eating disorder education to staff and students or implementing eating disorder-related screening of students.

The last stage of PAPM is the seventh stage, where the behavior change is maintained. In this stage, the school nurse would continue to ensure that eating disorder education is included in the education of staff and students as well as screening of students.

Another theory that will be used in this research is the Social Cognitive Theory (SCT). SCT was developed when Bandura added to the existing Social Learning Theory. SCT involves an interactive process where factors (such as personal, environmental, and behavioral) influence each other. The likelihood that someone will change a behavior is greatly influenced by several constructs: self-efficacy, the confidence in one’s ability to perform a specific action (this is the construct added to SLT by Bandura); reciprocal determinism, the interaction of personal, behavioral, and environmental factors; behavioral capability, the knowledge and skill needed to perform a specific behavior; modeling or observational learning, transpires when watching other’s actions and related outcomes; and reinforcements, which are the responses to the action that will increase or decrease the likelihood of that action occurring again (Theory at a Glance, 2005).

Constructs of SCT that were be used in this research include self-efficacy and expectations. Self-efficacy was be explored to determine if there is a relationship between efficacy of assessing and referring students with eating disorders and: education received
on eating disorders, beliefs held regarding school nurses’ role with students with eating disorders, and stage in Precaution Adoption Process Model readiness of assessing and referring students with eating disorders. Expectations were explored to determine if there is a relationship between outcome expectations and: using the 5A’s Model approach to assessing and referring students with eating disorders, as well as professional responsibility regarding the role of school nurses working with students with eating disorders.

In addition, concepts from the Health Belief Model were utilized in this research, including perceived benefits and barriers. Perceived benefits involve an individual’s belief in the confidence of an action to either reduce risk or seriousness (Glanz et al, 2002). Perceived barriers involve an individual’s perception of costs as a result of an action (Glanz et al, 2002). Perceived benefits and barriers of school nurses related to their role in helping students with eating disorders were collected in order to provide insight to respondents’ current behaviors.

Lastly, another theory or model-driven approach that was used in this study uses the 5A’s. The 5A’s were developed by the US Public Health Service as a tool to help physicians discuss tobacco use with students (Fiore M., Bailey W., Cohen S., et. al 2000). However, this approach can be useful in many other capacities, such as providing a guide for school nurses to discuss concerns with students suspected of having an eating disorder. This is a unique, yet logical take on the 5A’s approach. The 5A’s are include Ask, Advise, Assess, Assist, and Arrange. Instead of involving cessation of tobacco use, these A’s can be directed towards the assessment and referral of students with eating disorders, as explained in the table below.
Table 2

Use of the 5A’s approach with suspected eating disorders

<table>
<thead>
<tr>
<th>School Nurses’ Communication with Students Suspected of an Eating Disorders: Application of the 5A’s</th>
<th>Physicians and Students who use Tobacco: Original Application of the 5A’s as described by the US Public Health Service</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ask</strong> the student about her/his eating behaviors.</td>
<td><strong>Ask</strong> identify and document tobacco use status for every patient at every visit.</td>
</tr>
<tr>
<td><strong>Advise</strong> the student to seek professional help.</td>
<td><strong>Advise</strong> every tobacco user to quit.</td>
</tr>
<tr>
<td><strong>Assess</strong> the student’s willingness to be referred to professional help.</td>
<td><strong>Assess</strong> the tobacco user willingness to make a quit attempt.</td>
</tr>
<tr>
<td><strong>Assist</strong> the student in her/his attempts to change eating behaviors through counseling.</td>
<td><strong>Assist</strong> the patient willing to make a quit attempt by using counseling and pharmacotherapy.</td>
</tr>
<tr>
<td><strong>Arrange</strong> follow-up appointments for the student.</td>
<td><strong>Arrange</strong> a follow-up in person or by telephone within the first week after the quit date.</td>
</tr>
</tbody>
</table>

Studies Performed in This Topic Area: Weaknesses and Limitations

Comparisons of Similar Studies

There are many studies that have been performed on eating disorders, PAPM, the 5 A’s, and schools, but not together and not specifically involving school nurses. The following is a summary of research that touches many of these areas and how this research is different and needed.

The most similar and recent study to date was conducted by Kroshus et al (2014) called “Assessing the Awareness and Behaviors of U.S. High School Nurses with Respect to the Female Athlete Triad”. The study was conducted using a sample of 1,000 NASN members and utilized email surveys. Researchers obtained a response rate of 37%. Nurses were asked about their knowledge, attitudes, and communication with coaches and athletes in regards to the female athlete triad. Less than a third of respondents had heard of the triad, and less than a fifth agreed that they’d be able to identify the three
components of the triad. Differences between Kroshus’ study and this dissertation research include the focus of the female athlete triad versus eating disorders in general; use of specific theories or methods such as the 5 A’s and PAPM in the dissertation research but not in Kroshus’ study; research involved a paper mailing set to a list of school nurses obtained by using data from the Department of Education vs. this study’s 3,001 member sample. However, the implications of Kroshus’ research align with this research: school nurses, can be a valuable tool in prevention of diseases and disorders among students, including those that are eating disorder-related. School nurses have the tools to screen, provide education, and provide referrals to students with such needs.

Golsater et al (2011) published a study called “Adolescents’ and school nurses’ perceptions of using a health and lifestyle tool in health dialogues” in the *Journal of Clinical Nursing*. This research took place in Sweden as part of their public health service. Twenty-nine students and 23 nurses were involved in focus groups that tested a health and lifestyle tool aimed at opening communications about health. Findings were that while a tool can help improve dialogues between health professionals and students, they may also complicate discussions. Overall, discussion tools such as this one can help the professional be more focused when counseling in a health care setting. Golsater’s research is different than this dissertation study as it is not directly related to school nurses and their relationships with students at risk for eating disorders. In addition, this study took place in Sweden and surveyed adolescents and nurses, while this dissertation research involved only American school nurses. Furthermore, Golsater et al tested a tool in this research and did not directly involve the 5 A’s.
Shisslak et al (1990) published “Prevention of Eating Disorders among Adolescents” in the *American Journal of Health Promotion*. This research involved a pilot project at a high school, designed to educate students, faculty and staff about eating disorders. An evaluation tool used with the project found that students who were involved in the project were more able to correctly answer questions about eating disorders than students who were not involved in the project. Results indicated that increasing awareness of eating disorders in a high school setting was feasible. The researchers also found that there was value in having eating disorder education in schools. However, it is different than this dissertation research because Shisslak’s study looked at the high school setting in general in relation to eating disorder awareness and education. Also, school nurses were not the focus, nor was any health professional identifying/referring at risk students. This study is also dated (1990).

Wainwright et al published an article titled “Health promotion and the role of the school nurse: a systematic review” in 2000 in the *Journal of Advanced Nursing*. This meta-analysis research focused on the factors that affect a school nurse’s ability to improve the health of students, and the effectiveness of health programs involving school nurses. The researchers found insignificant/ineffective research in the existing pool of studies—small samples, mostly descriptive, and little research done on nurses addressing the needs of students. Researchers conclude the there is a need for high quality research involving nursing effectiveness in schools, and nursing effectiveness as a health promoter. This study was different that the dissertation research because it examined research available at that time (2000) and is outdated. However, it does identify the need
for more research related to school nurses and their effectiveness in addressing general health issues of students. Eating disorders was not specifically discussed.

LeGrant et al did a study titled “Eating disorder not otherwise specified presentation in the US population” published in 2012 in the International Journal of Eating Disorders. This research examines the prevalence and clinical correlates of eating disorders not otherwise specified (EDNOC) in the US. Methods involved cross-sectional surveys of adults and adolescents, using a nationally representative sample (n=879 household; n=9244 school). Results include: EDNOS is most common eating disorder among both adults and adolescents. The major difference between this study and this dissertation research is that this study used existing data to determine prevalence of EDNOS. It will helpful in the discussion of EDNOS, but does not involve school nurses or any tools such as the 5 A’s.

Carney & Scott performed a study called “Eating issues in schools: Detection, management, and consultation with allied professionals” that was published in 2012 in the Journal of Counseling and Development. This article discusses the role of school counselors have related to students with eating-related issues. It is a review or reflective piece rather than new research, but discusses many themes that could translate to this research with school nurses such as identifying students with body image dissatisfaction; what qualifies as disordered eating behaviors; and options for intervening and consulting with students at risk for eating disorders. The authors concluded that school counselors play a crucial role in prevention and treatment of children with eating disorders, and this research made the same argument for school nurses. This study is different than this dissertation research because this was a review instead of research and focused on school
counselors instead of school nurses. Also, the study did not discuss models such as the 5 A’s.

Haines et al (2010) published a study called “Screening High School Students for Eating Disorders: Validity of Brief Behavioral and Attitudinal Measures” in the *Journal of School Health*. This study’s aim was to determine how well brief surveys measuring attitude and behavior can identify adolescents at risk for eating disorders. Used data from the National Eating Disorder Screening Program, which was the first national screening of disordered eating behaviors for American high school students. Sampling method was 2-staged and clustered (n=5740), and used randomly selected student screening items from the EAT-26 test, behavioral questions related to purging, and items that identify preoccupation with thinness. However, this research is different than this dissertation research because it focused on the instruments and assessment tools, types of items, and sensitivity of those items when surveying high school students for eating disorders. The population focus was on students themselves rather than on school nurses, and also did not involve the 5 A’s as a tool.

In 1996 Neumark-Sztainer performed a study called “School-Based Programs for Preventing Eating Disturbances” that was published in the *Journal of School Health*. Though this article was published in 1996, it has been cited among a large number of more recent research articles involving schools and students’ eating behaviors. It discusses vital components of eating disorder preventive programming in schools. In sum, it was found that comprehensive approaches to eating disorder prevention in schools should contain a mix of curriculum, individual counseling, group work, and other activities. This is different than research detailed in this dissertation because the statistics
in Neumark-Sztainer’s research are likely outdated (1996). Also, this research focused on the framework for school-based prevention programs of eating disorders and most importantly, school nurses were not the sources of program management.

Knightsmith et al (2014) performed a study titled “‘My teacher saved my life’ versus ‘Teachers don't have a clue’: an online survey of pupils’ experiences of eating disorders” in the Child and Adolescent Mental Health. This study found 38% of participants reported an eating disorder either at the time of survey or in their past. About half (49%) of these were never formally diagnosed. Participants (n=511) were surveyed using an online questionnaire and responses were evaluated using content analysis. However, this research is different than the dissertation research because teachers are the focus instead of school nurses in this research. Also, the authors were mostly interested in how these teachers could play a role in detection and intervention of eating disorders among students.

In summary, the subject of nurses and their role in eating disorder management has been minimally researched and studied, though not in recent years. This research had a unique perspective that will add to this existing base of literature. First, this research focuses on school nurses and their role in identifying, referring, and managing the eating disorders of their students. Second, this investigator used theory/models that have not be used in regards to school nurses and eating disorders (Precaution Adoption Process Model and the 5A’s) and used a randomly sampled, national survey of school nurses. In addition, a three-wave mailing was utilized; and a 50% return rate was attempted as recommended for generalizability (though 37% was final response rate figure).
Existing Literature Regarding School Nurses and Students with Eating Disorders

In existing literature, there is a gap due to a lack of research involving school nurses and students with eating disorders. There is research that focuses on the school’s role in prevention of eating disorders (focus on curriculum, etc.); the school’s role in helping students with body image issues (not specific to which school professional should be involved); research on eating disorders in general; research on the effectiveness of school health personnel in assisting students with general health needs; research on the general health of students and the role of the school; research on obesity and the role of the school/nurse/school health professional; and research on eating disorders and the impact teachers or counselors have on prevention. There are few studies performed that specifically address school nurses and eating disorders, and those that do exist are dated (Wainwright et al 2000; Connolly et al 1990). There are no known studies involving use of the 5 A’s and eating disorders by school nurses, or use of PAPM by school nurses regarding students with eating disorders.

Summary

This research attempted to fill some of the void that currently exists regarding school nurses assisting students with eating disorders. Since school nurses work in a population most vulnerable to disordered eating behaviors, it is logical to involve them on eating disorder-related treatment teams, utilize their expertise by screening students for eating disorders, and using their knowledge to educate the school community (students and staff) on eating disorders. The next chapter of this dissertation describes the methods this research used to further these ideas.
Chapter Three

Methods

This chapter describes the methods that were used in this study. The following sections are discussed: Subjects, Instrument, Instrument Testing, Procedures for Data Collection, Data Analysis Procedures, Using Online Surveys, and Other Research Utilizing this Sample and Method.

Subjects

The instrument was approved as exempt by The University of Toledo Human Subjects Institutional Review Board (IRB) in December 2015, approval #200589. Because respondents were adults, implied consent was assumed if they submitted the survey.

Subjects were school nurses who were members of the National Association of School Nurses (NASN) at the time the list was obtained. According to the Health Resources and Service Administration, in 2010 there were 73,697 registered nurses practicing in schools in the U.S. (HRSA, 2010). The most recent available NASN annual report stated that there are 15,000 members in good standing (NASN, 2013). School nurses in the United States are not required to join the NASN in order to practice; however, the NASN is the largest organization of school nurses in the U.S.

NASN lists can be purchased in 1,000-person increments ($85 per 1,000 people plus a $100 setup fee for non-NASN members), and the list can be delimited as needed. This study used an NASN member list limited to currently practicing school nurses with no restrictions on age or geographical location. Therefore, the total population of this
section of the study is 15,000. Power analysis was performed for a sample size analysis (Raosoft, 2004), with a 5% margin of error and a 95% confidence level, as well as a 50/50 split, determined that the recommended sample size was 375. Due to an anticipated reduced response when compared to mailed surveys, to account for non-responders, and to account for undeliverable emails, the investigator had surveys emailed to 3,001 school nurses.

Instrument

The questionnaire used in this study was an online survey that was be emailed directly to the responder’s email in link form using Survey Monkey. The email used was the one the respondent provided to NASN upon registering to be a member of the organization. The email included a link that when clicked took the respondent directly to the survey. The instrument for this study is attached in paper form as an Appendix A. The instrument consisted of the following items: two questions asking respondents' agreement regarding assessing students for eating disorders and BMIs; one question to determine respondents' PAPM stage regarding assessing students for eating disorders; two questions on perceived benefits and barriers regarding school nurses assessing students for eating disorders; one section (five questions) asking how often the respondent uses the 5 A's with students suspected of having an eating disorder; one section (five questions) regarding perceived impact the 5 A's actions could have on students with eating disorders; one section (five questions) on confidence of using the 5 A's regarding students suspected of having an eating disorder; four questions regarding beliefs of school nurses' role with students and eating disorders; nine questions regarding
education the respondent received in their nursing education; and eleven demographic questions.

The survey was administered using the Gold/Pro version of SurveyMonkey. SurveyMonkey is a web-based survey company that allows users to create questions, email surveys to selected respondents, collect responses, and has different options regarding capturing data. The Gold version was be used because it has seamless integration with SPSS and removed the need for data entry of responses. Other benefits of using the Gold version of SurveyMonkey include collecting participants IP address and displaying a message for those have already taken the survey (rejecting respondent from taking survey again), a survey completion bar for respondents, preset themes/appearances/templates for use, skip patterns and customized questioning available, custom redirect when survey is completed, a custom “Thank You” page when survey is completed, easy ways to share the survey with respondents using embedded code or custom URLs, and real-time results. There was also 24/7 tech support when needed.

**Instrument Testing**

*Readability*

Readability of instrument was evaluated used the Graph for Estimating Readability—Extended (Fry 1977). It was determined the instrument showed an 11th grade reading level.

*Validity*
To establish content validity of the survey, questionnaires were forwarded to a panel of three experts who are recognized in the field of eating disorders or school health care, or experts who have published in these areas. Adjustments to the survey were made based on recommendations from the experts as well as collaboration with the dissertation committee.

Construct validity was analyzed using Principal Components Analysis (PCA), a statistical test which provides information on how well scales of an instrument actually measure the theoretical constructs. Items that loaded less than 0.40 were excluded from loading onto factors and varimax rotation was used. The PCA revealed 6 main factors, with inferred categories labeled Benefits, Barriers, Impact, Outcome Expectations, Efficacy Expectations and Values. When an item fit into more than one factor, it was placed with its highest loading value. See Table 3-1 for full PCA results.

**Table 3**  
Principal Components Analysis

<table>
<thead>
<tr>
<th>Component</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>School nurses assess their students for eating disorders.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.562</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School nurses assess their students’ body mass indexes (BMI).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.676</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barriers: There are no barriers to assessing students for eating disorders.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.457</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barriers: Schools do not want their school nurse to talk about eating disorders.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.582</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barriers: School nurses have more important priorities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.629</td>
<td></td>
</tr>
<tr>
<td>Barriers: It is not the role of school nurses to assess students for eating disorders.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.734</td>
<td></td>
</tr>
<tr>
<td>Barriers: School nurses do not have time to deal with eating disorders.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.632</td>
</tr>
<tr>
<td>Barriers: School nurses are not properly trained to assess their students for eating disorders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.422</td>
</tr>
<tr>
<td>Barriers: Eating disorders among students are too rare to devote much time to screening.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.870</td>
</tr>
<tr>
<td>Benefits: There are no benefits to having school nurses assess their students for eating disorders.</td>
<td></td>
<td></td>
<td>.713</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits: Assessing students would help school nurses identify those students with an eating disorder.</td>
<td></td>
<td></td>
<td>.677</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits: It would help to reduce eating disorder-related health complications in students.</td>
<td></td>
<td></td>
<td>.746</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits: It would enhance students’ overall health.</td>
<td></td>
<td></td>
<td>.642</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits: It would help to reduce the mortality rate from eating disorders.</td>
<td></td>
<td></td>
<td>.814</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits: It would help the student feel that the school nurse is concerned about the student’s overall health.</td>
<td></td>
<td></td>
<td>.776</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits: It would help create awareness of the issue.</td>
<td></td>
<td></td>
<td>.752</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits: It would help create a coordinated effort to address this issue.</td>
<td></td>
<td></td>
<td>.559</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What impact would each action have on student’s health: Ask the student about her/his eating behaviors.</td>
<td></td>
<td></td>
<td>.664</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What impact would each action have on student’s health: Advise the student to seek professional help.</td>
<td></td>
<td></td>
<td>.769</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What impact would each action have on student’s health: Assess the student’s willingness to be referred to professional help.</td>
<td></td>
<td></td>
<td>.805</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What impact would each action have on student’s health: Assist the student in her/his attempts to change eating behaviors through counseling.</td>
<td></td>
<td></td>
<td>.778</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What impact would each action have on student’s health: Arrange follow-up appointments for the student.</td>
<td></td>
<td></td>
<td>.756</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How confident are you in: Asking your students about suspected eating disorder behaviors.</td>
<td></td>
<td></td>
<td>.841</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How confident are you in: Advising your students to seek professional help.</td>
<td></td>
<td></td>
<td>.881</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How confident are you in: Assessing your students’ willingness to be referred to professional help.</td>
<td></td>
<td></td>
<td>.892</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How confident are you in: Assisting your students in their attempts to change eating disorder behaviors through counseling.</td>
<td></td>
<td></td>
<td>.801</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How confident are you in: Arranging follow-up appointments for your students with eating disorders.</td>
<td></td>
<td></td>
<td>.721</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome Expectation- If nursing education included eating disorders, school nurses would be able to assess students for eating disorders.</td>
<td></td>
<td></td>
<td>.673</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Outcome Expectation- If school nurses assessed students for eating disorders, students would have better health outcomes. | .720
---|---
Outcome Expectation- If a school nurse identifies a student with disordered eating behaviors, it is the nurse’s responsibility to refer the student for help. | .737
Outcome Expectation- If a student has an eating disorder, their cognition and scholastic aptitude is impacted. | .784


Reliability

Stability reliability and consistency of instrument was evaluated using selected instrument subscales (frequency of 5 A’s use, benefits, barriers, impact, efficacy, outcome expectations). The ad hoc test-retest method was from a small sample (n=11) of school nurses and utilized Cronbach’s alpha as well as inter-item correlations (see Table 3-2 below for results). All but one subscale Cronbach’s alpha values were fair to excellent; values ranged from -.571 (Barriers subscale), to .958 scored (Efficacy subscale). Stability-reliability scores were computed using inter-item correlations (Friedman’s Test and Tukey’s Test) with scores ranging from -0.36 to .725. Though overall reliability scores were mixed (potentially due to small test-retest sample size), Cronbach’s alpha values indicated acceptable instrument reliability.
Table 4
Test-Retest Internal Reliability Scores

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Internal Consistency Cronbach’s Alpha</th>
<th>Stability Reliability Test-Retest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of 5 A’s use</td>
<td>.948</td>
<td>.672</td>
</tr>
<tr>
<td>Benefits</td>
<td>.888</td>
<td>.428</td>
</tr>
<tr>
<td>Barriers</td>
<td>-.571</td>
<td>-.036</td>
</tr>
<tr>
<td>Impact</td>
<td>.914</td>
<td>.566</td>
</tr>
<tr>
<td>Efficacy</td>
<td>.958</td>
<td>.725</td>
</tr>
<tr>
<td>Outcome expectations</td>
<td>.722</td>
<td>.402</td>
</tr>
</tbody>
</table>

Procedures for Data Collection

For this study, a four-wave emailing was used to achieve the desired response rate. The time frame between each email wave was approximately three weeks. Each email wave included a message to the school nurse explaining the study purpose as well as assuring participation confidentiality and the link to the survey.

Above methods were chosen due to supportive evidence in literature on survey research. Having a higher return rate decreases the Type II error of a study (Price, Dake, Jordan, Silvestri, and Ward 2006). Moreover, the closer the study’s response rate is to 100%, the greater than chance that the results of the study can be generalized from the sample to the entire population (Price, Murnan, Dake, Dimmig, & Hayes 2004). Furthermore, university sponsorship of study can increase response rate (Edwards, Roberts, Clarke, DiGuiseppi, Pratap, Wentz & Kwan 2002).

Data Analysis Procedures

Data analysis was performed using Statistical Package for the Social Sciences (SPSS) 22.0 for Windows. Frequencies, means, and standard deviation were used to
describe questionnaire responses for demographic items. Factor analysis was used to analyze and categorize a large number of interrelated variables, and to determine commonalities between these variables. See Table 3-3 for specific test that were ran on items.

*Table 5*
Statistical Tests Used

<table>
<thead>
<tr>
<th>Type of Statistical Test</th>
<th>Hypotheses Utilizing this Test Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descriptive tests</td>
<td>1.1, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 4.1, 5.1, 6.1a-6.1j</td>
</tr>
<tr>
<td>Independent sample t-test</td>
<td>3.2, 3.3, 3.4, 4.3, 4.4, 4.5, 4.6, 5.3, 5.4, 5.5, 5.6</td>
</tr>
<tr>
<td>ANOVA</td>
<td>1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 6.2, 6.3</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>4.2, 5.2</td>
</tr>
</tbody>
</table>

**Using Online Surveys**

In today’s tech savvy world, it is important for the way we conduct research to evolve in order to keep up with the people being studied. According to the US Census report (File, 2013), in 2011 75.6% of American households had a computer compared to 8.2% in 1984 and 61.8% in 2003. Households reporting internet access have increased from 18% in 1997 to 71.7% in 2011. These increases are true across racial and ethnic groups, ages, and educational achievement (File, 2013), though demographics do influence who is most likely to have home broadband access (Pew, 2013). The numbers of Americans with internet access is even higher if smart phones are included, as 56% of American adults own one (Pew, 2013). Furthermore, according to the National Telecommunications and Information Administration (NTIA), the most popular place to
access the internet outside of one’s home is at work. Because of the availability of the internet, respondents’ online access to this survey is not a significant concern.

Cvent is an internet resource for professionals who use online surveys, and compiled a list of the most common advantages and disadvantages of using online surveys (Gingery, 2011). Advantages of using online surveys include lower costs than those associated with paper mailings (postage, printing, etc.); automation and real-time access to results (as demonstrated by using SurveyMonkey); less time (printing, preparing, and stuffing mailings, driving to a post office site to mail them); convenient method for responders (as demonstrated in the availability of internet access, and no need to mail responses back to researcher); and design flexibility (ability to do skip patterns and may reduce response errors by only allowing respondents to select desired amount of responses). Disadvantages may include respondent’s possible technical issues, and ensuring that the email is opened and read by the responder instead of ignored as trash or SPAM.

Messer, Edwards & Dillman (2012) published a report entitled “Determinants of Item Nonresponse to Web and Mail Respondents in Three Addressed-Based Mixed-Mode Surveys of the General Public” from the Social & Economic Sciences Research Center at Washington State University. This report discusses nonresponse of online surveys compared to traditional paper ones. The researchers used postal mailings that gave respondents options of how to respond (postal mail or online). The online survey matched the postal one to control for and differences. Researchers found that their web-based respondents yielded higher quality data (lower item nonresponse) than mail-based respondents, though the quantity of responses was higher among mail-based respondents.
Similar research found that there were no significant differences between internet vs. mailed surveys. The findings of Denscombe (2007) in his study “Item non-response rates: a comparison of online and paper questionnaires” corroborated those of Messer, Edwards and Dillman (2012). Desnscombe reported that online questionnaires appear to reduce nonresponse for open-ended questions. Also, Ritter P, Lorig K & Matthews K (2004) reported no significant differences when comparing paper and online surveys, but did find that online surveys required less follow up to encourage completion and a slightly higher response rate among the online group (87.6% vs. 83.1%).

**Other Recent Research Utilizing this Sample and Method**

Since NASN only offers access to their membership lists as part of online research (with NASN’s research arm distributing to member emails on behalf of the researcher), there are studies to use as comparison. Quaranta and Gale (2015) published research in the *Journal of School Nursing* utilizing a sample from the NASN membership list and online surveys. For this study, 1000 emails with invitations to participate in the study were sent, and a link was also posted on the NASN website. The email invitation resulted in 291/1000 responses, and researchers were able to obtain an additional 246 survey responses from the website link. Combined this resulted in a 53.6% response rate.

Another study performed using NASN membership list and online surveys was published in 2015 by Kroshus et al and referenced in Chapter 2. Using a sample of 1000 NASN members, researchers received 370 responses, achieving a 37% response rate.

A third study that sourced from NASN membership and involved online surveys was performed by Weber et al (2015) in the *Journal of School Nursing*. Researchers
solicited 8000 school nurses. They received 1246 responses, achieving a response rate of 15.6%; however, 1073 surveys were incomplete, and only 836 of which were completed entirely. The survey completion rate for this study was 77.9%. A fourth research study using a NASN sample and online research emailed 991 surveys out (Bergren, 2016). Of these, only 90 were determined to be eligible responses (resulting in a response rate of less than 10%).

Many articles in the *Journal of School Nursing* (the publication produced by NASN and where these involve literature or comprehensive reviews, are state- or region-specific, involve surveys of students or professions other than school nurses, use existing data sources, or consist of small (<20) qualitative subjects. However, looking at the results of the studies discussed above that involve similar methods, the results that this researcher received are in line with existing research.

In summary, online surveys were used in this research for the convenience of both the researcher and the responder. Research that has been conducted on the differences between using paper surveys and online surveys do not suggest one method receives better results than the other. It is up to the researcher to know their population being studied. Nurses are well-educated due to the knowledge necessary for their profession, and often need to keep up with the advances in health care technology. This is true for school professionals as well. Because of this, online surveys seem to be a great fit for researchers to use when surveying school nurses.
Chapter Four

Results

The results from the statistical analyses of the data are presented in this Chapter.

This Chapter contains the following sections: Response Rate; Demographic and Background Characteristics of the Respondents; School Nurses’ Current Practices Regarding Assessing Students with Eating Disorders; School Nurses’ Education Regarding Eating Disorders; Efficacy Expectations Regarding School Nurses and Students with Eating Disorders; Outcome Expectations Regarding School Nurses and Students with Eating Disorders; Perceived Benefits; Perceived Barriers; Hypotheses Testing; Summary.

Response Rate

The potential participants for this study were selected from the National Association of School Nurses database of members. They were selected at random by the NASN research committee; using their membership database, every third member was selected from their list of approximately 14,000 members who met the parameters of this research. There were 3,001 surveys that were emailed to respondents. After a four-wave emailing, the final tally included 1,116/3,001 responses received in SurveyMonkey. Of that group, 1,009 were considered eligible; 107 respondents had stopped answering the questionnaire after the first group of questions and therefore were removed from statistical analysis. Overall response rate (1009/3001) was 33.62% and completion rate of this survey was 90.41%.
Demographic and Background Characteristics of Respondents

The demographic characteristics of the respondents are shown in Table 4-1. Almost all (98%/n=868) reported being a currently practicing school nurse. About half of the respondents were certified school nurses (51%/n=446), and of those who were certified, most reported being certified at the state level (34% of respondents/n=280). Of those school nurses who were currently practicing, 43% (n=372) identified as being in a suburban school, 33% (n=288) were in a rural school, and 24% (n=205) were in an urban school. Most (72%/n=621) respondents reported working in elementary schools, and about half reporting working in middle schools/junior highs (52%/n=454) and high school settings (49%/n=421). Most participants (44%/n=44.71%) were aged 50-59 years; identified as white/Caucasian (94%/n=833); female (99%/n=879); and were registered nurses (87%/n=769). Just over half (57%) did not have a friend or family member with an eating disorder or were unaware if they did.

Table 6
Demographics and Background Characteristics of Respondents

<table>
<thead>
<tr>
<th>Demographic</th>
<th>% of Respondents (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Highest level of nursing education</strong></td>
<td></td>
</tr>
<tr>
<td>Associate’s degree</td>
<td>14 (126)</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td><strong>50 (442)</strong></td>
</tr>
<tr>
<td>Master’s degree</td>
<td>26 (232)</td>
</tr>
<tr>
<td>PhD</td>
<td>&lt;1 (4)</td>
</tr>
<tr>
<td>DNP</td>
<td>&lt;1 (4)</td>
</tr>
<tr>
<td>Other</td>
<td>9 (80)</td>
</tr>
<tr>
<td><strong>Nursing licensure/certification</strong></td>
<td></td>
</tr>
<tr>
<td>LPN</td>
<td>2 (22)</td>
</tr>
<tr>
<td>RN</td>
<td><strong>87 (769)</strong></td>
</tr>
<tr>
<td>NP</td>
<td>3 (23)</td>
</tr>
<tr>
<td>Other</td>
<td>8 (74)</td>
</tr>
<tr>
<td><strong>Gender identified with</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1 (9)</td>
</tr>
</tbody>
</table>
School Nurses’ Current Practices Regarding Assessing Students with Eating Disorders

Table 4-2 below details the breakdown of respondents’ reported current practices related to assessing students with eating disorders. Overall, most school nurses reported
that they had been assessing students for eating disorders for longer than one year (38%)—Stage 7 of PAPM, Maintenance. Interestingly, the next largest group of respondents reported they were currently not assessing students for eating disorders and had not thought about doing so (23%)—Stage 2 of PAPM, Unengaged by Issue. 44% of respondents are currently assessing students for eating disorders (Stages 6 and 7). 37% of respondents do not currently assess students for eating disorders and have no plans to begin doing so (Stages 1, 2, 4, relapse). 20% of respondents are in the decision making and planning phases (Stages 3 and 5). Respondent’s PAPM stage did vary by age (F =3.353, df =5, p=0.005), with the most significant variance between the 30-39 and 60-69 age group (mean difference=-1.03590, p=0.007). There was also a significant difference between reported PAPM stage and type of nursing certification/licensure (F =6.611, df =3, p<0.001). No significant difference was found by gender of respondent (F =2.553, df =2, p=0.078). In sum, less than half of school nurses were actively assessing students for eating disorders, just over a third did not assess students for eating disorders and had no plans to begin doing so, and there were significant differences found between PAPM stage and age, and PAPM stage and type of nursing certification/licensure.
Table 7
School Nurses Stage of Change Regarding Assessing Students for Eating Disorders

<table>
<thead>
<tr>
<th>PAPM Stage</th>
<th>% of Respondents (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: I am unaware that school nurses should be assessing students for eating disorders.</td>
<td>6 (65)</td>
</tr>
<tr>
<td>2: I currently do not assess students for eating disorders and have not thought about doing so.</td>
<td>23 (223)</td>
</tr>
<tr>
<td>3. I currently do not assess students for eating disorders but am in the process of deciding what to do.</td>
<td>17 (172)</td>
</tr>
<tr>
<td>4. In the past, I’ve thought about assessing students for eating disorders, but have decided not to do so.</td>
<td>4 (37)</td>
</tr>
<tr>
<td>5. I do not currently assess students for eating disorders but plan to begin in the next six months.</td>
<td>3 (31)</td>
</tr>
<tr>
<td>6. I started assessing students for eating disorders within the past year.</td>
<td>5 (52)</td>
</tr>
<tr>
<td>7. I have been assessing students with eating disorders for longer than one year.</td>
<td>38 (389)</td>
</tr>
<tr>
<td>Relapse: In the past I assessed students for eating disorders, but no longer do so.</td>
<td>4 (36)</td>
</tr>
</tbody>
</table>

Total n=1015

Table 4-3 below details school nurses’ current practices regarding use of the 5 A’s when communicating with students suspected of having an eating disorder. The greatest number of responses show that most school nurses are not arranging for follow-up appointments for their students with a suspected eating disorder (63% reported never), but that around a quarter of school nurses are asking their students about eating disorders (29%), advising their students with a suspected eating disorder to seek professional help (26%), and assessing their students’ willingness to be referred to professional health (29%) all of the time (100% of the time). A statistically significant difference between frequency of 5 A’s use and PAPM stage was identified (F=41.889, df=7, p<0.001). There
was also a statistically significant difference between frequency of 5 A’s use and self-efficacy of using the 5 A’s (F=18.362, df=26, p<0.001).

Table 8
Frequency of School Nurses Utilizing the 5 A’s Method When Communicating with Students Suspected of Having an Eating Disorder

<table>
<thead>
<tr>
<th>School nurses who:</th>
<th>% of Respondents (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASK their students about eating disorders.</td>
<td></td>
</tr>
<tr>
<td>Never (0% of the time)</td>
<td>19 (181)</td>
</tr>
<tr>
<td>About 25% of the time</td>
<td>19 (183)</td>
</tr>
<tr>
<td>About 50% of the time</td>
<td>13 (122)</td>
</tr>
<tr>
<td>About 75% of the time</td>
<td>21 (206)</td>
</tr>
<tr>
<td>All of the time (100% of the time)</td>
<td>29 (283)</td>
</tr>
<tr>
<td>ADVISE their students with a suspected eating disorder to seek professional help.</td>
<td>34 (330)</td>
</tr>
<tr>
<td>Never (0% of the time)</td>
<td></td>
</tr>
<tr>
<td>About 25% of the time</td>
<td>18 (178)</td>
</tr>
<tr>
<td>About 50% of the time</td>
<td>10 (98)</td>
</tr>
<tr>
<td>About 75% of the time</td>
<td>13 (122)</td>
</tr>
<tr>
<td>All of the time (100% of the time)</td>
<td>26 (248)</td>
</tr>
<tr>
<td>ASSESS their students’ willingness to be referred to professional help.</td>
<td>33 (320)</td>
</tr>
<tr>
<td>Never (0% of the time)</td>
<td></td>
</tr>
<tr>
<td>About 25% of the time</td>
<td>14 (140)</td>
</tr>
<tr>
<td>About 50% of the time</td>
<td>11 (108)</td>
</tr>
<tr>
<td>About 75% of the time</td>
<td>13 (127)</td>
</tr>
<tr>
<td>All of the time (100% of the time)</td>
<td>29 (280)</td>
</tr>
<tr>
<td>ASSIST their students in their attempts to change their eating behaviors through counseling.</td>
<td>39 (376)</td>
</tr>
<tr>
<td>Never (0% of the time)</td>
<td></td>
</tr>
<tr>
<td>About 25% of the time</td>
<td>18 (174)</td>
</tr>
<tr>
<td>About 50% of the time</td>
<td>13 (123)</td>
</tr>
<tr>
<td>About 75% of the time</td>
<td>12 (118)</td>
</tr>
<tr>
<td>All of the time (100% of the time)</td>
<td>19 (187)</td>
</tr>
<tr>
<td>ARRANGE follow up appointments for their students with a suspected eating disorder.</td>
<td>63 (616)</td>
</tr>
<tr>
<td>Never (0% of the time)</td>
<td></td>
</tr>
<tr>
<td>About 25% of the time</td>
<td>13 (123)</td>
</tr>
<tr>
<td>About 50% of the time</td>
<td>8 (79)</td>
</tr>
<tr>
<td>About 75% of the time</td>
<td>7 (64)</td>
</tr>
<tr>
<td>All of the time (100% of the time)</td>
<td>10 (94)</td>
</tr>
</tbody>
</table>

Total n=972
School Nurses’ Education Regarding Eating Disorders

Table 4-4 below details the amount of coverage in nursing school education for the following topics: Use of the 5 A’s as a technique in communication about eating disorders; health consequences of eating disorders; signs and symptoms of eating disorders; how to assess students for eating disorders; how to refer students with a suspected eating disorder to a mental health counselor, how to talk to students about eating disorders how to assess the student’s attitudes toward food/eating; hot to assess the student’s eating behaviors; the impact of eating disorders on cognitive health. Topics most likely to be included in nursing school include health consequences of eating disorders (50% reported moderate or extensive coverage of this topic) and signs and symptoms of eating disorders (45% reported moderate or extensive coverage of this topic). Three topics were most likely to not be included in nursing education: use of the 5 A’s; how to refer students with a suspected eating disorder to a mental health counselor; and how to talk to students about eating disorders. There was no statistically significant difference between amount of eating disorder education received in nursing school and highest level of nursing education (F=1.375, df=5, p=0.231). There is also a statically significant relationship between how much education received and number of perceived benefits (r=0.08, p=0.08)—as amount of education received increases, so does perceived benefits.
### Table 9
Eating Disorder-Related Education Received During Nursing School

<table>
<thead>
<tr>
<th>Topic</th>
<th>% of Respondents Received this Type of Education (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use of the 5 A’s method related to eating disorders</strong></td>
<td></td>
</tr>
<tr>
<td>Not covered</td>
<td>60 (538)</td>
</tr>
<tr>
<td>Minimal Education</td>
<td>29 (258)</td>
</tr>
<tr>
<td>Moderate Education</td>
<td>10 (92)</td>
</tr>
<tr>
<td>Extensive Education</td>
<td>2 (16)</td>
</tr>
<tr>
<td><strong>Health consequences of eating disorders</strong></td>
<td></td>
</tr>
<tr>
<td>Not covered</td>
<td>12 (108)</td>
</tr>
<tr>
<td>Minimal Education</td>
<td>38 (345)</td>
</tr>
<tr>
<td>Moderate Education</td>
<td>43 (388)</td>
</tr>
<tr>
<td>Extensive Education</td>
<td>7 (61)</td>
</tr>
<tr>
<td><strong>Signs and symptoms of eating disorders</strong></td>
<td></td>
</tr>
<tr>
<td>Not covered</td>
<td>12 (108)</td>
</tr>
<tr>
<td>Minimal Education</td>
<td>43 (385)</td>
</tr>
<tr>
<td>Moderate Education</td>
<td>38 (346)</td>
</tr>
<tr>
<td>Extensive Education</td>
<td>7 (61)</td>
</tr>
<tr>
<td><strong>How to assess students for eating disorders</strong></td>
<td></td>
</tr>
<tr>
<td>Not covered</td>
<td>38 (340)</td>
</tr>
<tr>
<td>Minimal Education</td>
<td>44 (399)</td>
</tr>
<tr>
<td>Moderate Education</td>
<td>15 (138)</td>
</tr>
<tr>
<td>Extensive Education</td>
<td>3 (24)</td>
</tr>
<tr>
<td><strong>How to refer students with a suspected eating disorder to a mental health counselor</strong></td>
<td></td>
</tr>
<tr>
<td>Not covered</td>
<td>43 (383)</td>
</tr>
<tr>
<td>Minimal Education</td>
<td>37 (331)</td>
</tr>
<tr>
<td>Moderate Education</td>
<td>18 (161)</td>
</tr>
<tr>
<td>Extensive Education</td>
<td>3 (27)</td>
</tr>
<tr>
<td><strong>How to talk to students about eating disorders</strong></td>
<td></td>
</tr>
<tr>
<td>Not covered</td>
<td>43 (383)</td>
</tr>
<tr>
<td>Minimal Education</td>
<td>42 (377)</td>
</tr>
<tr>
<td>Moderate Education</td>
<td>14 (125)</td>
</tr>
<tr>
<td>Extensive Education</td>
<td>2 (16)</td>
</tr>
<tr>
<td><strong>How to assess the student’s attitudes toward food/eating</strong></td>
<td></td>
</tr>
<tr>
<td>Not covered</td>
<td>40 (361)</td>
</tr>
<tr>
<td>Minimal Education</td>
<td>44 (399)</td>
</tr>
<tr>
<td>Moderate Education</td>
<td>14 (127)</td>
</tr>
<tr>
<td>Extensive Education</td>
<td>2 (14)</td>
</tr>
<tr>
<td><strong>How to assess the student’s eating behaviors</strong></td>
<td></td>
</tr>
<tr>
<td>Not covered</td>
<td>38 (342)</td>
</tr>
<tr>
<td>Minimal Education</td>
<td>42 (381)</td>
</tr>
<tr>
<td>Moderate Education</td>
<td>17 (157)</td>
</tr>
<tr>
<td>Extensive Education</td>
<td>2. (20)</td>
</tr>
<tr>
<td><strong>The impact of eating disorders on cognitive health</strong></td>
<td></td>
</tr>
<tr>
<td>Not covered</td>
<td>24 (213)</td>
</tr>
<tr>
<td>Minimal Education</td>
<td>43 (391)</td>
</tr>
<tr>
<td>Moderate Education</td>
<td>28 (251)</td>
</tr>
<tr>
<td>Extensive Education</td>
<td>5 (47)</td>
</tr>
</tbody>
</table>

Total n=900
Efficacy Expectations Regarding School Nurses and Students with Eating Disorders

Respondents were asked how confident they felt in their ability to use the 5 A’s skills to communicate with students regarding eating disorders. The table below demonstrates confidence levels reported for each of the 5 A’s. Respondents reported feeling most confident in advising students to seek professional help (33% confident and 20% very confident). A statistically significant difference was found between efficacy expectations and amount of education on eating disorder-related topics ($F = 8.456, df = 35, p < 0.001$). In addition, a statistically significant relationship between level of confidence identified above and number of perceived barriers to assessing students for eating disorders was found ($r = -0.345$); respondents felt less confident about their ability to use the 5 A’s as they identified more barriers.

Table 10
Level of Confidence Related to Using the 5 A’s while Interacting with Students Suspected of Having an Eating Disorder

<table>
<thead>
<tr>
<th>5 A’s Task</th>
<th>Not Confident % (n)</th>
<th>Minimally Confident % (n)</th>
<th>Somewhat Confident % (n)</th>
<th>Confident % (n)</th>
<th>Very Confident % (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asking your students about suspected eating disorder behaviors.</td>
<td>9 (84)</td>
<td>19 (174)</td>
<td>30 (277)</td>
<td>30 (273)</td>
<td>12 (109)</td>
</tr>
<tr>
<td>Advising your students to seek professional help.</td>
<td>9 (85)</td>
<td>16 (145)</td>
<td>23 (206)</td>
<td>33 (306)</td>
<td>19 (175)</td>
</tr>
<tr>
<td>Assessing your students’ willingness to be referred to professional help.</td>
<td>10 (90)</td>
<td>16 (145)</td>
<td>29 (261)</td>
<td>32 (289)</td>
<td>15 (133)</td>
</tr>
<tr>
<td>Assisting your students in their attempts to change eating disorder behaviors through counseling.</td>
<td>16 (145)</td>
<td>24 (221)</td>
<td>28 (254)</td>
<td>23 (212)</td>
<td>9 (86)</td>
</tr>
</tbody>
</table>
Arranging follow-up appointments for your students with eating disorders.

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly Agree %</th>
<th>Agree %</th>
<th>Not Sure %</th>
<th>Disagree %</th>
<th>Strongly Disagree %</th>
</tr>
</thead>
<tbody>
<tr>
<td>If nursing education included eating disorders, school nurses would be able to assess students for eating disorders.</td>
<td>21 (192)</td>
<td>48 (438)</td>
<td>24 (216)</td>
<td>6 (51)</td>
<td>2 (16)</td>
</tr>
<tr>
<td>If school nurses assessed students for eating disorders, students would have better health outcomes.</td>
<td>21 (188)</td>
<td>50 (457)</td>
<td>26 (237)</td>
<td>2 (21)</td>
<td>1 (11)</td>
</tr>
</tbody>
</table>

Total n=914

Outcome Expectations Regarding School Nurses and Students with Eating Disorders

Table 4-6 below details outcome expectations of school nurses regarding their interactions with students and eating disorders. The majority of respondents agreed or strongly agreed that including eating disorder topics in nursing education would enable school nurses to assess students for eating disorders; students would have better health outcomes if school nurses assessed students for eating disorders; when a school nurse identifies a student with disordered eating behaviors, it is the nurse’s responsibility to refer that student for help; and that student scholastic aptitude is impacted if they have an eating disorder. There was a statistically significant difference found between two of the outcome expectations and type of nursing degree (outcome statement #1 listed below F=2.864, df=5, p=0.014; outcome statement #3 listed below F=3.261, df=5, p=0.006).

Table 11
Outcome Expectations
If a school nurse identifies a student with disordered eating behaviors, it is the nurse’s responsibility to refer the student for help.

If a student has an eating disorder, their cognition and scholastic aptitude is impacted.

<table>
<thead>
<tr>
<th>Benefit</th>
<th>% of Respondents (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are no benefits to having school nurses assess their students for eating disorders.</td>
<td>&lt;1 (7)</td>
</tr>
<tr>
<td>Assessing students would help school nurses identify those students with an eating disorder.</td>
<td>54 (549)</td>
</tr>
<tr>
<td>It would help to reduce eating disorder-related health complications in students.</td>
<td>51 (516)</td>
</tr>
<tr>
<td>It would enhance students’ overall health.</td>
<td>65 (661)</td>
</tr>
<tr>
<td>It would help to reduce the mortality rate from eating disorders.</td>
<td>37 (378)</td>
</tr>
</tbody>
</table>

Total n=907
It would help the student feel that the school nurse is concerned about the student’s overall health.  

It would help create awareness of the issue  

It would help create a coordinated effort to address this issue.  

Other  

(Total n=1,015)

Perceived Barriers

Table 4-8 below details barriers identified by school nurses that hinder them from assessing students for eating disorders. The most frequently identified barrier was that school nurses are not properly trained to assess their students for eating disorders. The least frequently identified barrier was that eating disorders have little to do with school health.

Table 13
Barriers that Hinder School Nurses from Assessing Students for Eating Disorders

<table>
<thead>
<tr>
<th>Barrier</th>
<th>% of Respondents (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are no barriers to assessing students for eating disorders.</td>
<td>20 (204)</td>
</tr>
<tr>
<td>Schools do not want their school nurse to talk about eating disorders.</td>
<td>9 (96)</td>
</tr>
<tr>
<td>School nurses have more important priorities.</td>
<td>9 (90)</td>
</tr>
<tr>
<td>It is not the role of school nurses to assess students for eating disorders.</td>
<td>3 (29)</td>
</tr>
<tr>
<td>Eating disorders have little to do with school health.</td>
<td>&lt;1 (4)</td>
</tr>
<tr>
<td>School nurses do not have time to deal with eating disorders.</td>
<td>17 (176)</td>
</tr>
<tr>
<td>School nurses are not properly trained to assess their students for eating disorders.</td>
<td>47 (482)</td>
</tr>
</tbody>
</table>
Eating disorders among students are too rare to devote much time to screening. 5 (55)

I do not know how to assess for an eating disorder 24 (243)

Other 28 (283)

(Total n=1,015)

Testing the Research Questions and Hypotheses

The following are the research questions and hypotheses as stated in Chapter 1 with related data analysis.

1. School nurses are in what stage of readiness (PAPM) regarding assessing for eating disorders among students?

Dependent Variable = PAPM Stage of Assessing for Eating Disorders

1.1: The majority of school nurses are not currently assessing their students for eating disorders.

Descriptive statistics indicated that 44% of school nurses reported currently assessing students for eating disorders. Since the majority (57%) of school nurses reported that they are not currently assessing students for eating disorders (though 20% reported they may implement doing so in the future), the null hypothesis was accepted.

1.2: There is no statistically significant difference in PAPM stage by the amount of education received in nursing school (none versus minimum versus moderate versus extensive.)
An ANOVA was calculated for this hypothesis (F = 3.699, df = 35, p < 0.001, and the hypothesis was rejected. There was a statistically significant difference between the means of the groups.

1.3: There is no statistically significant difference in PAPM stage by type of nurse (LPN vs. RN vs. NP).

An ANOVA was calculated for this hypothesis (F = 6.611, df = 35, p < 0.001), and the hypothesis was rejected. There was a statistically significant difference between the means of the groups.

1.4: There is no statistically significant difference in PAPM stage by school nurses’ level of confidence in “Asking” their students about suspected eating disorder behaviors.

An ANOVA was calculated for this hypothesis (F = 57.555, df = 5, p < 0.001), and the hypothesis was rejected. There was a statistically significant difference between the means of the groups.

1.5: There is no statistically significant difference in PAPM stage by school nurses’ outcome expectations regarding “Asking” students about their eating behaviors.

An ANOVA was calculated for this hypothesis (F = 22.241, df = 3, p < 0.001), and the hypothesis was rejected. There was a statistically significant difference between the means of the groups.
1.6: There is no statistically significant difference in PAPM stage by the number of perceived benefits to assessing students for eating disorders.

An ANOVA was calculated for this hypothesis ($F = 7.296, \text{df} = 7, p < 0.001$), and the hypothesis was rejected. There was a statistically significant difference between the means of the groups.

1.7: There is no statistically significant difference in PAPM stage by the number of perceived barriers to assessing students for eating disorders.

An ANOVA was calculated for this hypothesis ($F = 13.344, \text{df} = 7, p < 0.001$), and the hypothesis was rejected. There was a statistically significant difference between the means of the groups.

2. **How frequently are school nurses implementing the 5A’s method when communicating with students that have a suspected eating disorder?**

*Dependent Variable = Frequency of school nurses implementing the 5A’s method*

2.1: The majority of school nurses are not ASKING their students about eating disorders.

Descriptive statistics indicated that 19% of school nurses reported that they never ask students about eating disorders. Since the majority (63%) of school nurses reported that they ask students about eating disorders at least 50% of the time, the null hypothesis was rejected.
2.2: The majority of school nurses are not ADVISING their students with a suspected eating disorder to seek professional help.

Descriptive statistics indicated that 34% of school nurses reported that they never advise students with a suspected eating disorder to seek help. Since less than the majority (49%) of school nurses reported that they advise students with a suspected eating disorder to seek help at least 50% of the time, the null hypothesis was accepted.

2.3: The majority of school nurses are not ASSESSING their students’ willingness to be referred to professional help.

Descriptive statistics indicated that 40% of school nurses reported that they never assess students’ willingness to be referred to professional help. Since the majority (53%) of school nurses reported that they assess students’ willingness to be referred to professional help at least 50% of the time, the null hypothesis was rejected.

2.4: The majority of school nurses are not ASSISTING their students in their attempts to change their eating behaviors through counseling.

Descriptive statistics indicated that 39% of school nurses reported that they never assist their students in their attempts to change their eating behaviors through counseling. Since less than the majority (44%) of school nurses reported that they ask students about eating disorders at least 50% of the time, the null hypothesis was accepted.
2.5: The majority of school nurses are not ARRANGING follow up appointments for their students with a suspected eating disorder.

Descriptive statistics indicated that 63% of school nurses reported that they never arrange follow up appointments for their students with a suspected eating disorder. Since less than the majority (24%) of school nurses reported that they arrange follow up appointments for their students with a suspected eating disorder at least 50% of the time, the null hypothesis was accepted.

3. How confident are school nurses in using the 5A’s method of communication with students with a suspected eating disorder?

**Dependent Variable= School nurses’ confidence in using the 5A’s**

3.1: The majority of school nurses are not confident in using the 5A’s with students suspected of an eating disorder.

Descriptive statistics indicated that 63% of school nurses reported that they never arrange follow up appointments for their students with a suspected eating disorder. Since less than the majority (24%) of school nurses reported that they arrange follow up appointments for their students with a suspected eating disorder at least 50% of the time, the null hypothesis was accepted.
3.2: There is no statistically significant difference in confidence of using the 5A’s method by the amount of education that school nurses received on eating disorders in nursing school.

   This hypothesis was accepted. An independent samples t-test was calculated and a statistically significant difference was not found (t = -1.384, df = 60, p=0.172) for amount of education that school nurses had received on the topic of eating disorders and their confidence in using the 5 A’s method.

3.3: There is no statistically significant difference in confidence of using the 5A’s method by the amount of education that school nurses received on the 5A’s in nursing school (none versus minimum versus moderate versus extensive).

   This hypothesis was rejected. An independent samples t-test was calculated and a statistically significant difference was found (t = -2.981, df = 347, p=0.003) for amount of education that school nurses had received on the topic of the 5 A’s method and their confidence in using the 5 A’s method.

3.4: There is no statistically significant difference in confidence of using the 5A’s method by the stage of readiness (PAPM).

   This hypothesis was accepted. An independent samples t-test was calculated and a statistically significant difference was not found (t =
0.300, df = 257, p=0.764) for school nurses’ confidence in using the 5 A’s method and PAPM stage.

4. Do school nurses perceive benefits to having their profession involved in assessing students for eating disorders?

*Dependent Variable = School nurses’ perceived benefits of assessing students*

4.1: The majority of school nurses do not perceive benefits to assessing students for eating disorders.

Descriptive statistics indicated that <1% of school nurses reported that they do not perceive any benefits to having school nurses assess their students for eating disorders. The null hypothesis was rejected.

4.2: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not by how much education on eating disorders that they received in nursing school.

Perceived benefits and amount of education were strongly correlated therefore the null hypothesis was rejected. A Pearson correlation coefficient was calculated: \( r = 0.80, \ p = 0.016 \).

4.3: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not
by belief it is the nurse’s responsibility to refer students with a suspected eating disorder to a mental health counselor.

This hypothesis was rejected. An independent samples t-test was calculated and a statistically significant difference was found \((t = 2.783, \text{df} = 720, p=0.006)\) for perceived benefits and belief that school nurses should refer students suspected of an eating disorder to a mental health counselor.

4.4: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not by whether or not the nurse ever had a family member or close friend with an eating disorder.

This hypothesis was rejected. An independent samples t-test was calculated and a statistically significant difference was found \((t = 3.128, \text{df} = 1007, p=0.002)\) for perceived benefits and knowing a friend or family member with an eating disorder.

4.5: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not by gender of nurse.

This hypothesis was accepted. An independent samples t-test was calculated and a statistically significant difference was not found \((t = -1.719, \text{df} = 880, p=0.086)\) for perceived benefits and gender of school nurse respondent.
4.6: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not by PAPM stage of readiness.

This hypothesis was accepted. An independent samples t-test was calculated and a statistically significant difference was not found (t = -0.288, df = 295, p = 0.774) for perceived benefits and PAPM stage of school nurse respondent.

5. Do school nurses believe that there are specific barriers to being involved in the secondary prevention of eating disorders?

*Dependent Variable = School nurses’ perceived barriers of assessing students*

5.1: The majority of school nurses do not perceive barriers to assessing students for eating disorders.

Descriptive statistics indicated that only 20% of school nurses reported that they do not perceive any barriers to having school nurses assess their students for eating disorders. The null hypothesis was rejected.

5.2: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by how much education on eating disorders that they received in nursing school.
A Pearson correlation coefficient was calculated: $r = -0.271$, $p < 0.001$.

Perceived benefits and amount of education were correlated therefore the null hypothesis was rejected.

5.3: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by belief it is the nurse’s responsibility to refer students with a suspected eating disorder to a mental health counselor.

This hypothesis was accepted. An independent samples t-test was calculated and a statistically significant difference was not found ($t = -1.844$, $df = 720$, $p = 0.066$) for perceived barriers and belief that school nurses should refer students suspected of an eating disorder to a mental health counselor.

5.4: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by whether or not the nurse ever had a family member or close friend with an eating disorder.

This hypothesis was rejected. An independent samples t-test was calculated and a statistically significant difference was found ($t = -2.781$, $df = 720$, $p = 0.006$).
df = 1007, p=0.006) for perceived barriers and knowing a friend or family member with an eating disorder.

5.5: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by gender of nurse.

This hypothesis was accepted. An independent samples t-test was calculated and a statistically significant difference was not found (t = -0.421, df = 880, p=0.674) for perceived barriers and gender of school nurse respondent.

5.6: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by PAPM stage of readiness.

This hypothesis was accepted. An independent samples t-test was calculated and a statistically significant difference was not found (t = -0.930, df=295, p=0.353) for perceived barriers and PAPM stage of school nurse respondent.

6. How much education did school nurses receive on eating disorders in nursing school?
Dependent Variable= Amount of eating disorder education received in nursing school

6.1: The majority of school nurses did not receive education on eating disorders in nursing school.

   Regarding individual topics related to eating disorders, the following are sub-hypotheses and their results.

   6.1a: Use of the 5 A’s method in eating disorder (Ask, Advise, Assess, Assist, and Arrange). Descriptive statistics indicated that 60% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was accepted.

   6.1b: Health consequences of eating disorders. Descriptive statistics indicated that 12% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.

   6.1c: Signs and symptoms of eating disorders. Descriptive statistics indicated that 12% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.
6.1d: How to assess students for eating disorders. Descriptive statistics indicated that 38% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.

6.1e: How to refer students with a suspected eating disorder to a mental health counselor. Descriptive statistics indicated that 43% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.

6.1f: How to talk to students about eating disorders. Descriptive statistics indicated that 43% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.

6.1g: How to assess the student’s attitudes toward food/eating. Descriptive statistics indicated that 40% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.

6.1h How to assess the student’s eating behaviors. Descriptive statistics indicated that 38% of school nurses reported that this
topic was not covered in their nursing education. The null hypothesis was rejected.

6.1j: The impact of eating disorders on cognitive health. Descriptive statistics indicated that 24% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.

6.2: There is no statistically significant difference in amount of education received in nursing school by stage of readiness (PAPM). An ANOVA was calculated for this hypothesis (F = 18.122, df = 7, p < .001), and the hypothesis was rejected. The difference was between PAPM stage and amount of education on eating disorder topics received in nursing school.

6.3: There is no statistically significant difference in amount of education received in nursing school by type of nursing degree obtained. An ANOVA was calculated for this hypothesis (F = 5.466, df = 3, p =0.001), and the hypothesis was rejected. The difference was between PAPM stage and nursing licensure/certification.
Summary

A total of 1116 surveys were returned out of 3001 eligible surveys for a response rate of 37%. The majority of respondents worked in a suburban setting (43%), and though many worked in more than one school level, most respondents reported primarily working in elementary schools (71%). Almost all of the respondents were currently practicing school nurses (98%) and just over half were certified at either the state level (34%), national level (13%) or both (8%). The majority of respondents were registered nurses (87%). The majority of respondents were between 50 and 59 years old (45%) female (99%) and almost all self-identified as White/Caucasian (94%). Just over half (57%) reported no knowledge of having a close friend or family member with an eating disorder.

Most respondents reported receiving minimal or no education on a variety of eating disorder-related topics within nursing school. Regarding outcome expectations, over half (55%) reported that they strongly agreed that eating disorders can impact students’ cognition and scholastic aptitude. About half of respondents reported that they agree that if nursing education included eating disorders, school nurses would be able to assess students for eating disorders (48%); if school nurses assessed students for eating disorders, students would have better health outcomes (50%); and if a school nurse identifies a student with disordered eating behaviors, it is the nurse’s responsibility to refer the student for help (46%).

The majority of school nurses reported low self-efficacy in the use of the 5 A’s method; lowest confidence was reported related to asking students about suspected eating disorder behaviors while highest confidence was reported related to advising students to
seek professional help. School nurses reported high efficacy expectations regarding major positive impact on student health and the individual 5 A’s skills (asking, advising, assessing, assisting, and arranging). The most commonly selected statement associated with PAPM showed that 39% of school nurses had been assessing students with eating disorders for longer than one year. The next most frequently selected statement showed that 23% of school nurses did not currently assess students for eating disorders and had not thought about doing so.

Regarding barriers that hinder school nurses from assessing students for eating disorders, a commonly-reported barrier was that school nurses are not properly trained to assess their students for eating disorders (47%). Other commonly-reported barriers include not knowing how to assess for an eating disorder (24%) and that school nurses do not have time to deal with eating disorders (17%). One in five respondents reported that there are no barriers to assessing students for eating disorders.

Regarding benefits of having school nurses assess for eating disorders, the most frequently reported benefits include enhancing students’ overall health (65%), helping to create a coordinated effort to address this issue (63%), and helping to create awareness of this issue (59.%). Less than one-percent (<1%) reported no benefits to having school nurses assess their students for eating disorders.
Chapter Five

Conclusion

This chapter contains the following sections: Summary of the Study, Accepted Hypotheses, Rejected Hypotheses, Discussion, Implications, Recommendations for the Health Profession, Recommendations for Future Research, and Conclusion.

Summary of Study

Eating disorders are a significant public health problem. Eating disorders, specifically anorexia, are the most deadly of all psychiatric conditions (Stein, 2009; Arcelus, Mitchell, Wales, & Nielsen, 2011). Aside from the mortality rate of eating disorders, the negative health impact on those who suffer from them is also substantial. These negative health effects reach almost system of the body and include cardiac issues, brittle bones, gastro abnormalities, delayed puberty, impaired cognition, and can contribute to mood disorders (ANAD; NIMH). Sadly, most youth with an eating disorder are not diagnosed early in the disease progression and few receive treatment (Merikangas et al, 2011).

Prevalence rates for eating disorders vary by study, surveillance data set, and type of eating disorder. Globally, the lifetime prevalence of a diagnosable eating disorder is 1.01% (Qian et al, 2013). However, this number likely does not include newer eating disorders such as binge eating disorder or disordered weight control behaviors (DWCB) or disordered eating behaviors that may not neatly fit into one of the established categories of eating disorders.

Certain characteristics predispose to eating disorders, such as being female (three times more likely to develop anorexia or bulimia versus men [Hudson, 2007]); Caucasian
(report the highest prevalence of anorexia [Swanson et al, 2011]); age (the age of onset of eating disorders is becoming lower, and typically begins in the teenage years [Swanson et al., 2011]); living in a Westernized or developed country, and a history of obesity, depression, anxiety, or substance abuse disorders (Franco, 2010).

Scholastic ability of youth suffering from eating disorders can be impaired. NEDA (2007) found that people with anorexia spend the majority of their time preoccupied with food and hunger. Furthermore, without proper nutrition during formative years, students with eating disorders can suffer from lack of energy, attention span, and concentration (DHHS, 2005).

School nurses were identified as a leader in the health policy and programming of our schools (NASN, 2011). As stated by NASN, healthy learners are successful learners, and the role school nurses can play in detection, referral, and management of students with eating disorders is impactful. No published research exists on the role of school nurses in early detection of eating disorders and this research aimed to begin to fill that gap.

The purpose of this research study was to answer the following questions:

1. What, if anything, are school nurses currently doing regarding assessing students for eating disorders;
2. What benefits and/or barriers school nurses identify regarding assessing students for eating disorders;
3. Frequency of school nurses’ use of the 5 A’s with students suspected of having an eating disorder;
4. Perceived impact of school nurses’ involvement with students suspected of having an eating disorder;
5. Level of confidence regarding use of the 5 A’s with students suspected of having an eating disorder;
6. Amount of education school nurses received regarding the 5 A’s, eating disorders in general, and how to assess students for eating disorders.

To help answer these questions, a 24-item survey was created to determine practices, efficacy expectations, perceived impact, perceived barriers and benefits, and beliefs of school nurses regarding students with eating disorders. This survey was emailed to a random nationwide sample of 3001 National Association of School Nurses members. Of the 1116 surveys received, 1009 were eligible. The 107 were deemed ineligible because the survey responses stopped after the first set of questions. The response rate was 37.18%. School nurses were asked to determine level of agreement on two questions related to school nurses responsibilities in a Likert-scale type question; one question to determine the respondent’s PAPM stage; one question each to determined perceived benefits and barriers to assessing students for eating disorders; five questions in a matrix-type format designed to identify how often the 5 A’s are used with students suspected of having an eating disorder, perceived impact on student’s health, level of confidence in using the 5 A’s skills, outcome expectations related to school nurses and students with eating disorders, how much education the respondent received in nursing school related to a range of eating disorder-related topics; and demographic questions.
Most nurses reported being a currently practicing school nurse, working in elementary schools, female, Caucasian, between the ages of 50-59, and were registered nurses. Over a third of school nurses surveyed reported that they had been assessing students for eating disorders for over a year, yet the same proportion of respondents did not assess and have no plans to do so.

Regarding use of the 5 A’s while communicating with students suspected of having an eating disorder, one-fifth to one-third of respondents reported using each of the skills 100% of the time. One-fifth to over one-half reported using these skills 0% of the time. One area of improvement in nursing education could be the addition of this valuable communication tool, as it can be used in a variety of health needs from eating disorders to smoking cessation.

The most frequently reported covered health topics covered in nursing school include health consequences of eating disorders and signs and symptoms of eating disorders; however, this meant that slightly less than half of respondents reported minimal or moderate education. The responses to this set of questions indicated a gap in nursing education related to eating disorders.

The responses to the outcome expectation set of questions on this survey indicated that school nurses agree if they received eating disorder education in school, they’d be able to assess students for eating disorders, that assessing for eating disorders would lead to better student health outcomes, and that eating disorders impact student cognition and scholastic aptitude. These responses demonstrated awareness that eating disorders impact student health and that school nurses may be able to contribute to early detection goals.
Benefits of having a school nurse assess for eating disorders that were most frequently identified include helping to create a coordinated effort to address this issue and enhancing students’ overall health. 4.4% of respondents wrote in their own perceived benefits, which range from school nurses helping with students’ absenteeism from class due to not eating or eating in an unhealthy manner, to helping to bring attention to mental health problems, to reduce copy-cat behaviors related to students with eating disorders.

Barriers to having a school nurse assess for eating disorders that were most frequently identified include that school nurses are not properly trained to assess students for eating disorders and school nurses do not know how to assess for an eating disorder. 27.88% of respondents wrote in their own perceived barriers, which included a lack of protocol, other priorities consuming time, covering too many students/schools to do these assessments, and a lack of assistance from parents. Many of the barriers reported include a perceived lack of skill or feeling of unpreparedness related to assessing for eating disorders, which could be addressed by education and learning opportunities for school nurses.

Accepted Hypotheses

Of 40 tested null hypotheses, 14 (35%) were accepted:

1.1: The majority of school nurses are not currently assessing their students for eating disorders.

2.2: The majority of school nurses are not ADVISING their students with a suspected eating disorder to seek professional help.
2.4: The majority of school nurses are not ASSISTING their students in their attempts to change their eating behaviors through counseling.

2.5: The majority of school nurses are not ARRANGING follow up appointments for their students with a suspected eating disorder.

3.1: The majority of school nurses are not confident in using the 5A’s with students suspected of an eating disorder.

3.2: There is no statistically significant difference in confidence of using the 5A’s method by the amount of education that school nurses received on eating disorders in nursing school.

3.4: There is no statistically significant difference in confidence of using the 5A’s method by the stage of readiness (PAPM).

4.5: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not by gender of nurse.

4.6: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not by PAPM stage of readiness.

5.3: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by belief it is the nurse’s responsibility to refer students with a suspected eating disorder to a mental health counselor.
5.5: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by gender of nurse.

5.6: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by PAPM stage of readiness.

6.1a: The majority of school nurses did not receive education on eating disorders in nursing school. Use of the 5 A’s method involving eating disorders communication (Ask, Advise, Assess, Assist, and Arrange). Descriptive statistics indicated that 59.78% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was accepted.

Rejected Hypotheses

Of 40 tested null hypotheses, 26 (65%) were rejected:

1.2: There is no statistically significant difference in PAPM stage by the amount of education received in nursing school (none versus minimum versus moderate versus extensive.)

1.3: There is no statistically significant difference in PAPM stage by type of nurse (LPN vs. RN vs. NP).

1.4: There is no statistically significant difference in PAPM stage by school nurses’ level of confidence in “Asking” their students about suspected eating disorder behaviors.
1.5: There is no statistically significant difference in PAPM stage by school nurses’ outcome expectations regarding “Asking” students about their eating behaviors.

1.6: There is no statistically significant difference in PAPM stage by the number of perceived benefits to assessing students for eating disorders.

1.7: There is no statistically significant difference in PAPM stage by the number of perceived barriers to assessing students for eating disorders.

2.1: The majority of school nurses are not ASKING their students about eating disorders.

2.3: The majority of school nurses are not ASSESSING their students’ willingness to be referred to professional help.

3.3: There is no statistically significant difference in confidence of using the 5A’s method by the amount of education that school nurses received on the 5A’s in nursing school (none versus minimum versus moderate versus extensive).

4.1: The majority of school nurses do not perceive benefits to assessing students for eating disorders.

4.2: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not by how much education on eating disorders that they received in nursing school.

4.3: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not by belief it is the nurse’s responsibility to refer students with a suspected eating disorder to a mental health counselor.
4.4: There is no statistically significant difference between school nurses who perceive benefits of assessing students for eating disorders and those who do not by whether or not the nurse ever had a family member or close friend with an eating disorder.

5.1: The majority of school nurses do not perceive barriers to assessing students for eating disorders.

5.2: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by how much education on eating disorders that they received in nursing school.

5.4: There is no statistically significant difference between school nurses who perceive barriers of assessing students for eating disorders and those who do not by whether or not the nurse ever had a family member or close friend with an eating disorder.

6.1b: Health consequences of eating disorders. Descriptive statistics indicated that 12% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.

6.1c: Signs and symptoms of eating disorders. Descriptive statistics indicated that 12% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.

6.1d: How to assess students for eating disorders. Descriptive statistics indicated that 37.78% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.
6.1e: How to refer students with a suspected eating disorder to a mental health counselor. Descriptive statistics indicated that 42.56% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.

6.1f: How to talk to students about eating disorders. Descriptive statistics indicated that 42.56% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.

6.1g: How to assess the student’s attitudes toward food/eating. Descriptive statistics indicated that 40.11% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.

6.1h: How to assess the student’s eating behaviors. Descriptive statistics indicated that 38% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.

6.1j: The impact of eating disorders on cognitive health. Descriptive statistics indicated that 23.67% of school nurses reported that this topic was not covered in their nursing education. The null hypothesis was rejected.

6.2: There is no statistically significant difference in amount of education received in nursing school by stage of readiness (PAPM).

6.3: There is no statistically significant difference in amount of education received in nursing school by type of nursing degree obtained.

**Discussion**

This study revealed several important findings that contribute to knowledge regarding school nurses and their role in eating disorders and students. However, it is
important to note that due to the demographically-homogenous sample, results of this study may be limited to beliefs and opinions of school nurses who are registered nurses, female, middle-aged, and Caucasian/white. Few to no responses from individuals not in these demographic group were received.

First, school nurses’ need for further education on eating disorders was clearly identified. The two most frequently reported barriers were related to knowledge (24%) and training of school nurses (47%) in assessment of students with suspected eating disorders. One question on this survey asked for respondents to report the amount of education (none, minimal, moderate, and extensive) they received on nine different eating disorder-related topics. For all topics, less than 7% reported receiving extensive education on the topic, four topics had over 40% of respondents reporting no education on the topic, and 37-38% of respondents reported no education received on two additional topics. However, this problem can be addressed by providing further education to this profession. Education that is needed on eating disorder-related topics can come in various forms such as within undergraduate or graduate education; continuing education courses; webinars; conference sessions; and further research in scholarly journals can all contribute to grow school nursing skills sets related to eating disorders.

With increased education can come increased self-efficacy. School nurses’ level of confidence regarding using the 5 A’s when communicating with students suspected of having an eating disorder was evaluated in this survey. Overall, self-efficacy for each of the 5 A’s steps were reported as follows: 42% reported being confident or very confident in asking students about suspected eating disorders; 53% reported being confident or very confident in advising students to seek professional help; 467% reported being
confident or very confident in assessing students’ willingness to be referred to professional help; 33% reported being confident or very confident in assisting students with attempts to change disordered behaviors through counseling; and 39.39% reported being confident or very confident in arranging follow-up appointments for students with eating disorders. With about one-half of respondents reporting low confidence in each of these areas, education and skill building can help to increase school nurses’ self-efficacy in these areas.

Another area this research contributes knowledge to is regarding perceived actions versus actual actions. Interestingly, 63% of respondents reported that they never (0% of time) arrange follow up for students with eating disorders. This is despite the fact that 81% of respondents agreed or strongly agreed that if a school nurse identifies a student with disordered eating behaviors, it is the nurse’s responsibility to refer the student for help. Moreover, 40% reported being confident or very confident in their ability arrange follow-up for students suspected of having an eating disorder.

Along with identifying the need for further education and skill building, this research helps to demonstrate that school nurses believe eating disorders impact the health of their students (71% agree or strongly agree that if school nurses assessed students for eating disorders, students would have better health outcomes; 93% agree or strongly agree that if a student has an eating disorder, their cognition and scholastic aptitude is impacted). School nurses are clearly receptive to their involvement in detection, referral, and management of eating disorders among students as evidenced in the high frequency of reported benefits (3,937 total benefits selected for 1,015 responses—an average of almost four benefits reported per respondent) and high
perceived impact of involving school nursing in eating disorder detection/assessment (42%-64% reported major impact on students’ health, broken down by each of the 5 A’s skills).

In summary, this research was able to identify a clear need for further education of school nurses on the topic of eating disorders, as this was identified as a commonly reported barrier. Methods such as the 5 A’s approach can be utilized to help with communications with students suspected of having an eating disorder, and this method is not used by the majority of school nurses. School nurses reported none or minimal education in nursing school on most eating disorder-related subjects identified in the instrument. Self-efficacy regarding use of the 5 A’s was low as well. However, school nurses did report an understanding of the importance of eating disorder education in nursing school in order to assess students and help improve student health outcomes. This suggests a willingness to learn and be educated in this area in order to benefit student health.

**Implications**

Empirical implications of this research suggest that less than half of school nurses are currently assessing students for eating disorders, and about one-third do not currently assess students for eating disorders and have no plans to begin doing so. It has been demonstrated that barriers to school nurses assessing students suspected of having an eating disorder include an educational deficiency in this topic and low self-efficacy in eating disorder assessment skills (including the 5 A’s methodology). Since no other known research addresses this subject with this population, identifying these perceived
barriers to assessing students with eating disorders is crucial. Since eating disorders impact student health and school performance, schools and school health teams should be involved in this conversation.

Theoretical implications from this research suggest that while some respondents perceived value in using the elements of the 5 A’s when communicating with students suspected of having an eating disorder, there was also low self-efficacy of these skills reported. Using constructs from the Health Belief Model (HBM) allowed this research to identify areas that are encouraging (benefits) and that are discouraging (barriers) to school nurses regarding assessing students for eating disorders. Lastly, placing school nurses in a Precaution Adoption Process Model (PAPM) stage based on their response to a related statement allowed this investigator to determine the current practices of school nurses regarding students with eating disorders. Furthermore, the PAPM stage provides insight as to whether or not school nurses have thought about assessing students for eating disorders yet decided not to act.

Policy implications from this research suggest a need for position papers authored by relevant professional organizations such as the National Association for School Nurses (NASN) and the Academy of Nutrition and Dietetics. Neither organization currently has a policy or official statement written on the role of school nurses involved with students and eating disorders. With a strong position from one of these organizations, particularly from NASN, there would be support to help eliminate some barriers identified by school nurses in this research, such adding eating disorder education to nursing curriculum and skill building to increase efficacy of eating disorder assessment skills.
Recommendations for the Health Profession

Based on this study’s findings, there are a number of recommendations for school health-related organizations and health professionals including school nurses. Firstly, as mentioned above, school health-related organizations should release position statements and policies related to the involvement of school nurses with students and eating disorders. The support from professional organizations such as NASN can help to propel momentum towards inclusion of eating disorders in nursing education and eliminate other barriers identified by school nurses in this study. Another recommendation for professional organizations to include eating disorder-related topics at conferences, webinars, and other educational opportunities that are regularly provided to nurses.

Recommendations for school nurses based on this research indicate a need for education and skill building in order to build self-efficacy in assessing students for eating disorders. Specifically, education regarding how to assess students with eating disorders, how to refer these students to other professionals for treatment, how to talk to students about eating disorders, how to assess the student’s attitude towards eating, and how to assess the student’s eating behaviors (these items most commonly were reported as “not covered” in their nursing education; see Table 4-4). Providing feedback to learning institutions and professional organizations can help facilitate this learning. The number of respondents who indicated benefits of school nurses assessing students for eating disorders demonstrated that there is a perceived value in this concept. To help perform assessments, using tools such as those discussed in Chapter 2 of dissertation provides guidance when working with students suspected of an eating disorder. Also, school
nurses should become familiar with and use the 5 A’s method, which can assist in the communication with these students.

**Recommendations for Future Research**

While performing the literature review for this study, it was clear there was a gap in research involving both school nurses and eating disorders. This study is the first known one to involve both school nurses and their role with students and eating disorders. In addition, no existing research was found involving PAPM and the 5 A’s along with either school nurses or eating disorders. This study only begins to ask the questions that are needed to improve students’ health quality related to eating disorders. Other recommended research topics in this area include:

- How many students are school nurses seeing with disordered eating behaviors?
- Studies involving school nurses’ use of eating disorder screening tools
- Parent and/or student perception of school nurse involvement in eating disorder assessment
- Would education provided to school nurses on eating disorder topics increase the likelihood that they will begin to assess students for eating disorders? Would perceived barriers change?
- Of those school nurses who reported that they are currently assessing students for eating disorders, how are they performing these assessments (e.g. which tools, etc.)?
- Perception of eating disorder treatment teams and how school nurses can be involved
• When school nurses are assessing students for eating disorders, are these student referred to them, considered “walk-ins” or some other avenue of referral?

Conclusion

Previous research has demonstrated the impact a student’s health has on their scholastic performance. The same is true for students suffering from eating disorders. Without adequate nutrition, students are not able to focus or perform scholastically like their peers. This indicates that eating disorders, both diagnosable and related disordered-eating behaviors, can be a major school health issue. This research revealed support by school nurses as demonstrated in the responses to perceived outcome expectation-related questions (see Table 4-6). This research also revealed a high number of perceived benefits to school nurses assessing students for eating disorders (Table 4-7), relatively low number of perceived barriers aside from lack of education on the topic or skills (Table 4-8), low efficacy around using the 5 A’s to communicate with students suspected of having an eating disorder (Table 4-5), a lack of education in nursing school on a number of eating disorder related topics (Table 4-4), and that most school nurses are not currently assessing students for eating disorders (Table 4-2).

School nurses should utilize their existing relationships with students and as well as their clinical skills to aid students who are suffering from eating disorders. When school nurses are present in schools, they are available as needed for students with a variety of health concerns including eating disorders. Though school nurses are not licensed clinical counselors or registered dietitians, they do have a skill set that can benefit these students. School nurses assessing students for eating disorders can assist a
well-rounded clinical team in the detection, management, and referral of students who need this help.
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Appendix A

Instrument

National Survey of School Nurses

For the purposes of this research, eating disorders can include anorexia nervosa, bulimia nervosa, binge-eating disorder, other specified feeding or eating disorders (OSFED), or disordered eating behaviors such as food restriction, purging, over-exercise, etc.

PART A: Directions - Please rate your level of agreement/disagreement with each statement below by writing an “X” in the answer column that best describes your opinion/belief.

<table>
<thead>
<tr>
<th>Do you agree or disagree?</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. School nurses assess their students for eating disorders.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. School nurses assess their students’ body mass indexes (BMI).</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PART B: Directions - Please read each question carefully and answer it to the best of your ability. Thank you.

1. Which statement best describes how you typically assess for eating disorders? (check only one)
   - [ ] I am unaware that school nurses should be assessing students for eating disorders.
   - [ ] I currently do not assess students for eating disorders and have not thought about doing so.
   - [ ] I currently do not assess students for eating disorders but am in the process of deciding what to do.
   - [ ] In the past, I’ve thought about assessing students for eating disorders, but have decided not to do so.
   - [ ] I do not currently assess students for eating disorders but plan to begin in the next six months.
   - [ ] I started assessing students for eating disorders within the past year.
   - [ ] I have been assessing students with eating disorders for longer than one year.
   - [ ] In the past I assessed students for eating disorders, but no longer do so.

2. In your opinion, which barriers may hinder school nurses from assessing students for eating disorders? (check all that apply)
   - [ ] There are no barriers to assessing students for eating disorders.
   - [ ] Schools do not want their school nurse to talk about eating disorders.
   - [ ] School nurses have more important priorities.
   - [ ] It is not the role of school nurses to assess students for eating disorders.
   - [ ] Eating disorders have little to do with school health.
   - [ ] School nurses do not have time to deal with eating disorders.
   - [ ] School nurses are not properly trained to assess their students for eating disorders.
   - [ ] Eating disorders among students are too rare to devote much time to screening.
   - [ ] I do not know how to assess for an eating disorder.
   - [ ] Other: please specify.

3. In your opinion, what would be some of the benefits of having school nurses assess for eating disorders? (check all that apply)
   - [ ] There are no benefits to having school nurses assess their students for eating disorders.
   - [ ] Assessing students would help school nurses identify those students with an eating disorder.
   - [ ] It would help to reduce eating disorder-related health complications in students.
   - [ ] It would enhance students’ overall health.
   - [ ] It would help to reduce the mortality rate from eating disorders.
   - [ ] It would help the student feel that the school nurse is concerned about the student’s overall health.
   - [ ] It would help create awareness of the issue.
   - [ ] It would help create a coordinated effort to address this issue.
   - [ ] Other: please specify.

4. Has a family member or close friend ever had an eating disorder? (circle one)

   - [ ] Yes
   - [ ] No
   - [ ] Not Sure
**PART C: Directions:** How often do you perform each of the following actions with students you suspect may have an eating disorder? Please write an “X” in the column that most closely describes your usual behavior.

<table>
<thead>
<tr>
<th>How often do you perform each of the following with students you suspect may have an eating disorder?</th>
<th>Never (0% of the time)</th>
<th>About 25% of the time</th>
<th>About 50% of the time</th>
<th>About 75% of the time</th>
<th>All of the time (100% of the time)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask the student about her/his eating behaviors.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advise the student to seek professional help.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assess the student’s willingness to be referred to professional help.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Assist the student in her/his attempts to change eating behaviors through counseling</td>
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<td></td>
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<tr>
<td>Arrange follow-up appointments for the student.</td>
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</tbody>
</table>

**PART D: Directions:** If you were to regularly perform each of the following actions with your students suspected of having an eating disorder, what impact would those actions have on student health? Please write an “X” in the answer column that best describes your opinion.

<table>
<thead>
<tr>
<th>If you were to perform each of the following with your students suspected of having an eating disorder, what impact would each action have on student’s health?</th>
<th>No positive impact on students’ health</th>
<th>Minor positive impact on students’ health</th>
<th>Major positive impact on students’ health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask the student about her/his eating behaviors.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advise the student to seek professional help.</td>
<td></td>
<td></td>
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<tr>
<td>Assess the student’s willingness to be referred to professional help.</td>
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<tr>
<td>Assist the student in her/his attempts to change eating behaviors through counseling.</td>
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<tr>
<td>Arrange follow-up appointments for the student.</td>
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</tbody>
</table>

**PART E: Directions:** Please rate your level of confidence for each of the following tasks as it relates to interacting with students with a suspected eating disorder.

<table>
<thead>
<tr>
<th>How confident are you in...</th>
<th>No Confidence</th>
<th>Minimal Confidence</th>
<th>Somewhat Confident</th>
<th>Confident</th>
<th>Very Confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asking your students about suspected eating disorder behaviors.</td>
<td></td>
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<tr>
<td>Advising your students to seek professional help.</td>
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</tr>
<tr>
<td>Assessing your students’ willingness to be referred to professional help.</td>
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<tr>
<td>Assisting your students in their attempts to change eating disorder behaviors through counseling</td>
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<tr>
<td>Arranging follow-up appointments for your students with eating disorders.</td>
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</tr>
</tbody>
</table>

148
**PART F: Directions.** Please rate your level of agreement/disagreement with each statement below by writing an “X” in the answer column that best describes your opinion/belief.

<table>
<thead>
<tr>
<th>Do you agree or disagree?</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. If nursing education included eating disorders, school nurses would be able to assess students for eating disorders.</td>
<td></td>
<td></td>
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<tr>
<td>2. If school nurses assessed students for eating disorders, students would have better health outcomes.</td>
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<tr>
<td>3. If a school nurse identifies a student with disordered eating behaviors, it is the nurse’s responsibility to refer the student for help.</td>
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<tr>
<td>4. If a student has an eating disorder, their cognition and scholastic aptitude is impacted.</td>
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</tbody>
</table>

**PART G: Directions.** How much education did you receive on each of the topics below? Please write an “X” in the answer column that best describes the amount of instruction you received during nursing education.

<table>
<thead>
<tr>
<th>How much instruction did you receive during your nursing education?</th>
<th>Not Covered</th>
<th>Minimal Education</th>
<th>Moderate Education</th>
<th>Extensive Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use of the S.A.'s method related to eating disorders (Ask, Advise, Assess, Assist, and Arrange)</td>
<td></td>
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<tr>
<td>2. Health consequences of eating disorders</td>
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<tr>
<td>3. Signs and symptoms of eating disorders</td>
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<tr>
<td>4. How to assess students for eating disorders</td>
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<tr>
<td>5. How to refer students with a suspected eating disorder to a mental health counselor</td>
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<tr>
<td>6. How to talk to students about eating disorders</td>
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<tr>
<td>7. How to assess the student’s attitudes toward food/eating</td>
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<tr>
<td>8. How to assess the student’s eating behaviors</td>
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<tr>
<td>9. The impact of eating disorders on cognitive health</td>
<td></td>
<td></td>
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</tbody>
</table>
PART H: Directions - Listed below are questions about your nursing experience and demographic information. Please answer each question. Thank you!

1. What is your highest level of nursing education?
   - Associate’s degree
   - Bachelor’s degree
   - Master’s degree
   - PhD
   - DNP

2. What nursing licensure/certification do you have?
   - LPN
   - RN
   - NP
   - Other: __________________________

3. Gender you identify with: 
   - Male
   - Female

4. Race/Ethnicity (check all that apply):
   - White
   - African American
   - Hispanic
   - Asian
   - Other: __________________________

5. Your Age:
   - 20-29
   - 30-39
   - 40-49
   - 50-59
   - 60-69
   - 70+

6. Are you a currently practicing school nurse? 
   - Yes
   - No
   - Retired School Nurse
   a. How many years have you been/were you a practicing school nurse? 
      ________ Years

7. Are you certified as a school nurse? 
   - Yes
   - No
   If yes, what level? Select all that apply.
   a. State
   b. National
   c. Both
   b. If you are currently practicing, which setting best describes the school district in which you practice?
      - Urban
      - Rural
      - Suburban
   c. Number of schools you serve: ______________
      Number of students served: ______________

8. Are you a member of NASN? 
   - Yes
   - No

9. What school level do you serve? Select all that apply.
   - Elementary
   - Middle school/junior high
   - High school

10. What would you say was the approximate racial mix in the school district in which you practice? (Write in percentages, total = 100%)
    a. Caucasian/White
    b. African-American/Black
    c. Asian/Pacific Islander
    d. American Indian/Alaskan Native
    e. Hispanic
    f. Other

    Thank you for your time!
Appendix B

Expert Review – Instrument

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Appendix C

Email Cover Letter: Waves One & Two

Dear School Nurse:

We are conducting a national survey on the Role of School Nurses in Early Detection of Eating Disorders. You are being asked to complete this study due to your involvement with the National Association of School Nurses. This study is part of doctoral dissertation research. Your participation is vital to the success of this national survey and your response is very important to us. All responses will be kept completely confidential. Your participation is voluntary and no identifiable information of any sort will be reported. Please only take the survey once.

Thank you for your professional courtesy of responding to this survey. This survey will take approximately 15 minutes of your time to complete.

If you have any questions or concerns, please contact me by phone (419-349-1829) or email Jamie.Dowling@utoledo.edu.

Sincerely,

Jamie Dowling Tawes,

MPH Doctoral student

The University of Toledo

CC: Amy Thompson, PhD Professor of Health Education Health and Recreation Studies
Dear School Nurse:

This research study on the Role of School Nurses in Early Detection of Eating Disorders is to fulfill dissertation requirements for completion of my PhD. Your participation is appreciated, is voluntary, and is vital to the success of my research. No identifiable information of any sort will be reported and all responses will be kept completely confidential.

By completing this survey, you are aiding in research that will help school nurses to improve the health of students. Eating disorders can have serious health complications and typically first manifest in adolescence, which is why school nurses are an important group to study. Results of this research will be shared with NASN.

Please only take the survey once. If you have already taken this survey, thank you for your time.

To take the survey, please go to: https://www.surveymonkey.com/r/JTawes. This will take approximately 15 minutes of your time to complete.

If you have any questions or concerns, please contact me by phone (419-349-1829) or email Jamie.Dowling@utoledo.edu.

Sincerely, Jamie Dowling Tawes, MPH

Doctoral student

The University of Toledo

CC: Amy Thompson, PhD Professor of Health Education Health and Recreation Studies