Perceived Stress in Undergraduate Nursing Students

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Professor and Acting Director, Graduate Programs in Nursing

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RE: FACULTY ENDORSEMENT and FINAL REVIEW COMMITTEE

DATE: 11/4/2019

THESIS TITLE: Perceived Stress in Undergraduate Nursing Students

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PERCEIVED STRESS IN UNDERGRADUATE NURSING STUDENTS

A Thesis
Submitted to the Faculty
of the Department of Nursing
College of Nursing and Health Sciences
of Winona State University

by
Amy Henderson
Abbie McGee
Emily Vore

In Partial Fulfillment of the Requirements
for the Degree of
Master of Science

November 4th, 2019
ABSTRACT

This secondary analysis explored the prevalence of perceived stress in undergraduate nursing students and the effects of self-efficacy and helplessness on the perceived stress. There were three purposes of this study. The primary purpose was to assess levels of perceived stress among undergraduate nursing students, based on the variables of age, gender, and academic term. The second purpose was to identify how students’ reported feelings of self-efficacy and helplessness correlated to their overall perceived stress scores. The final purpose was to identify how students applied skills learned in a stress management program. Lazarus’ theory of stress guided this study. Following IRB approval, data were obtained from the primary investigators. The primary study included a sample of undergraduate nursing students at a Midwestern university in various terms of their nursing program. This secondary analysis utilized the primary investigation’s pre-survey demographic information and perceived stress scores (N = 256), and post-survey qualitative responses regarding the use of stress management techniques (n = 35). Multiple analyses were used to obtain the data including a two-sample t-test, one-way ANOVA, Pearson’s correlation coefficient, and qualitative thematic analysis. Perceived stress was significantly higher for females than males (p = 0.03), and tended to decrease as students progressed further in the nursing program (p < 0.001). Stress was statistically significantly positively associated with helplessness (p < 0.001) and negatively associated with self-efficacy (p < 0.001). Seven themes were found among the qualitative response data with the most prevalent being utilization of mindfulness/relaxation techniques and
utilization of physical activity. The secondary analysis had similar findings to what has been identified in prior research. Demographic factors had varying effects on students’ overall perceived stress scores. Perceived stress had a positive correlation with feelings of helplessness ($r = 0.92, p < 0.001$), and a negative correlation with self-efficacy ($r = -0.49, p < 0.001$). The results of this secondary analysis can be used to understand the experience of stress for undergraduate nursing students. This knowledge can assist educators to plan interventions for stress management. Future research should include larger sample sizes and control groups, as well as, a more diverse sample.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>List</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>vii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>viii</td>
</tr>
<tr>
<td>CHAPTER</td>
<td></td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>A. Introduction to the Problem</td>
<td>1</td>
</tr>
<tr>
<td>B. Problem Statement</td>
<td>1</td>
</tr>
<tr>
<td>C. Purpose of the Study</td>
<td>6</td>
</tr>
<tr>
<td>D. Research Questions</td>
<td>6</td>
</tr>
<tr>
<td>E. Definitions of Terms</td>
<td>7</td>
</tr>
<tr>
<td>II. LITERATURE REVIEW</td>
<td>9</td>
</tr>
<tr>
<td>A. Introduction</td>
<td>9</td>
</tr>
<tr>
<td>B. Review of the Literature</td>
<td>9</td>
</tr>
<tr>
<td>1. Search Strategy</td>
<td>9</td>
</tr>
<tr>
<td>2. Occurrence of Stress in Nursing Students and Influence of Demographic Factors</td>
<td>10</td>
</tr>
<tr>
<td>3. Self-Efficacy</td>
<td>14</td>
</tr>
<tr>
<td>4. Helplessness</td>
<td>16</td>
</tr>
<tr>
<td>5. Stress Management Techniques</td>
<td>17</td>
</tr>
<tr>
<td>6. Literature Summary</td>
<td>20</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table                                      Page
1.  Data Abstraction Process ..........................................................................................  67
2.  Literature Tables .......................................................................................................  68
3.  Conceptual Map Citation Key ..................................................................................  88
4.  Description of Sample ...............................................................................................  32
5.  Sample Sizes, Summaries of Overall Perceived Stress by Age, Gender, and Term.     34
6.  Correlations Between Perceived Stress & Helplessness & Self-Efficacy Factors ...  35
7.  Frequency and Examples of Qualitative Responses Themes ...................................  37
<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Conceptual Map</td>
<td>87</td>
</tr>
<tr>
<td>2. Qualitative Responses Word Cloud</td>
<td>38</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

Introduction to the Problem

Nursing is a physically and emotionally demanding job. Nursing workload and complexity of patient care has risen, yet inpatient lengths of stay have decreased (He, Turnbull, Kirshbaum, Phillips, & Klainin-Yobas, 2017). Undergraduate nursing students experience rates of stress greater than students in other degree paths (Bartlett, Taylor, & Nelson, 2016). Student nurses experience many stress-related symptoms, such as anxiety, migraines, and illness (Bartlett et al., 2016). If students do not have proper stress management techniques, physical and emotional stress symptoms negatively impact their clinical and academic performance (Lu et al., 2019).

This secondary analysis explores the prevalence of perceived stress in undergraduate nursing students and the correlations between self-efficacy and helplessness on the perceived stress. The utilization of stress management techniques is discussed in relation to perceived stress. Chapter one reviews the problem statement, purpose of the study, conceptual and operational definition of terms, and research questions related to perceived stress in undergraduate nursing students.

Problem Statement

This secondary analysis explores the overall experience of perceived stress in undergraduate nursing students, as well as factors that influence their levels of perceived stress. Factors that influence perceived stress related to the research question are: self-
efficacy, helplessness, and the use of stress management techniques. This section provides a background on the experience of overall stress in nursing students, and the influence of each of the above factors.

**Frequency of Stress**

Evidence suggests nursing students experience high levels of stress, particularly in the early stages of their programs, and again towards the end of their education (Smith & Yang, 2017). Changes in the clinical setting may contribute to increased stress. Currently, many patients are more complex and difficult to care for than in years past (He et al., 2018). The literature reveals death and dying, increased complex care, and providing emotional support to clients and families are common stressors for nursing students (He et al., 2018). “Without proper stress management, nursing students may develop various physical (e.g., headache, vertigo) and emotional (e.g., depression, anxiety) stress symptoms” (Lu et al., 2019, p. 41) recognized to exert a direct effect on academic performance, daily lifestyle, and career goals (Smith & Yang, 2017).

Experiences of stress may vary depending on students’ age, gender, or academic term. Labrague, McEnroe-Pettite, De Los Santos, and Edet (2018) conducted a systematic review relating to nursing students’ stress among various age groups. The articles they reviewed displayed common themes of students between the ages of 20-24 experiencing higher levels of perceived stress than students in other age groups (Labrague et al., 2018). Due to limited amounts of male nursing students, it is often difficult to distinguish differences in the data between males and females (Smith & Yang, 2017). Smith and Yang (2017) found highest stress levels and lowest psychological well-
being among senior nursing students as compared with nursing students in earlier academic years.

**Self-efficacy**

Self-efficacy is the ability to handle various stressful and challenging situations (Terp, Hjarthag, & Bisholt, 2019). Self-efficacy can serve as a protective factor and a buffer for handling stress (Terp et al., 2019). Nursing students who have ineffective coping mechanisms for handling stress demonstrate poor well-being and academic performance (Reyes, Andrusyszyn, Iwasiw, Forchuk, & Babenko-Mould, 2015). Self-efficacy is an important stress management resource. Developing a high level of self-efficacy is essential for nursing students in order to handle the high levels of stress that will occur during their nursing profession (Rayan, 2018). A high level of self-efficacy will give a person enough confidence to change their perception of a stressor, and therefore experience less stress (Zhao, Lei, He, Gu, & Li, 2015).

Improving self-efficacy enhances nursing students’ ability to handle stress (Rayan, 2018). Self-efficacy can be developed through “effort, experiences, and mindfulness” (Rayan, 2018, p. 5). Bodys-Cupak, Majda, Zalewska-Puchala, and Kaminska (2016) evaluated the effect of self-efficacy on students’ levels of stress and how they coped with stress. Respondents with low levels of stress had much higher levels of self-efficacy (Bodys-Cupak et al., 2016). Zhao et al. (2015) demonstrated similar findings; students with high levels of self-efficacy more frequently used positive coping strategies. A higher level of self-efficacy can lead to increased academic performance and increased satisfaction with the nursing profession (Bodys-Cupak et al., 2016).
Helplessness

A consequence of feelings of low self-efficacy may be high levels of perceived helplessness (Bahadir-Yilmaz et al., 2015). Helplessness occurs due to ineffective problem-solving skills and a feeling of a loss of control when faced with stressful situations (Bahadir-Yilmaz et al., 2015). This phenomenon is commonly referred to in the literature as learned helplessness (Bahadir-Yilmaz et al., 2015). In the study done by Bahadir-Yilmaz et al. (2015), first-year and final-year nursing students had high levels of learned helplessness. High levels of helplessness may affect nursing student’s patient care (Bahadir-Yilmaz et al., 2015).

Learned helplessness behaviors need to be inhibited in nursing students’ pattern of thinking and replaced with positive patterns of thinking (Gibson & Lloyd, 2018). When nursing students experience feelings of helplessness, academic and clinical performance can suffer (Gibson & Lloyd, 2018). If the learned helplessness pattern of thinking is replaced with a sense of hope and control, actions to correct the negative experience or situation can be put into action (Gibson & Lloyd, 2018).

Stress Management Techniques

Post-secondary education is an essential time to teach stress management techniques as students can utilize these techniques throughout their schooling, as well as, their careers (Enns, Eldridge, Montgomery, & Gonzalez, 2018). If nursing students learn how to manage stress during their undergraduate education, they will be better equipped to handle stress once they have entered the workforce. Teaching stress management techniques decreases student’s risk for stress, burnout, and workplace errors, and increases retention in the nursing field (Enns et al., 2018). Students who can learn and
develop adaptive coping techniques are less likely to use maladaptive strategies, such as alcohol consumption, isolating behaviors, and ignoring stress, anxiety, or depressive symptoms (Reeve, Shumaker, Yearwood, Crowell, & Riley, 2013).

Reeve et al. (2013) surveyed undergraduate nursing students to identify how they responded to stress as well as the coping mechanisms they used. Students frequently used social strategies, such as talking or spending time with friends and speaking with family, to decrease stress (Reeve et al., 2013). Many students also identified the use of physical activity to manage stress, for example, running, showering, or meditating (Reeve et al., 2013). Ong, Linden, and Young (2004) conducted a literature review to determine how to define typical stress management techniques. Most studies in their review defined stress management techniques by using a cognitive-behavioral approach and/or relaxation, meditation, and guided imagery (Ong et al., 2004).

Stress management techniques can be taught to students in various formats, either group or individually, and can have varying lengths of sessions and number of sessions per intervention to leave an impact on participants (Ong et al., 2004). Overall, consensus on teaching stress management techniques involves six to ten small-group treatment sessions, with an average of ten to fifteen hours of participant exposure to the technique (Ong et al., 2004).

**Summary**

Nursing students experience high levels of perceived stress. Nursing educators should seek to understand the relationship among self-efficacy, helplessness, and utilization of stress management techniques. Understanding the relationship between
these factors could provide an opportunity for nurse educators to implement stress management interventions.

Purpose of Study

There are three purposes of this secondary analysis. The primary purpose is to assess levels of perceived stress among undergraduate nursing students, based on the variables of age, gender, and academic term. The second purpose is to identify how students’ reported feelings of self-efficacy and helplessness correlate to their overall perceived stress score. Finally, the third purpose is to identify how students apply skills learned in a stress management technique class.

Research Questions

The purpose of this secondary analysis is to answer the following questions. Among baccalaureate undergraduate nursing students in a midwestern university:

1. What are the levels of perceived stress based on their:
   a. Age
   b. Gender
   c. Academic Term

2. How do students’ overall Perceived Stress Scale-10 (PSS-10) scores correlate to their factor scores of self-efficacy and helplessness?

3. How does a program to teach stress management techniques affect students self-reported utilization of stress management techniques?
Definition of Terms

The variables utilized in the research questions are perceived stress, self-efficacy, helplessness, and stress management techniques. These variables are defined conceptually and operationally.

**Perceived Stress.**

Perceived stress is defined conceptually as the degree to which respondents find their lives unpredictable, uncontrollable, and overloaded (Robert, Harrington, & Storch, 2006). Perceived stress is operationally defined through the total score of the PSS-10, a self-report, Likert-scale questionnaire consisting of ten items (Robert et al., 2006). Respondents answer each question using a zero to four scale, providing a highest possible total score of 40 (Robert et al., 2006). Higher scores correlate with higher levels of perceived stress (Robert et al., 2006). Total PSS-10 scores were analyzed using the pre-survey data.

**Self-efficacy.**

Self-efficacy is conceptually defined by feeling confident and in control when faced with stress (Maroufizadeh et al., 2018). Self-efficacy is operationally defined through a score of the self-efficacy factor. The score is calculated from questions four, five, seven, and eight on the PSS-10 tool, providing a total possible score of 16 (Maroufizadeh et al., 2018) (see Appendix A). Self-efficacy factor scores were analyzed using the pre-survey results.

**Helplessness.**

Helplessness is conceptually defined as feeling unable to control, overcome, or cope with feelings such as being upset, nervous, angry, or stressed (Maroufizadeh et al.,
Feelings of helplessness is operationally defined through the helplessness factor calculated from specific items on the PSS-10 tool (Maroufizadeh et al., 2018). These questions are numbers one, two, three, six, nine, and ten and the possible total score is 24 (see Appendix A). Helplessness factor scores were analyzed using the pre-survey results.

**Stress management techniques.**

Stress management techniques are conceptually defined as behavioral and cognitive efforts to manage demands that are perceived to be stressful and require efforts that tax or exceed one’s resources (Lazarus & Folkman, 1984). Stress management techniques are operationally defined through the self-reported, qualitative question asked on the post survey: “Thinking back to the stress and resilience techniques that were taught in the SMART program (during the Innovations Symposium), how were you able to apply what you learned throughout your nursing program at WSU? Offer any specific examples.”

**Summary**

There is a need to investigate the experience of perceived stress in undergraduate nursing students, and the effect of self-efficacy, helplessness, and stress-management techniques on the stress. Thus, the purposes of this study were to examine these relationships. The research questions that guided the secondary analysis were provided with conceptual and operational definitions for each of the variables.
CHAPTER II
LITERATURE REVIEW

Introduction

The following chapter reviews the literature that guided this secondary analysis. Literature was reviewed in themes of overall occurrence of stress in nursing students, the influence of demographic factors on stress, self-efficacy, helplessness; and stress management techniques. The chapter also discusses how Lazarus' theory of stress and coping relates to this secondary analysis. A concept map presents common themes in the reviewed literature, and the relationships of these themes.

Search Strategy

The search was conducted between January and March of 2019. The databases used in performing the search were Pub Med, Google Scholar, CINHAL, and Proquest. Literature that was selected and reviewed was published between 1999-2019. Search terms included: perceived stress, undergraduate nursing students, self-efficacy and stress undergraduate nursing students, self-efficacy and helplessness undergraduate nursing students, self-efficacy and hopelessness, helplessness nursing students, mindfulness-based stress reduction, nursing students stress resiliency, helplessness, and learned helplessness. The reference lists of selected articles were also reviewed for additional articles relevant to the research question. Table 1 provides a list of search details. Articles were included based on publication within the last twenty years, English language, and subject matter pertaining to nursing students. Twenty years was chosen
rather than ten years due to availability of literature. Articles were excluded if students sampled were not in a nursing program, or if perceived stress was not included in the article. Articles were both included and excluded based on how closely the content related to the research questions.

Limited high-level evidence exists on the research questions in this secondary analysis. The majority of articles reviewed were levels IV-VI. Definitions for each level of evidence can be found at the end of Table 2.

**Occurrence of Stress in Nursing Students and Influence of Demographic Factors**

Nursing students may experience varying levels of stress throughout their time as students. According to Bartlett, Taylor, and Nelson (2016), student nurses report higher levels of stress than students pursuing other degrees. Edwards, Burnard, Bennet, and Hebden (2010) identified stress in nursing students is even higher than those in other healthcare related fields. High levels of stress experienced by nursing students during their education leads to higher drop-out rates, an increased risk of early-career burnout, and higher job turnover rates (Terp et al., 2019). Ensuring students have adequate stress management techniques should be a priority for nurse educators, as a stressful educational experience may prevent prospective nurses from entering the workforce (Labrague et al., 2018).

Various factors lead to high levels of stress in nursing students. Lo (2002) found in a survey of 101 nursing students that 81.2% of students identified nursing coursework as their top ranked stressor, while other top stressors included finances, family, and health. Zhao et al. (2015) had similar findings, with the most common stressors reported by nursing students as assignments and workload, followed with stress from peers, or
daily life. In the study done by Zhao et al., students identified worrying about bad grades and being concerned their performance would not meet teacher expectations as the most significant factors correlated to high academic stress. Timmins and Kaliszer (2002) found most nursing students reported clinical placements and being involved in a patient death as sources of stress. Stress from school life can also affect the students’ responsibilities outside of the classroom. When students lose their ability to maintain balance between work, school, and home life, they experience high levels of stress leading to low levels of personal well-being. (He et al., 2018)

Stress can have various effects on students’ wellbeing. Perceived stress was found by Crary (2013) to be correlated with negative mood and physical symptoms. Within the last two weeks prior to the survey, students experienced physical symptoms of stress including palpitations, chest pain, irregular bowels, fatigue, and poor eating habits (Crary, 2013). Emotional symptoms like anxiety and depression can also be experienced when stress is unmanaged (Lu et al., 2019). Emotional and physical stressors can cause diminished academic and clinical performance (Lu et al., 2019).

The literature notes many factors leading to stress for nursing students. One of these factors is demographics, which include students’ age, gender, and academic term.

Age

Age is one of the demographics explored in several studies of stress. Admi, Moshe-Eilon, Sharon, and Mann (2018) found that nursing students who were over the age of 31 had significantly higher stress levels than students less than 25 years old. Alsaqri (2017) had similar findings, with nursing students in the 22-24 age group reporting higher stress than students in the 20-21 age group.
He et al. (2018) included many non-traditional nursing students in their cohort, with the mean age of 36.23, and speculated older students would have more ability to deal with school stresses due to their life experiences and coping abilities. However, the study found the younger students had lower reported levels of stress (He et al., 2018). The authors stated older students have more responsibilities than younger students related to work and family commitments leading to the higher stress levels (He et al., 2018). Bodys-Cupak et al. (2016) were not able to identify a link between stress levels and age.

Gender

Gender is another demographic factor researched in relation to stress. However, males are often a small sample in nursing student studies. For example, in the study by Crary (2013) males only accounted for 16 of the 153 individuals surveyed. Wang, Tao, Bowers, Brown, and Zhang (2018) had a similar small sample with males accounting for only three percent of the 747 total individuals surveyed.

Taylor (2015) identified, on average, females report higher levels of overall perceived stress than males when using the PSS-10. In the analysis done by Taylor, females reported significantly higher stress levels than males, specifically, regarding perceived helplessness ($p < 0.001$). However, no significant difference ($p = 0.455$) was seen between males and females when assessing self-efficacy (Taylor, 2015). Admi et al. (2018) found similar results, with women experiencing significantly higher levels of stress than men ($p < 0.01$).
**Academic Term**

Several studies have examined the relationship between perceived stress and academic term. These studies have had varying results. Differences in results may be related to varying lengths of nursing programs. In a systematic review by Labrague et al. (2018) five of the eleven reviewed articles discussed stress in relation to academic term. Of the five articles, three found students in higher academic terms experienced more stress than those in lower academic terms (Labrague et al., 2018).

The study conducted by Smith and Yang (2017) demonstrated significant differences in mean stress scores among year one, two, three, and four nursing students. Stress scores increased each year, so were highest among senior nursing students ($p < 0.001$) (Smith & Yang, 2017). The junior and senior nursing students reported worse psychological well-being than the freshmen and sophomores (Smith & Yang, 2017).

Lo (2002) discovered transient stress was significantly greater in second-year nursing students as compared to first-year students. The students surveyed in the Lo study participated in clinical rotations at a health facility during academic year two, which the author identified as a possible explanation for the increase in stress in academic year two versus year one. In the study conducted by Terp et al. (2019) students were recruited to participate in a stress management reduction intervention in their second semester. Terp et al. discussed utilizing this type of program because research has shown nursing students’ stress levels increase between the second and fourth semesters of their programs. Crary (2013) had opposite findings, discovering first year students had higher levels of stress, and more physical symptoms associated with their stress than second year nursing students.
**Self-efficacy**

Self-efficacy is a protective factor for students in stressful situations (Terp et al., 2019) and is an attribute of resilience (Gillespie, Chaboyer, & Wallis, 2007). Self-efficacy helps determine how much energy an individual will expel on an activity, and how long someone will persevere when faced with adversity (Gillespie et al., 2007). Self-efficacy is not an innate trait, but is developed by effort, experiences, and mindfulness (Rayan, 2018). A higher sense of self-efficacy leads to greater effort, persistence, and resilience (Gillespie et al., 2007).

One of the commonly used tools to measure self-efficacy is the Generalized Self-Efficacy Scale (GSE). The GSE is used worldwide and is based on Bandura’s social-cognitive theory (Terp et al., 2019). The instrument creates a total score generated by ten items answered on a 4-point Likert scale (Terp et al., 2019). The higher the score, the higher level of general self-efficacy (Terp et al., 2019).

Research has shown a high GSE score can benefit students in many ways. Bodys-Cupak et al. (2016) identified perceived stress scores were negatively correlated with students’ GSE ($p = .00001$). The students with low levels of stress had significantly higher levels of self-efficacy (Bodys-Cupak et al., 2016). Body-Cupak et al. also found a sense of self-efficacy was significantly correlated with strategies of active coping ($p < 0.0001$), for example, planning, positive reevaluation, acceptance, and seeking emotional support. Students with low levels of self-efficacy were more likely to use negative coping strategies such as denial ($p < 0.0001$) and blaming oneself ($p < 0.0001$) (Bodys-Cupak et al., 2016). Zhao et al. (2015) identified self-efficacy benefited students in their ability to manage stress from assignments and workload. Also, when the stress of taking
care of patients was high, students who reported high levels of self-efficacy were less likely to engage in transference behavior (Zhao et al., 2015). Increasing and supporting the development of self-efficacy in students can promote effective and positive coping (Zhao et al., 2015).

Terp et al. (2019) conducted a quasi-experimental study to measure the effectiveness of a stress management group intervention for nursing students. Immediately following the intervention, GSE scores significantly increased for the intervention group. However, no significant difference was seen in GSE scores between the intervention and control groups in the final measurement, a year later, which was puzzling to the investigators. Terp et al. recommends further research should be done regarding stress management interventions and their effect on students’ self-efficacy.

Actively communicating with peers and teachers can supplement a high sense of self-efficacy to manage daily stress (Terp et al., 2019). Wang et al. (2018) used a cross-sectional descriptive survey to explore the relationship among social support and self-efficacy in early career registered nurses. Using the GSE tool, Wang et al. found family support had no significant effect on self-efficacy. However, friend support had a significant positive effect on self-efficacy ($p = 0.037$), and co-worker support was strongly associated ($p = 0.032$) with high self-efficacy.

Evidence suggests supportive work environments can empower employees and raise self-efficacy, thereby improving professional performance (Welsh, 2014). Co-workers play an important role in helping new nurses handle challenging situations by providing “emotional support, advice, and hands-on assistance” (Wang et al., 2018, p. 658). Early career registered nurses with higher levels of self-efficacy tend to exhibit
greater levels of nurse resilience, view difficult tasks as something to be mastered rather than avoided (Wang et al., 2018), have a greater sense of accomplishment, and better psychological well-being (Taylor & Reyes, 2012). Wang et al. (2018) concluded it is necessary for nurse managers or leaders to understand the connection between co-worker support and self-efficacy in order to decrease new nurses’ turnover rates and increase self-efficacy. The findings from the Wang et al. study can be utilized to support the need for nursing students to have social support from faculty, peers, and friends.

**Helplessness**

Learned helplessness is described as failure to escape shock as the result of uncontrollable adverse events (Gibson & Lloyd, 2018). Feelings of helplessness in nursing students may occur for many reasons, for example, caring for a palliative care patient, psychiatric patient, or pediatric cancer patient; or experiencing verbal, physical, sexual, or academic abuse (Bahadir-Yilmaz et al., 2015). Once learned helplessness has been learned and displayed in the behaviors of individuals, it becomes difficult to reverse the actions of learned helplessness (Gibson & Lloyd, 2018). Learned helplessness can lead to nurses feeling as if they are “between a rock and a hard place” due to the various demands on them (Moreland, Ewoldsen, Albert, Kosicki, & Clayton, 2015, p. 1157). Feelings of helplessness may lead to ineffective patient care (Bahadir-Yilmaz et al., 2015).

In the study conducted by Bahadir-Yilmaz et al. (2015), learned helplessness levels of first-year and final-year nursing students were compared using a descriptive survey design. First-year and final-year students both had above average helplessness scores, which Bahadir-Yilmaz et al. hypothesized was related to the stress of the nursing
education program. Age significantly affected learned helplessness scores, but students’ academic year and gender did not (Bahadir-Yilmaz et al., 2015). Students age 23 and older had significantly higher ($p < 0.05$) learned helplessness scores than students between ages 20-22 (Bahadir-Yilmaz et al., 2015). Due to no statistical difference ($p > 0.05$) found according to students’ academic year, Bahadir-Yilmaz et al. concluded nursing education did not affect the students’ learned helplessness levels. Bahadir-Yilmaz et al. found no statistical difference in relation to student’s gender ($p > 0.05$) which was different from a previous study result in which male students had higher levels of learned helplessness than females (Erdogdu, 2006).

Interventions to alleviate learned helplessness in nursing students should include empowerment and counseling (Bahadir-Yilmaz et al., 2015). To cope with stressors and to alleviate learned helplessness, nursing students should have a strong sense of self-efficacy (Bahadir-Yilmaz et al., 2015). More research should be done regarding the factors affecting nursing students experience of learned helplessness (Bahadir-Yilmaz et al., 2015). Future research could guide nursing faculty in creating meaningful programs for nursing students to improve their problem-solving skills and regain control of their lives (Bahadir-Yilmaz et al., 2015).

**Stress Management Techniques**

Development of active coping strategies by nursing students can result in a reduction of maladaptive coping strategies such as consuming alcohol, separating from others, and ignoring stress, anxiety, and depression (Reeve et al., 2013). Reeve et al. (2013) conducted a survey of 107 nursing students and 42% of respondents reported feelings of depression. The authors do not offer any rationale why this response would
be so high, but discuss there is a concern that students lack adequate coping mechanisms to navigate being a student nurse (Reeve et al., 2013).

Crary (2013) identified self-care behaviors are inversely related with levels of perceived stress. Therefore, educating students how to manage their stress and care for themselves is very important. In a study by Lo (2002), only 21% of students surveyed were able to identify methods utilized to decrease stress. Those who reported techniques identified problem solving, recreation and sport, social support, and tension reduction strategies were all beneficial techniques to manage stress (Lo, 2002). Students identified talking to friends, and spending time with friends or family helped manage their stress (Reeve et al., 2013). Students also identified exercise, time in nature, religious activities, yoga, creative activities, journaling, mindfulness awareness, muscle relaxation, centered breathing, and reiki as ways they cope, listed in order of popularity (Crary, 2013). When asked about an elective class offering self-care techniques, 75% of respondents answered they would enroll in the course (Crary, 2013).

Investment in stress management interventions could prepare students to handle the challenges of a rewarding profession, and potentially enhance professional nursing competence (Smith & Yang, 2017). Mindfulness and cognitive appraisal can improve overall sense of well-being in nursing students (Van der Reit, Rossiter, Kirby, Diuzewska, & Harmon, 2015) and student nurses who cope well with their experiences in school have supportive networks and positive attitudes (Gibbons, Dempster, & Moutray, 2011). These attributes could benefit students as they enter the workforce.

Spadaro and Hunker (2016) found an eight-week mindfulness-based stress reduction online program offered to nursing students was successful in decreasing stress
at the end of the eight weeks, as well as retaining lower stress levels at the end of 24
weeks. The intervention included mindfulness breathing, sitting meditation, walking
meditation, mindfulness movement, yoga, and video guided mindfulness exercises.

Students were able to access the training at their own convenience and at any time during
their online course. No additional instruction was needed before the mindfulness-based
stress reduction training. Nursing students’ stress was measured by the PSS and the
intervention was found to significantly decrease levels of stress ($p = 0.019$). The more
students practiced the meditation intervention, the greater the results in their reduced
stress levels.

Galbraith and Brown (2011) reviewed 16 studies to examine the effectiveness of
various interventions to reduce stress. The studies were sorted by the aim of the
intervention into one of the following categories: “(a) reduction in intensity or number of
stressors, (b) cognitive reappraisal of potential stressors and (c) more effective coping
with the consequences of stress” (Galbraith & Brown, 2011, p. 714). The authors
summarize their findings by stating interventions to reduce stress that included all three
of these factors were most effective in improving stress, anxiety, self-esteem, depression,
and measurements of stress (Galbraith & Brown, 2011). Also, the studies that only
included introduction of cognitive reappraisal techniques, and effective coping techniques
were successful (Galbraith & Brown, 2011). Therefore, it could be hypothesized
interventions only aiming to decrease intensity or number of stressors may not
be effective, and may not be necessary in newly developed stress management programs
(Galbraith & Brown, 2011). Though stress management programs are effective, there is
no current evidence stress management interventions improve academic performance
(Galbraith & Brown, 2011). More research is suggested to identify the relationship between academic performance and stress management interventions (Galbraith & Brown, 2011).

Many more studies have investigated nursing students’ stress during their education than studies designed to measure effectiveness of stress management interventions (Terp et al., 2019). In the quasi-experimental study done by Terp et al. (2019), their intervention consisted of ten two-hour, group session stress management techniques. The focus of their intervention was to “increase participants’ awareness and knowledge about stress, coping, and their own reactions and patterns when facing stress” (Terp et al., 2019, p. E2). Participants were taught trainable stress management thoughts, emotions, and behaviors (Terp et al., 2019). As a result of the intervention, nursing students’ self-rated stress management competency scores increased significantly during each measurement of the intervention, and remained significantly high one year after the intervention compared to the control group (Terp et al., 2019). Terp et al. concluded stress management techniques can successfully be taught to nursing students and have lasting effects.

**Literature Summary**

Nursing students experience high levels of stress throughout their education due to many factors. The high stress affects their physical and psychological well-being, as well as clinical and academic performance. The literature supports differences in levels of stress due to student’s age, gender, and academic term. Results vary, but overall, students who are older, in the higher-class levels, and female had highest stress levels.
Self-efficacy has been well-researched as a protective factor for students when faced with stressful situations. Helplessness can contribute to students’ stress and can lead to poor patient care and academic performance. Overall, much of the research reviewed was of lower levels of evidence, indicating a need for higher levels of research done regarding these topics. The majority of the research discussing perceived stress utilized the PSS-10 tool. The research supports the benefits of nursing students utilizing stress management techniques as well as having high levels of self-efficacy to handle the stress they experience. Various stress management interventions are recommended in the literature to support students in managing stress.

**Lazarus Stress Theory**

The conceptual theory guiding this secondary analysis is the Lazarus stress theory. Lazarus is a theorist who has focused much of his work on studying sources and reactions to stress (Krohne, 2002). There have been several renderings of Lazarus’ stress theory since its origination. However, the overall themes are essentially unchanged. Two concepts, appraisal and coping, guide this psychological stress theory. These two concepts will be explored further in their relation to this secondary analysis.

The concept of appraisal is based on the thought that individuals' expectations of a certain situation will have an impact on the level of stress associated with the situation (Krohne, 2002). Personal and situational factors will influence an individual's appraisal of a stressor (Krohne, 2002). Also, expectations, goals, and values may impact an individual's appraisal of a stressful situation. Individuals will have differences in the quality, intensity, and duration of their stress according to this concept (Krohne, 2002). In this secondary analysis, factors that could influence students’ appraisal of
stress include self-efficacy, helplessness, and demographic factors. Because these factors will influence the student's appraisal of a situation, it is important to understand how each of these factors individually affects overall levels perceived stress.

Coping is defined by Folkman and Lazarus (1980) as, “cognitive and behavioral efforts to master, reduce, or tolerate the internal and/or external demands that are created by a stressful transaction” (p. 223). Coping is viewed as having two functions, the regulation of emotions and problem management (Folkman, 1984). Emotion-focused coping is used to control distressing emotions by altering an outcome (Folkman, 1984). In this secondary analysis, self-efficacy and helplessness are emotion-focused coping mechanisms which may affect students' levels of perceived stress.

Problem focused coping focuses on the control of the person-environment relationship by problem solving, decision making, or direct action (Folkman, 1984). Stress management techniques would fall under problem focused coping in this secondary analysis. The effectiveness of problem focused coping depends largely on the success of emotion focused efforts (Folkman, 1984). Therefore, it could be hypothesized that a sense of self-efficacy will benefit students in their ability to utilize stress management techniques.

Many articles included in the review of the literature reference Lazarus’ various stress theories as theoretical principals guiding their research. The PSS-10 tool, which is one of the main measurements of this secondary analysis, was developed based on Lazarus’ stress theory (Cohen & Williamson, 1988). Throughout this secondary analysis, it is important to understand the appraisal of stress in addition to coping techniques utilized by students, and their relationship to overall perceived stress.
Conceptual Map

A conceptual map is provided (Figure 1) to display the relationships between the concept, perceived stress in nursing students, and the various antecedents and consequences. Antecedents included in the conceptual map are: demographic factors, self-efficacy, helplessness, and stress management techniques. Consequences included in the conceptual map include: mental health symptoms, physical health symptoms, negative or ineffective coping strategies, and positive coping strategies. These antecedents and consequences are defined within previous sections of this secondary analysis. A key is provided to help the reader identify which figures are the antecedents and consequences, and the meanings of the icons which demonstrate relationships. The numbers on the map represent the articles included in the literature review for this secondary analysis. Table 3 provides a list of the numbers in the concept map, and the correlating citation for the article.

To explain the use of the conceptual map, two examples are provided. Demographic factors were discussed as an antecedent to perceived stress in 11 articles. The numbers between demographic factors and the concept are preceded by a question mark, which identifies an unknown relationship. An unknown relationship exists because the articles discuss both positive and negative relationships between demographic factors and perceived stress.

Secondly, a consequence of perceived stress is physical health symptoms. Three articles discussed physical health symptoms as a consequence of perceived stress, and these numbers are preceded with a plus mark, demonstrating a positive relationship. As more perceived stress is evident, there is an increase in physical health symptoms. The
conceptual map can be utilized in this fashion to understand the relationship among the four antecedents, four consequences, and the concept of perceived stress.

**Summary**

Chapter two provided a review of the literature on the occurrence of stress in nursing students, and the influence of demographic factors, self-efficacy, helplessness, and the utilization of stress management techniques. The Lazarus stress theory is the conceptual theory that guided this secondary analysis. A conceptual map was provided to review the common themes in the literature in relation to the concept of perceived stress in undergraduate nursing students.
CHAPTER III
RESEARCH METHODOLOGY

Introduction

The goal of this secondary analysis was to evaluate three research questions related to undergraduate nursing students’ experience of perceived stress. In this chapter, the research design and details of the primary study are provided. Additionally, this chapter discusses the sample and setting, ethical considerations, instruments and measures, specifically the PSS-10 tool, and data collection of the secondary analysis.

Primary Study

Design and Purpose

The design of the primary study was a pretest-posttest correlational study, with no control group. The purpose of the study was to describe changes before and after a stress management intervention program. Students were provided a survey before and after the stress management program to measure their stress levels, stress reduction techniques, and quality of life.

Setting and Sample

The primary study took place at a Midwestern university with about 8,000 students covering two campuses. The sample included currently enrolled undergraduate generic baccalaureate nursing students. The study began in October of 2015 with 302 nursing students invited to participate. The undergraduate nursing program is fully accredited and occurs over four academic terms. Students in all four terms of the program
were invited to attend. Students who participated ranged from newly admitted students who were enrolled in term one to students who were in term four, ready to graduate in December of 2015. Most of the students were young females and of the traditional college age. The nursing department offers undergraduate (generic and RN-BSN), masters, doctoral, and post-graduate certificate programs, however only generic undergraduate students were included in the study. Students who were admitted for the Registered Nurse to Bachelor of Science in Nursing (RN-BSN) program were not included in the sample.

**Instruments and Measurements**

Multiple tools were used to evaluate perceived stress, resiliency, and quality of life for the primary study. The Perceived Stress Scale (PSS-10) was used to measure perceived stress (Roberti et al., 2006). The Connor-Davidson Resiliency Scale (CD-RISC) was used to measure resiliency (Connor & Davidson, 2003). The Linear Analog Scale Assessment (LASA) tool was used to measure quality of life in physical, emotional, spiritual, and overall well-being of life (Locke, et al., 2007).

The pre-survey was used to collect demographic data which included the student’s age, gender, academic term, and a self-rating of how many times they used a stress management technique. The post-survey utilized the same format as the pre-survey with additional qualitative questions assessing student’s use of the program.

**Data Collection Procedure**

A Qualtrics survey tool was used to collect data for the demographic questions and for all three instruments. The total number of items on the survey included 40 items
from the three tools, in addition to the demographic information. The average time for undergraduate nursing students to complete the survey was between 15-20 minutes.

The Qualtrics survey was sent to students prior to the planned stress management program, explaining the study. The pre-survey was emailed on October 1, 2015 to the 302 undergraduate nursing students who were planning to attend the program training on October 6, 2015. A reminder email was sent to the students the day before the program session.

The post-survey was sent to students to complete one month prior to graduation and was sent at different dates based on when the students attended the program. Surveys were sent in December 2015 (term IV), May 2016 (term III), December 2016 (term II), and May 2017 (term I). Two follow-up emails were sent reminding nursing students to complete the post-survey. An email was sent to faculty asking them to remind students in class that the survey was available.

**Ethical Considerations**

The potential for any risk to the students was minimal. If a student was under a great deal of stress during the survey, reading questions related to their situation could trigger a reminder of their stressful situation. If students were experiencing undue stress, the university had student counseling services available, and the students were made aware of these services with the information about the research. Campus and community resources were provided to aid students if they were experiencing high levels of stress.

There were more benefits than risks. Benefits for the students in completing the survey were to aid the nursing department at this university about potential strategies that
could alleviate perceived stress and foster resilience in current and future nursing students. For example, the stress management program could be provided annually for all newly admitted nursing students to help aid in their success.

The pre and post surveys were sent out by the primary investigator who did not teach any of the undergraduate nursing students. The names of the students were kept in a confidential file on a locked computer, and access was only given to the primary investigator. Names of the students were only needed for the pre and post matched data, but once the match had been completed, the information was destroyed before being shared with undergraduate faculty members. The other two investigators in the study taught in the undergraduate nursing program, but were only given de-identified data for analysis.

**Secondary Analysis**

Many of the design aspects for the secondary analysis were similar to the elements of the primary investigation. A summary is provided of the sample and setting, ethical considerations, instruments and measures, specifically the PSS-10 tool, and data collection of the secondary analysis.

**Sample and Setting**

The secondary analysis utilized the same sample and setting as the primary study. At an upper Midwestern university’s fully accredited, baccalaureate nursing program, all 302 admitted, generic undergraduate nursing students participated in the stress management program in October of 2015, however the final pre-survey data included 256 students while 35 of these students provided post-survey qualitative
responses. Students ranged from newly admitted, term one students, to students who were near graduation in term four.

**Ethical Considerations**

Prior to receiving the data for this secondary analysis, approval from Winona State University’s Institutional Review Board (IRB) in Winona, Minnesota was obtained. Data were received from the primary study database with permission from the primary study authors (see Appendix B). The human subjects were protected as the primary study data were de-identified. The co-investigators of this study ensured privacy was maintained by keeping data access limited to only themselves and the statistician.

**Instruments or Measurement**

To answer the research questions for this secondary analysis, the PSS-10 tool data results were examined. The Perceived Stress Scale-10 (PSS-10) was utilized to measure overall levels of perceived stress, while factor analysis of the PSS-10 provided information regarding feelings of helplessness and self-efficacy (Roberti et. al, 2006).

The PSS-10 is a self-report tool which measures “the degree to which one perceives aspects of one’s life as uncontrollable, unpredictable, and overloading” (Roberti et al., 2006, p. 137) and is the most popular tool used to measure perceived stress (Taylor, 2015). The scale is based on Lazarus’ original theory of stress to serve as a global, subjective measure of perceived stress (Cohen, Kamarack, & Merrelstein, 1983). The PSS-10 has been frequently used in various cultures, languages, and clinical settings, but assumes respondents have at least a middle school education (Taylor, 2015). The tool is easy to administer and is an affordable way to assess stress (Roberti et al.,
Many factor analyses have been done regarding the scale, and the two factors consistently agreed upon are perceived helplessness and perceived self-efficacy.

Participants respond to ten items on a 5-point Likert scale ranging from 0 (never) to 4 (very often) and are directed to think about the last month (Roberti et al., 2006). The items are either positively or negatively worded depending on whether the item is assessing helplessness or self-efficacy (Roberti et al., 2006). Total scores range from 0-40, with higher scores indicating greater perceived stress (Roberti et al., 2006).

According to Roberti et al. (2006), the PSS-10 is a reliable and valid measure for college students in the United States. Internal consistency and inter-scale correlations between the two factors are excellent (Roberti et al., 2006). Internal consistency reliability was evaluated by Roberti et al. (2006); Cronbach’s alpha reliability coefficients were: PSS-10 total score (0.89), perceived helplessness (0.85), and perceived self-efficacy (0.82). Maroufizadeh et al. (2018) had similar findings, with the Cronbach’s alpha coefficient for PSS-10 total score at 0.842, perceived helplessness at 0.856, and perceived self-efficacy slightly lower at 0.720.

According to Maroufizadeh et al. (2018), the PSS-10 and its factor scores had significantly moderate correlation with the subscales of the Hospital Anxiety and Depression Scale (HADS), which confirms convergent validity of the scale. The PSS-10 has been correlated with anxiety, depression, stress, self-esteem, life satisfaction, and quality of life (Maroufizadeh et al., 2018).

The PSS-10 was a part of the student’s pre-surveys. Along with the PSS-10, demographic data were collected in the pre-survey including age, gender, and academic term. In the post survey, an open-ended question was asked regarding the student’s
opinion of how the program was applied (or not) throughout their nursing program. The qualitative question was written to gather information about which stress management techniques the students used after the program, and how frequently they used these stress management techniques.

**Data Collection Procedure**

The secondary analysis utilized data collected through the primary investigation. Following a proposal of this secondary analysis, permission was granted by the primary study’s PI to access a subset of the primary study data (see Appendix B). Following IRB approval, data were retrieved from the primary investigator.

**Summary**

This secondary analysis utilized the information provided in the initial study to identify the overall occurrence of perceived stress in undergraduate nursing students at a midwestern university and the relationship of various factors. The secondary analysis followed many of the same design aspects as the primary investigation. The secondary analysis aimed to identify factors that contribute to the levels of perceived stress in nursing students through an investigation of portions of the primary study.
CHAPTER IV  
RESULTS OF ANALYSIS  

Introduction  

The co-authors of this secondary analysis utilized a Winona State University statistician to analyze the three research questions after obtaining the data. The following chapter provides a description of the sample, as well as, the data analysis and data results for each research question. Tables and figures are used to easily display findings.  

Description of Sample  

This secondary analysis utilized the sample from the primary study. The sample size was 256 undergraduate nursing students at a midwestern university. Most of the students were between the ages of 18-22, were female, and were in either in term one or term three. Table 4 describes the sample by age, gender, and term.  

Table 4  

Description of Sample  

<table>
<thead>
<tr>
<th>Demographic factor</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>18-22</td>
<td>243 (95)</td>
</tr>
<tr>
<td>23-29</td>
<td>12 (5)</td>
</tr>
<tr>
<td>30-40</td>
<td>1 (&lt;1)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>232 (91)</td>
</tr>
<tr>
<td>Male</td>
<td>24 (9)</td>
</tr>
<tr>
<td>Term</td>
<td></td>
</tr>
<tr>
<td>Term 1</td>
<td>85 (33)</td>
</tr>
<tr>
<td>Term 2</td>
<td>42 (16)</td>
</tr>
<tr>
<td>Term 3</td>
<td>86 (34)</td>
</tr>
<tr>
<td>Term 4</td>
<td>43 (17)</td>
</tr>
</tbody>
</table>
Data Analysis

Multiple analyses were used to obtain the data including a two-sample t-test, one-way ANOVA, Pearson’s correlation coefficient, and thematic analysis. Three research questions guided this secondary analysis.

Among baccalaureate undergraduate nursing students in a midwestern university:

1. What are the levels of perceived stress based on their:
   a. Age
   b. Gender
   c. Academic Term

2. How do students’ overall PSS-10 scores correlate to their factor scores of self-efficacy and helplessness?

3. How does a program to teach stress management techniques affect students self-reported utilization of stress management techniques?

Question One

In the primary study, students were assessed with a pre-survey containing the Perceived Stress Scale (PSS-10), a 10-item survey where each item is a 5-point Likert Scale ranging from 0-4. The PSS-10 consists of two factors: helplessness (6 items) and self-efficacy (4 items). For the self-efficacy items on the original scale, high responses indicate low levels of perceived stress. To calculate overall perceived stress in this analysis, the self-efficacy items were reverse-coded so responses of “4” indicated high levels of stress. The ten items were then averaged to create an overall perceived stress score for each student in order to analyze the first research question.
Levels of perceived stress were compared across gender with the two-sample $t$-test, and across term and age group with a one-way ANOVA. Table 5 reports the means and standard deviations of the overall perceived stress scores by age, gender, and term. Data were considered significant if the $p$-value was $< 0.05$. There was no evidence to suggest overall perceived stress differed by age ($p = 0.599$). The overall perceived stress was significantly higher for females than for males ($p = 0.030$). The overall perceived stress also tended to decrease as students progressed in the nursing program ($p < 0.001$).

Table 5

<table>
<thead>
<tr>
<th>Demographic factor</th>
<th>n</th>
<th>Mean ± SD</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-22</td>
<td>243</td>
<td>2.0±0.6</td>
<td>0.599</td>
</tr>
<tr>
<td>23-29</td>
<td>12</td>
<td>1.8±0.7</td>
<td></td>
</tr>
<tr>
<td>30-40</td>
<td>1</td>
<td>1.8±0.0</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>232</td>
<td>2.0±0.6</td>
<td>0.030</td>
</tr>
<tr>
<td>Male</td>
<td>24</td>
<td>1.7±0.8</td>
<td></td>
</tr>
<tr>
<td>Term</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term 1</td>
<td>85</td>
<td>2.2±0.5</td>
<td></td>
</tr>
<tr>
<td>Term 2</td>
<td>42</td>
<td>2.0±0.6</td>
<td>$&lt;0.001$</td>
</tr>
<tr>
<td>Term 3</td>
<td>86</td>
<td>2.0±0.6</td>
<td></td>
</tr>
<tr>
<td>Term 4</td>
<td>43</td>
<td>1.7±0.6</td>
<td></td>
</tr>
</tbody>
</table>

**Question Two**

There are two factors within the PSS-10: helplessness (6 items) and self-efficacy (4 items). Students’ levels of helplessness and self-efficacy were measured by averaging the items for those factors. Cronbach’s alpha scores found with the pre-survey results: PSS-10 total score (0.86), perceived helplessness (0.72), and perceived self-efficacy (0.80). To analyze question two, Pearson’s correlation coefficient was calculated to measure the correlation between overall perceived stress and helplessness, and overall perceived stress and self-efficacy. The significance of this correlation was assessed by fitting a simple linear regression model. Table 6 reports the correlations between overall
perceived stress and the helplessness factor, and overall perceived stress and the self-efficacy factor.

Table 6

*Correlations Between Overall Perceived Stress and the Helplessness and Self-Efficacy Factors*

<table>
<thead>
<tr>
<th></th>
<th>Correlation (r)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helplessness</td>
<td>0.92</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>-0.49</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Stress was strongly and positively associated with helplessness, which was found to be statistically significant \((r = 0.92, p < 0.001)\). There was a moderate, negative association between overall stress and self-efficacy that was also statistically significant \((r = -0.49, p < 0.001)\).

**Question Three**

To analyze research question three, qualitative answers were examined from an open-ended question students answered on the post-survey: “Thinking back to the stress and resilience techniques that were taught in the [stress management] program (during the Innovations Symposium), how were you able to apply what you learned throughout your nursing program at WSU? Offer any specific examples.” A total of 35 responses were examined and the three co-investigators of this secondary analysis used thematic analysis to summarize the responses into themes.

**Qualitative themes.**

The investigators worked together to read all responses, analyze the responses, and group them into seven themes. The investigators agreed on all final themes so inter-rater reliability was 100%. Frequency and examples of themes are listed in Table 7, and all responses can be found in Appendix C.
Themes included:

- general self-care
- utilization of physical activity
- utilization of social support
- utilization of mindfulness/relaxation stress management techniques
- I don’t remember
- not applicable
- did not utilize

The most common theme was mindfulness/relaxation stress management techniques followed by utilization of physical activity. Only three responses were not applicable, and only two responses fit under the theme of did not utilize. Many responses fit into more than one theme. For example, the following response mentions utilization of physical activity, utilization of social support, and mindfulness/relaxation stress management techniques:

I learned to recognize my own individual traits and find ways that I could feel in control of my life and its stressors. Since then, I have increased my frequency of using the stress reduction techniques taught in the Symposium. These include yoga, stretching, deep breathing, exercising, talking with friends and family, humor, taking breaks and occasional distraction, guided imagery, and pet therapy.

A word cloud made from all responses can be seen in Figure 2.
Table 7

*Frequency and Examples of Qualitative Response Themes*

<table>
<thead>
<tr>
<th>Theme</th>
<th>Frequency</th>
<th>Example of Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilization of mindfulness/relaxation stress management techniques</td>
<td>13</td>
<td>“…Thinking of meditation/prayer and other small stress relief techniques (self-talk, deep breathing), these have proved useful throughout the duration of my nursing school career and I will bring these skills into my nursing career.”</td>
</tr>
<tr>
<td>Utilization of physical activity</td>
<td>9</td>
<td>“When stressed I would go on a walk with friends or workout to get my mind off everything. It really helped when I was studying and stressed I would workout and when I came back I was ready to get after it again without the feeling of stress”</td>
</tr>
<tr>
<td>I don’t remember</td>
<td>9</td>
<td>“I don't remember what I was taught during the Symposium.”</td>
</tr>
<tr>
<td>Utilization of social support</td>
<td>6</td>
<td>“…talking on the phone with my family to help relieve anxiety. It is nearly impossible to de-stress without talking to someone (family member/ friend) about it.”</td>
</tr>
<tr>
<td>General self-care</td>
<td>5</td>
<td>“I learned the importance of taking time to care for myself first. If I am not taking care of myself or managing my own stress, I cannot properly care for my patients.”</td>
</tr>
<tr>
<td>Not applicable</td>
<td>3</td>
<td>“N/A”</td>
</tr>
<tr>
<td>Did not utilize</td>
<td>2</td>
<td>“I don't attempt to decrease my stress. Stress and demands are something successful people need to learn how to deal with. I exercise (3 times weekly) not to decrease my stress but to make myself stronger and better able to handle my stress. These are two very different ways of looking at this problem. People that try to reduce their stress end up taking on fewer demands instead of increasing their resilience and i suspect this is related to several other issues (marijuana use, anxiety disorders, depression, etc.). Personally i believe stress is a driving force in my life and i would be much less productive without it.”</td>
</tr>
</tbody>
</table>
Figure 2. Qualitative Responses Word Cloud
Summary

This chapter included a description of the sample, data analysis of the three research questions, and the results. This chapter also included relevant tables and figures. No evidence was found to suggest stress differed by age. However, perceived stress was significantly higher for females than males, and tended to decrease as students progressed further in the nursing program. Stress was statistically significantly positively associated with helplessness and negatively associated with self-efficacy. Seven themes were found among the qualitative response data.
CHAPTER V
DISCUSSIONS AND CONCLUSIONS/MANUSCRIPT

Introduction

Nursing is a physically and emotionally demanding job. Undergraduate nursing students experience rates of stress greater than students in other degree paths (Bartlett, Taylor, & Nelson, 2016). Student nurses experience many stress-related symptoms, such as anxiety, migraines, and illness (Bartlett et al., 2016). If students do not have proper stress management techniques, physical and emotional stress symptoms negatively impact their clinical and academic performance (Lu et al., 2019).

This secondary analysis explores the prevalence of perceived stress in undergraduate nursing students and the effects of self-efficacy and helplessness on the perceived stress. The utilization of stress management techniques is discussed in relation to perceived stress. Understanding the link between perceived stress and demographic factors, as well as the utilization of stress management techniques, will help nursing educators understand the experience of stress for students, and assist educators to plan future interventions for stress in undergraduate nursing students. The research questions for this secondary analysis include:

Among baccalaureate undergraduate nursing students in a midwestern university:

1. What are the levels of perceived stress based on their:
   a. Age
b. Gender

c. Academic Term

2. How do students’ overall PSS-10 scores correlate to their factor scores of self-efficacy and helplessness?

3. How does a program to teach stress management techniques affect students self-reported utilization of stress management techniques?

This chapter provides a summary of the findings from this secondary analysis. Included is a summary of the background literature, discussion of the methods, results, discussions and conclusions, a concept map, scope and limitations, and implications for education and research. This chapter is being written as a general manuscript. A specific journal for publication will be chosen at a later date. Journals which have been considered for publication include *Perspectives in Nursing Education, Nursing Education Today* and *the International Journal of Nursing Education Scholarship*. This chapter is written with these audiences in mind.

**Background Literature**

The search was conducted between January and March of 2019. The databases used in the search were Pub Med, Google Scholar, CINHAL, and Proquest. Literature selected and reviewed was published between 1999-2019. Search terms included: perceived stress, undergraduate nursing students, self-efficacy and stress undergraduate nursing students, self-efficacy and helplessness undergraduate nursing student, self-efficacy and hopelessness, helplessness nursing students, mindfulness-based stress reduction, nursing students stress resiliency, helpless, and learned helplessness. Articles included were based on publication in last twenty-years, English language, and pertained
to nursing students. Articles were excluded if students were not in a nursing program, or if perceived stress was not included in the article.

**Demographic Factors**

Nursing students may experience varying levels of stress throughout their time as students. According to Bartlett, Taylor, and Nelson (2016), student nurses report higher levels of stress than students pursuing other degrees. Edwards, Burnard, Bennet, and Hebden (2010) identified that stress in nursing students is even higher than those in other healthcare related fields. High levels of stress experienced by nursing students during their education leads to higher drop-out rates, an increased risk of early-career burnout, and higher job turnover rates (Terp et al., 2019). When students lose their ability to maintain balance between work, school, and home life, they experience high levels of stress leading to low levels of personal well-being (He et al., 2018). Stress can be displayed in various physical and emotional symptoms. According to Crary (2013) perceived stress was found to be correlated with negative moods, palpitation, chest paint and irregular bowels.

Admi, Moshe-Eilon, Sharon, and Mann (2018) found nursing students who were over the age of 31 had significantly higher stress levels than students less than 25 years old. Alsaqri (2017) had similar findings, with nursing students in the 22-24 age group reporting higher stress than students in the 20-21 age group. He et al. (2018) included many non-traditional nursing students in their cohort, with the mean age of 36.23, and speculated older students would have more ability to deal with school stresses due to their life experiences and coping abilities. However, the study found the younger students had
lower reported levels of stress. Older nursing students have more responsibilities than the younger nursing students with work and families (He et al., 2018).

Gender is another demographic factor researched in relation to stress, with males often being a small sample in nursing student studies. For example, in the study by Crary (2013) males only accounted for 16 of the 153 individuals surveyed. Wang, Tao, Bowers, Brown, and Zhang (2018) had a similar small sample with males accounting for only three percent of the 747 total individuals surveyed. Taylor (2015) identified, on average, females report higher levels of overall perceived stress than males when using the PSS-10. In the analysis done by Taylor, females reported significantly higher stress levels than males, specifically, regarding perceived helplessness ($p < 0.001$). However, no significant difference ($p = 0.455$) was seen between males and females when assessing self-efficacy (Taylor, 2015). Admi et al. (2018) found similar results, with women experiencing significantly higher levels of stress than men ($p < 0.01$).

In a systematic review by Labrague et al. (2018) five of the eleven reviewed articles discussed stress in relation to academic term. Of the five articles, three found students in higher academic terms experienced more stress than those in lower academic terms (Labrague et al., 2018). With many of these studies, varying results were identified. Differences may be related to the varying lengths of nursing programs. The study conducted by Smith and Yang (2017) demonstrated significant differences in mean stress scores among year one, two, three, and four nursing students. Stress scores increased each year, so were highest among senior nursing students ($p < 0.001$) (Smith & Yang, 2017). Lo (2002) discovered transient stress was significantly greater in second-year nursing students as compared to first-year students.
Self-Efficacy

Self-efficacy is a protective factor for students in stressful situations (Terp et al., 2019) and is an attribute of resilience (Gillespie et al., 2007). Self-efficacy is not an innate trait, but is developed by effort, experiences, and mindfulness (Rayan, 2018). A higher sense of self-efficacy leads to greater effort, persistence, and resilience (Gillespie et al., 2007).

One of the commonly used tools to measure self-efficacy is the Generalized Self-Efficacy Scale (GSE). The GSE is used worldwide and is based on Bandura’s social-cognitive theory (Terp et al., 2019). The instrument creates a total score generated by ten items answered on a 4-point Likert scale (Terp et al., 2019). The Likert scale uses numbers 0, 1, 2, and 3 for responses with a higher score resembling a higher level of general self-efficacy (Terp et al., 2019). Bodys-Cupak et al. (2016) identified perceived stress scores were negatively correlated with students’ GSE ($p = .00001$).

Helplessness

Interventions to alleviate learned helplessness in nursing students should include empowerment and counseling (Bahadir-Yilmaz et al., 2015). To cope with stressors and to mitigate learned helplessness, nursing students should have a strong sense of self-efficacy (Bahadir-Yilmaz et al., 2015). More research is needed regarding the factors affecting nursing student’s experience of learned helplessness (Bahadir-Yilmaz et al., 2015).

Stress Management Techniques

Investment in stress management interventions could prepare students to handle the challenges of a rewarding profession, and potentially enhance professional nursing
competence (Smith & Yang, 2017). Mindfulness and cognitive appraisal can improve overall sense of well-being in nursing students (Van der Reit, Rossiter, Kirby, Diuzewska, & Harmon, 2015) and student nurses who cope well with their experiences in school have supportive networks and positive attitudes (Gibbons, Dempster, & Moutray, 2011). Spadaro and Hunker (2016) found an eight-week mindfulness-based stress reduction online program offered to nursing students was successful in decreasing stress at the end of the eight weeks, as well as retaining lower stress levels at the end of 24 weeks. The intervention included mindfulness breathing, sitting meditation, walking meditation, mindfulness movement, yoga, and video guided mindfulness exercises.

**Methods**

The purpose of this secondary analysis was to answer three research questions based from a primary study related to undergraduate nursing students’ experience of perceived stress. The primary study was a pretest-posttest correlational study, with no control group and was designed to describe changes before and after a stress management workshop. Pre-Qualtrics surveys were sent to students prior to the stress management program and then post-surveys were sent one month prior to the student’s graduation date, which varied depending on the students’ term. The pre-survey collected demographic data including the student’s age, gender, and academic term, and the Perceived Stress Scale (PSS-10) to measure perceived stress (Roberti et al., 2006). The post-survey utilized the same format as the pre-survey with an additional qualitative question assessing student’s use of the program. The qualitative question was written to gain information about which techniques students used from the stress management workshop, and how often they used these techniques.
**Setting and Sample**

The primary study took place at a Midwestern university with about 8,000 students covering two campuses. The study began in October of 2015 with 302 undergraduate nursing students invited to participate. Students ranged from newly admitted students who were enrolled in term one, to students who were in term four, ready to graduate in December of 2015. The secondary analysis utilized the same sample and setting as the primary study; however, the final pre-survey consisted of 256 students with 35 students providing post-survey qualitative responses. Most of those sampled were between the ages of 18-22, were females, and were in either in term one or term three.

**Instruments**

To answer the first two research questions of this secondary analysis, the PSS-10 tool data were examined. The PSS-10 is a self-report tool which measures “the degree to which one perceives aspects of one’s life as uncontrollable, unpredictable, and overloading” (Roberti et al., 2006, p. 137) and is the most popular tool used to measure perceived stress (Taylor, 2015). Participants respond to ten items on a 5-point Likert scale ranging from 0 (never) to 4 (very often) (Roberti et al., 2006). Two factors can be assessed with the scale-, helplessness and self-efficacy.

For self-efficacy items on the original scale, high responses indicate low levels of perceived stress. To calculate overall perceived stress in this analysis, the self-efficacy items on the PSS-10 were reverse-coded so responses of “4” indicated high levels of stress. The ten items were then averaged to create an overall perceived stress score for
each student. Students’ levels of helplessness (6 items) and self-efficacy (4 items) were measured by averaging the items for those factors and creating a score.

According to Roberti et al. (2006), the PSS-10 is a reliable and valid measure for college students in the United States. Internal reliability was good, with Cronbach’s alpha scores for: PSS-10 total score (0.89), perceived helplessness (0.85), and perceived self-efficacy (0.82) (Roberti et al., 2006). These data are similar to the Cronbach’s alpha scores found with our pre-survey results: PSS-10 total score (0.86), perceived helplessness (0.72), and perceived self-efficacy (0.80). According to Maroufizadeh et al. (2018), the PSS-10 and its factor scores had significantly moderate correlation with the subscales of the Hospital Anxiety and Depression Scale (HADS), which confirms convergent validity of the scale.

Data Collection Procedure

The secondary analysis utilized data collected through the primary investigation including the student’s pre-survey demographic information and perceived stress scores, and their post-survey qualitative response. Following a proposal of this secondary analysis, permission was granted for access to the primary study data by the PI of the primary study (see Appendix B), and approval was gained from the IRB at these authors’ university. Data were received from the primary investigator. The human subjects were protected as the primary study data were de-identified, and the co-investigators of this study ensured privacy was maintained by guarding data access.

Results

Multiple analyses were used to obtain the data including a two-sample t-test, one-way ANOVA, Pearson’s correlation coefficient, and thematic analysis. Data were
considered significant if the $p$-value was < 0.05. Three research questions guided this secondary analysis.

Among baccalaureate undergraduate nursing students in a midwestern university:

1. What are the levels of perceived stress based on their:
   a. Age
   b. Gender
   c. Academic Term

2. How do students’ overall PSS-10 scores correlate to their factor scores of self-efficacy and helplessness?

3. How does a program to teach stress management techniques affect students self-reported utilization of stress management techniques?

In order to analyze the first research question, PSS-10 scores were examined in relation to the student’s demographic information they provided. Levels of perceived stress were compared across gender with the two-sample $t$-test, and across term and age group with a one-way ANOVA. Table 5 (p. 34) reports the means and standard deviations of the overall perceived stress scores by age, gender, and term. There was no evidence to suggest overall perceived stress differed by age ($p = 0.599$). The overall perceived stress was significantly higher for females than for males ($p = 0.030$). The overall perceived stress also tended to decrease as students progressed further in the nursing program ($p < 0.001$).

To analyze question two, Pearson’s correlation coefficient was calculated to measure the correlation between overall perceived stress and helplessness, and overall perceived stress and self-efficacy. The significance of this correlation was assessed by
fitting a simple linear regression model. Table 6 (p. 35) reports the correlations between overall perceived stress and the helplessness factor, and overall perceived stress and the self-efficacy factor. Stress was strongly and positively associated with helplessness, which was found to be statistically significant \((r = 0.92, p < 0.001)\). There was a moderate, negative association between overall stress and self-efficacy that was also found to be statistically significant \((r = -0.49, p < 0.001)\).

To analyze the third research question, the co-investigators used thematic analysis to examine the qualitative answers from the open-ended question students answered on the post-survey. The investigators worked together to read all responses, analyze the responses, and group them into themes. The investigators agreed on all final themes so inter-rater reliability was 100%. A total of 35 responses fit into seven themes, however multiple responses fit into multiple themes. Themes and their frequency can be seen in Table 7 (p. 37). A word cloud made from all 35 responses can be seen in Figure 1.

**Discussions/Conclusions**

The results of this secondary analysis overall very closely matched the themes identified in the review of the literature. Research question one revealed that age did not have a significant difference in the perceived stress score of the students in this category. This was unexpected after reviewing the literature, as several sources identified that students who are older have more life responsibilities and therefore more stress during their education (Admi et al., 2018; Alsaqri, 2017, He et al., 2018). The difference between the data in this secondary analysis and the reviewed literature could be related to the sample size of the primary data. Only one student was in age group 30-40 (0.4%),
and only 12 students were in age group 23-29 (4.7%). A study with more students, or with more varied ages may yield different results.

Like the studies included in the literature review, this secondary analysis had a relatively small sample of male participants (n = 24, 9.3%). This was a larger size of male participants than most of the literature which was reviewed (Crary, 2013; Taylor, 2015; Wang et al., 2018). The overall perceived stress for students in this study was significantly higher for females than for males (p = 0.030). Educators may use this information when working with students or planning stress management education. However, given the small sample size of males it would not be appropriate to focus on interventions specific to female students.

The reviewed literature did not have a clear overall theme for whether stress would increase or decrease based on program term. Several studies found that students had more stress as they progressed throughout the program and into clinical rotations (Labrague et al., 2018; Lo, 2002; Smith & Yang, 2017; Terp et al., 2019). There were also studies which revealed higher levels of stress in early terms (Crary, 2013). This secondary analysis revealed that overall perceived stress scores did decrease as students progressed through the four terms of the nursing program (p < 0.001). The sample sizes of students from each sample can be seen in Table 4 (p. 32). There were some variances in sample sizes, however no one term had significantly less responses. This information could prove to be very helpful as educators try to assist students to manage their stress. However, because of the varying information available in the literature more research should be done before having term influence stress management interventions. However, given the findings of this secondary analysis, it would be prudent to plan
interventions in the early years of the nursing program. This would give students stress management resources when they were most needed per this secondary analysis, and hopefully enable students to continue to manage stress effectively throughout their program.

This secondary analysis demonstrated a high correlation between feelings of self-efficacy and helplessness and the overall perceived stress scores of students. This was an expected finding, supported by the literature. A higher sense of self-efficacy leads to greater effort, persistence, and resilience (Gillespie et al., 2007). Learned helplessness can lead to nurses feeling as if they are “between a rock and a hard place” due to the various demands on them (Moreland et al., 2015, p. 1157).

This secondary analysis demonstrated a moderate, negative association between overall stress and self-efficacy that was found to be statistically significant ($r = -0.49$, $p < 0.001$). These findings support the nurse educators’ focus on interventions which would instill a sense of self-efficacy in students. Body-Cupak et al. (2016) found a sense of self-efficacy was significantly correlated with strategies of active coping. Therefore, education on positive, active coping strategies may be beneficial to encourage and support a sense of self-efficacy in undergraduate nursing students. Teaching these positive coping strategies could be a successful tool to assist students manages the stress of schooling and clinical throughout their time in the program.

Stress was strongly and positively associated with helplessness, which was found to be statistically significant ($r = 0.92$, $p < 0.001$). This is similar overall themes of the literature review. Therefore, it is essential that educators identify and intervene in these feelings when evident in students. This is especially important because it has been
identified that feelings of helplessness have been found to negatively impact the students’ ability to provide effective patient care (Bahadir-Yilmaz et al., 2015). Interventions to alleviate learned helplessness in nursing students should include empowerment and counseling (Bahadir-Yilmaz et al., 2015). Assisting students to manage feelings of helplessness would be most beneficial for an educator in an advising role. Faculty who serve as advisers have a unique opportunity to address feelings of helplessness in their role in counseling and advising students throughout the nursing program. Interventions to reduce stress in nursing students could include education to faculty in advising roles regarding the effect of helplessness on overall perceived stress, and how to assist students to manage these feelings. Future research could also be focused on helping educators assess feelings of helplessness early in a student’s education.

A review of the qualitative responses for research question number three yielded seven overall themes as seen in Table 7 (p. 37). The theme which occurred most often was that students used mindfulness techniques to manage stress. Because this was the most common theme, mindfulness techniques should be included in any workshop interventions for students to manage stress. Mindfulness techniques could also be incorporated into regular class time for students during stressful times, such as around final exams.

Utilizing physical activity, and not remembering the workshop were the second most common themes. Due to the high number of students who utilize physical activity to relieve stress, these are techniques that educators could incorporate into education seminars about stress management. Educators may also consider creative
learning environments such as walking meetings or active learning strategies. Students also need to be encouraged to maintain an active lifestyle outside of the classroom.

Some of the students took the post survey several semesters after the education which may have accounted for the high number of students not remembering the education. The study design did not have a formal plan for educating faculty in continuing the education which was initially discussed in the stress management class. Future programs should have a formal training for staff to incorporate stress management methods throughout the nursing program. This may be a way to ensure that the students retain the information from the training, as the skills could be reinforced throughout their nursing program.

Active coping strategies that students need to be educated about during stress management workshops are mindfulness and physical activity, based on the responses of this qualitative question. Themes that were less common in the data analysis were social support and general care techniques. Some students did respond that they did not utilize any stress management techniques or did not respond to the question. Overall the findings support students reported using stress management techniques following the stress management workshop in the primary study.

The findings of this secondary analysis are very similar to the reviewed research on stress in nursing students. Demographic factors had varying effects on students’ overall perceived stress scores. Perceived stress had a positive correlation with feelings of helplessness, and a negative correlation with self-efficacy. Students used various methods of stress management techniques, with mindfulness techniques being the most common overall theme. These findings can be utilized for educators to have an
awareness of the experience of stress in undergraduate nursing students. These findings also could be utilized to develop teaching plans and interventions stress management education for students.

**Concept Map**

The findings of this secondary analysis support the original concept map (Figure 1) which was developed from a review of the literature. This secondary analysis did not, however, address the effects of stress. Therefore, the secondary analysis did not change or supplement the consequences portion of the original concept map. A discussion follows on how each antecedent was supported by the research of this secondary analysis.

Helplessness was demonstrated in the secondary analysis to be positively related with overall levels of perceived stress ($r = 0.92$, p-value $< 0.001$). Helplessness remains a positive antecedent to overall levels of perceived stress. There was a moderate, negative association between overall stress and self-efficacy that was also found to be statistically significant ($r = -0.49$, p-value $< 0.001$). This supports that self-efficacy remain a negative antecedent to overall levels of perceived stress in nursing students.

Demographic factors remain an unknown antecedent of perceived stress following this secondary analysis. Age, gender, and the students’ term in the nursing program all have different correlations with overall levels of perceived stress. The identified themes that were gathered from the qualitative analysis of this secondary analysis reveal that students use varying stress management techniques. Therefore, the relationship between the use of these stress management techniques remains unknown.
Due to the similarity between the data gathered in this secondary analysis, and that in the literature, the consequences of stress remain an important component of the final concept map, which is unchanged from the original. This concept map explains the antecedents and consequences of perceived stress related to the review of literature on this topic. This secondary analysis did not result in a need to adapt this concept map.

**Limitations**

Any research that is conducted by a secondary analysis has limitations related to the study design. Though information is readily accessible, the available data were set up for the researcher’s primary research questions. There may have been additional questions the co-authors of this analysis would have liked to include in the survey which were specific to the research questions. Another limitation of a secondary analysis study design is lack of current data, the data utilized for this secondary analysis were gathered between December 2015 and May 2017.

Another limitation was a lack of a control group in the primary investigation. The primary investigators chose not to utilize a control group due to feasibility. The primary investigation had a high attrition rate, likely because many of the surveys were sent a long time after students had attended the workshop, depending on term (e.g., those in term one at the time of the workshop received their post survey over two years later). Though some nursing faculty chose to attend the workshop, no formal plan was initiated by the primary investigators on how to ensure the faculty were providing continuing stress management education, and enforcing the techniques taught in the program. Due to this limitation, the question on the post survey was created, asking how many times stress management techniques were utilized by students.
Implications for Education

The findings of this secondary analysis can support nurse educators to create meaningful programs to help undergraduate nursing students manage stress. Also, having an awareness of what is causing stress for nursing students can help educators in their daily interactions with students. This may be especially helpful for nurse educators who are in an advising, or leadership role.

Demographic factors had varying effects on students' overall experience of stress. Educators should be aware of these findings so that they can be aware which students may be more likely to be under high levels of stress. For example, based on the findings of this secondary analysis, students in earlier terms will need more support and resources for stress management than students in later terms.

Having the knowledge that a feeling of helplessness leads to increased stress in nursing students assists educators to identify and intervene in these feelings when exemplified in students. Bahadir-Yilmaz et al. (2015) suggest that interventions to improve feelings of helplessness include empowerment and counseling strategies. However, Bahdir-Yilmaz et al. also acknowledge the need for further research on specific tools which will reduce feelings of helplessness in nursing students.

Likewise, understanding that feelings of self-efficacy help to lower levels of overall stress; educators might use tools to enhance self-efficacy to assist nursing students in stress management. Wang et al. (2018) discusses that social support of friends and faculty can support the sense of self efficacy in nursing students. Faculty should consider this in all of their interactions. Body-Cupak et al. (2016) found a sense of self-efficacy was significantly correlated with strategies of active coping. Therefore,
education on positive, active coping strategies may be beneficial to encourage and support a sense of self-efficacy in undergraduate nursing students.

Analysis of qualitative data found that the students who responded did remember and utilize the tools that they learned in a stress management workshop. They, overall, seemed to use the tools of mindfulness most frequently. Educators may consider programs to teach these techniques early in the educational programs when students seem to struggle the most with high levels of perceived stress.

**Implications for Research**

Our secondary analysis revealed many opportunities for continued research. Overall, much of the research reviewed was of lower levels of evidence, indicating a need for higher levels of research done regarding perceived stress, self-efficacy, helplessness, and stress management techniques. Additional research should be done with control and intervention groups. Our first research question analyzed perceived stress in relation to the student’s age, gender, and term in the nursing program. Most of our sample was of traditional college age. However, our literature review demonstrated older students, or non-traditionally aged students, had highest levels of stress. More research should be done with older nursing students. They might have different stressors than traditional college age students that are not being targeted with stress management technique programs. Unfortunately, older nursing students and male nursing students are often difficult to find.

As seen in our literature review and in our own results, males are often a small sample in nursing student studies. The small available sample sizes decrease the power
of the studies and make it difficult to generalize results. Conducting more studies with as many male nursing students as possible will help confirm results.

Students start core nursing classes and nursing clinicals at different semesters in different programs. The literature we reviewed found students had high stress at the beginning, and then again at the end, of nursing programs. Our secondary analysis results demonstrated students had more stress towards the beginning of the program. More research should be done comparing nursing programs with similar curriculums. The same stressors could be involved in all nursing programs, but the term in which the stressor occurs might be different, skewing the results to be different when they are actually similar.

Our second research question examined self-efficacy and helplessness. The literature supported friends and co-workers being strongly associated with high levels of self-efficacy. In our results, some students reported utilization of social support as a stress management technique. More research could be done regarding self-efficacy and social support. When conducting the literature review, ample research was available on self-efficacy, but there was very little available research on helplessness, especially in nursing students. More research should be done, in general, regarding helplessness and its effect on perceived stress, as well as, the factors influencing nursing student’s high levels of perceived helplessness. The literature review also demonstrated high levels of self-efficacy had a positive impact on early career registered nurses, including greater retention and better psychological well-being. More research could be conducted following students from their nursing programs to their careers examining their usage of
stress management techniques, and the long-term effects of teaching and utilizing stress management techniques to nursing students.

Lastly, the literature revealed an abundance of research on nursing students’ stress throughout nursing programs, and many students are aware of available stress management techniques they may be using. However, more research should be done on the effectiveness of stress management interventions in decreasing students’ stress, why students choose certain stress management techniques, and what techniques work best. Our research revealed most students favored utilization of mindfulness/relaxation stress management techniques, so more research could be done involving nursing students and these specific techniques. Obtaining a larger sample size in a post-survey after a stress management technique intervention would also be useful.

Summary

This chapter provided a general manuscript for the secondary analysis. This chapter covered the background literature, discussion of the methods, results, discussions and conclusions, a concept map, scope and limitations, and implications for education and research. There were three purposes of this secondary analysis: to assess levels of perceived stress among undergraduate nursing students, based on the variables of age, gender, and academic term, to identify how students’ factor scores of self-efficacy and helplessness correlate to their overall perceived stress score, and to identify how students apply skills learned in a stress management class.

The secondary analysis had similar findings to what has been identified in prior research. Demographic factors had varying effects on students overall perceived stress scores. Perceived stress had a positive correlation with feelings of helplessness, and a
negative correlation with self-efficacy. Students used various methods of stress management techniques, with mindfulness techniques being the most common overall theme.

The results of this secondary analysis can be used to understand the experience of stress for undergraduate nursing students. This knowledge can assist educators to plan interventions for stress management. Future research should include larger sample sizes, and control groups, as well as a more diverse sample.
References


Table 1

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Table 2

**Literature Tables**

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<th>Design/ Framework</th>
<th>Variables/ Instruments</th>
<th>Results</th>
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<td>Bahadir-Yilmaz, E., Aydin-Pekdemir, E., Atamer, B., Cakmak, B., Celebi, Y., Iyim, G., &amp; Kabak, K. (2015). A comparison of learned helplessness levels of first-year and final-year Turkish nursing students. <em>Asian Journal of Nursing Education and Research</em>, 5(4), 531–536. doi: 10.5958/2349-2996.2015.00109.</td>
<td>To compare learned helplessness levels of first-year and final-year nursing students.</td>
<td>$N = 171$ BSN nursing students at Giresun University in Turkey. $n = 117$ first year students $n = 54$ final year students</td>
<td>Descriptive survey design.</td>
<td>Personal Health Information Form to collect sociodemographic variables. Learned Helplessness Scale (LHS).</td>
<td>Both classes had above average learned helplessness scores. There was no significant difference in learned helplessness mean scores according to class level ($p &gt; 0.05$). Also, no significant difference was found according to gender ($p &gt; 0.05$). There was a statistically significant difference between students age 20-22 and students 23 and older. ($p &lt; 0.05$). Older students had higher helplessness scores.</td>
<td>Nursing education does not affect learned helplessness levels. Older students have higher levels of learned helplessness. Nursing students have higher helplessness scores than average students, indicating nursing education is stressful.</td>
<td>Conducted in Turkey. Not a huge sample size.</td>
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<td>Citation</td>
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<td>Bodys-Cupak, I., Majda, A., Zalewska-Puchała, J., &amp; Kamińska, A. (2016). The impact of a sense of self-efficacy on the level of stress and coping strategies used by Polish nursing students. Nurse Education Today, 45, 102-107. doi: 10.1016/j.nedt.2016.07.004</td>
<td>Evaluate the effect of a sense of self-efficacy on the level of stress and coping strategies used by Polish nursing students.</td>
<td>N = 394 students in their first year from 2014-2015 in two separate universities in Southern Poland.</td>
<td>Descriptive survey design. Diagnostic questionnaire method. Estimation and surveying technique. Research was done using questionnaire, estimation and surveying technique. Students were given surveys at the end of their first practical classes. Data were deidentified and data analysis was performed utilizing electronic data analysis.</td>
<td>The PSS-10 tool was utilized to measure severity of stress in student's life over the last month. Mini-COPE was used to measure common ways of reacting and sensing emotions when faced with stress. The Generalized Self-Efficacy (GSE) scale was utilized to measure strength of the individual in the effectiveness of coping with difficult situations and obstacles. Statistical analysis was done, and a level of significance was accepted of $\alpha = 0.005$</td>
<td>The analysis of PSS-10 scale showed the average level of perceived stress in the whole group was 20.79 points (SD=5.50). The low levels of perceived stress affected 11.2% of the respondents, the average 24.6%, and high 64.2% of students. The studies did not show that the age of respondents influenced their stress levels. Students with high PSS-10 scores often used coping strategies such as denial, release, cessation of actions, and blaming oneself. A low level of self-efficacy was reported by 9.4% of students, average, 38.1% and 52.5% reported high levels of self-efficacy. Students with low intensity of stress frequently exhibited high scores in perception of self-efficacy. PSS 10 and GES scores were found to have a negative correlation ($p = 0.0001$). People with low levels of stress had significantly higher levels of self-efficacy. It was found that a sense of self-efficacy was positively correlated with strategies of active coping.</td>
<td>Communicatio problems with patients and discrepancies between theory and practice were most common stressors for students. These could be areas for nursing educators to focus on helping students with coping. Students who have high levels of stress are more likely to choose negative coping strategies. A sense of self-efficacy has an impact on how students perceive a stressful situation, and how they select coping.</td>
<td>Larger sample size than most studies in this category. Nice that they included two separate universities, even though geographically they are still close, so the data may still be similar.</td>
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<td>Crary, P. (2013). Beliefs, behaviors, and health of undergraduate nursing students. Holistic Nursing Practice, 27(2), 74–88. doi: 10.1097/HNP.0b013e318280f75e</td>
<td>The primary aim of the study was to evaluate the relationships between supportiveness of the educator and perceived stress, coping responses, and emotional symptoms.</td>
<td>Convenience sample of undergraduate nursing students. Spring semester of 2011 at a midwestern public university. N = 176. Age ranged from 20-53 years, 79% of students were 20-24 years old. The majority were female (90%).</td>
<td>Theory guided study (Lazarus and Folkman) Descriptive cross sectional study. A web based survey was sent to students. Stress and physical symptoms were measured. Students were asked about supportiveness of educators, perceived competence, participation in self-care activities, if they would be interested in a self-care course. Data were downloaded to SPSS 19 for analysis.</td>
<td>The PSS-10 tool was utilized to measure overall stress, and the PSS-4 was utilized to measure stress specifically related to nursing coursework. The Brief COPE and Self-Compassion scale were used to measure self-care behaviors in the last 6-8 weeks. Complementary self-care behaviors were listed for students to select which behaviors they utilize. Moods were measured using the Positive Affect and Negative Affect Scale (PANAS). Physical Symptoms were measured by the PRIME-MD. Supportiveness of educator was measured by the Learning Climate Questionnaire. Competence was measured by the Perceived Competence Scale. Motivation was measured using the SelfRegulation Questionnaire for</td>
<td>Regular exercise (55.8%), spending time in nature (15.6%), religious activities (7.1%), yoga (5.2%), art and music (4.5%) journaling (3.9%), mindful awareness (3.9%) were utilized by students as self-care activities. n = 115 (75%) of respondents answered “yes” that they would electively enroll in a stress management course if offered. Perceived stress was correlated positively with negative mood and physical symptoms but was correlated inversely with self-compassion. Supportiveness of the educator was correlated positively with autonomous motivation. Perceived competence was inversely related to perceived stress. Second year reported more physical symptoms related to stress than first year students. Physical symptoms related to stress included but were not limited to, back pain, fatigue, palpations.</td>
<td>There is an opportunity for nursing educators to incorporate skill building for nursing students to manage stress. It is important to help students learn to manage stress is important during their time as a student as some new nurses remain in nursing only 1-2 years due to inability to manage the stress in the career.</td>
<td>Nice sample size, would have been nice to have another sample group at another university to make the information more generalizabl e. Authors gave lots of detail about how each variable was measured.</td>
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<td>Galbraith, N. D., &amp; Brown, K. E. (2011). Assessing intervention effectiveness for reducing stress in student nurses: Quantitative systematic review. <em>Journal of Advanced Nursing</em>, 67(4), 709-721. doi: 10.1111/j.1365-2648.2010.05549.x</td>
<td>To identify interventions that are successful in reducing stress levels of nursing students. To make recommendations for further research on the topic.</td>
<td>N = 16 studies were included for the final systematic review. 17 were reviewed and one was excluded due to not meeting quality criteria. N = 186 studies were reviewed for eligibility criteria. Articles that were written in English and published between January 1980 and March 2009. Papers had to include a description of the intervention and outcome measures.</td>
<td>Quantitative systematic review, with narrative synthesis. An electronic search of databases Medline, CINAHL, Behavioral Sciences Collection, IBSS and Psychinfo. Key terms used included nurses, nursing, student, intervention, stress, burnout. Articles were appraised for quality using a set of key conditions for non-randomized studies. The 17 studies were various types of studies, including quasi-experimental, experimental,</td>
<td>Articles were appraised based on how the interventions related to one of three targets. (1) reduction in intensity or number of stressors, (2) cognitive reappraisal of stressors, (3) more effective coping with the consequences of stress. Results were separated into categories based on how the interventions fit the targets described. The types of interventions that were most effective were those that addressed all three of the targets created by the authors. The techniques that were utilized to achieve these targets were cognitive reappraisal, relaxation, strategies for reducing the number and frequency of stressors. Stress reduction techniques led to improvements in anxiety, self-esteem and depression. Interventions that only addressed targets 2 and three were also successful. However interventions only focused on target one were not found to be successful. Though the above interventions are successful at stress reduction, there is not enough evidence to support that stress reduction can improve academic performance.</td>
<td>Nurse educators should utilize stress interventions combining cognitive reappraisal with relaxation and stress theories to decrease stress in students. Nurse educators should not implement stress reduction interventions with the sole purpose of improving academic performance.</td>
<td>The variety of studies and the span of years of articles may make it difficult to draw conclusions on how the findings should influence practice.</td>
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<td>Gibson, T.L. &amp; Lloyd, S.L. (2018). Nursing staff perceptions of fall risk: the emergence of learned helplessness as a theme. <em>Journal of Nursing Administration</em>, 48(1), 5-7. <a href="https://doi.org/10.1097/NNA.000000000000062">https://doi.org/10.1097/NNA.000000000000062</a></td>
<td>To gain insight from two medical surgical units on why do falls continue to happen even with fall prevention protocols in place? Perceptible on learned helplessness.</td>
<td>Hospital in Texas, with 2 medial surgical units. Twenty-five nurses and unlicensed assistive personnel.</td>
<td>Qualitative Interview Study. Interviewed face to face in small groups or individually on the nursing floor. Open-ended questions were conducted.</td>
<td>Five themes were recognized that were related to falls. 1-patient status 2-physical environment 3-patient and staff education 4-inconsistent intervention implementation 5-factors beyond nurse control</td>
<td>Nursing staff felt many falls happened due to factors out of their control. Such things as patient weakness, dementia, forgot to call for help, didn’t use call system, low staff ratios at night, more confusion at night. Nurse felt a great deal of helplessness due to patient continuing to fall even when hospital policies were implemented. Hourly rounding for one tech just isn’t possible. Patient will still be confused at night and can’t be in the room at all times. Nurses continue to be upset when patients fall even when they have done everything possible to prevent the fall. Many nurses feel that patient falls are out of their control. This can lead to a learned helplessness, because they have been exposed to numerous falls and believe they can no make a difference. No interventions changed the outcome, and feelings of helplessness continue. In order for the cycle to break negative feelings need to be replaced with a sense of control.</td>
<td>Situational awareness is the ability for an individual to perceive and comprehend their environment for any potential influences in the future. Situational awareness can aid with recognizing helplessness or patient falls.</td>
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<td>Gillespie, B., Chaboyer, W., &amp; Wallis, M. (2007). Development of a theoretically derived model of resilience through concept analysis. <em>Contemporary Nurse: A Journal for the Australian Nursing Profession</em>, 25, 124-135. doi: 10.5555/conu.2007.25.1-2.124</td>
<td>To identify the attributes of resilience.</td>
<td>50 publications from the 1970’s to 2006. Conceptual, qualitative, and quantitative research.</td>
<td>A concept analysis. Guided by Walker and Avant’s (1995) approach to concept analysis.</td>
<td>Resilience Self-efficacy</td>
<td>Self-efficacy is an attribute of resilience. Self-efficacy is a person’s coping mechanisms A person’s self-efficacy may help determine how much effort the individual expends on an activity and how long they persevere when faced with adversity. Higher sense of efficacy, the greater the effort, persistence, and resilience. Self-efficacy is the ability to deal with change, and the use of a repertoire of problem-solving skills.</td>
<td>Self-efficacy may be developed after heavy investment of effort over a long period with uncertain outcomes and failures. Increased exposure to stressful situations may assist individuals to develop effective coping strategies such as self-efficacy. Resilience and self-efficacy can be learned at any time throughout the life span.</td>
<td>Researchers indicate (like many of our studies) more research should be done regarding how individuals transform stressful experiences into growing opportunities and gain positive coping skills. Also, more research needed on strategies (intervention s) that increase self-efficacy.</td>
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<td>He, F. X., Turnbull, B., Kirshbaum, M. N., Phillips, B., &amp; Klainin-Yobas, P. (2018). Assessing stress, protective factors and psychological well-being among undergraduates nursing students. <em>Nurse Education Today</em>, 68, 4-12. doi: 10.1016/j.nedt.2018.05.013</td>
<td>Examine the predictors of psychological well-being (PWB) among the nursing student population.</td>
<td>Australian regional university with nontraditional nursing students cohorts, that received predominately all their education online. 1760 invitations distributed, 657 responses were returned, many were lacking information 538 were used in data analysis.</td>
<td>Cross sectional Descriptive predictive model</td>
<td>Six validated scales: Perceived Stress Scale, General Self-efficacy Scale, Connor Davidson Resilience Scale, Multi-Dimensional Scale of Perceived Social Support, Psychological Wellbeing Scale, Mindfulness Awareness Scale, demographic inventory used via online survey.</td>
<td>Levels of stress were negatively correlated with the level of PWB, especially with negative PWB. The relationship between perceived stress and positive PWB was borderline ($p = 0.057$). Student with higher stress levels might report lower levels of PWB. It was thought that nontraditional student with a mean age of 36.23 might have developed greater coping skills than younger students. This was untrue. Three other factors with positive correlated to stress resilience, ($p &lt; 0.001$) mindfulness, ($p = 0.057$) and self-efficacy ($p = 0.323$) were all measured. Resilience was found to be a strong predictor of students PWB. Mindfulness training found to be significantly related to PWB, and thirdly self-efficacy was found to have no significantly effect on PWB.</td>
<td>Many students in this group experienced decreased ability of coping skills, and lower psychological wellbeing. Assumed that nontraditional students might have better coping skills, found that younger students had higher levels of psychological wellbeing. Many students had difficulties juggling responsibilities such as families, finance, studying externally online, and work.</td>
<td>Links between positive psychological wellbeing with social support, mindfulness, and resilience. Suggestion to provide a special curriculum course in positive coping mechanisms maybe contribute to nursing students cope with demanding academic and work environment. Low numbers of participates due to the large</td>
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<td>Labrague, L., Mcenroe–Petitte, D., De Los Santos, J., &amp; Edet, O. (2018). Examining stress perceptions and coping strategies among Saudi student nurses: A systematic review. <em>Nurse Education Today</em>, 65. doi: 10.1016/j.nedt.2018.03.012</td>
<td>A systematic review to appraise stress perceptions and coping styles in Saudi student nurses.</td>
<td>$N = 11$ total studies included in the review. $N = 342$, number of records reviewed, $N = 71$ met criteria and were reviewed, of which 60 were excluded because they did not meet selection criteria. Articles were included if the main objective was to examine stress and coping in baccalaureate students in Saudi Arabia, were published in the English language, and were published from 2010</td>
<td>Systematic Review. Electronic search databases, SCOPUS, CINAHL, PubMed and Ovid. Search terms included were, “stress”, “psychological stress”, “coping”, psychological adaption”, “Saudi Arabia”, “student” and “nurse”. Trustworthiness, rigor, credibility and methodological quality were appraised by the Centre for Evidence-Based medicine approach. Data extracted by two research members. All studies used a cross-sectional,</td>
<td>Articles were reviewed for themes of stress levels, sources of stress, demographic information and ways of coping. Eight studies reported levels of stress in nursing students ranging from moderate to high levels. Sources of stress were identified as heavy workload (5 studies), and taking care of patients (3 studies). Two studies discussed age, indicating that students have a negative association was found between age and problem-solving sub scale score and the stay optimistic subscale score ($p = 0.005$). Three studies discussed the use of active solving strategies. Three studies examined stress in relation to coping strategies. Three articles examined stress in relation to their coping styles. Some links were found between students’ term and levels of stress, with higher levels of stress in late terms.</td>
<td>Students were found to have moderate to high levels of stress in various studies. The cause of this stress was related to high workloads and taking care of patients. Understanding this stress may guide nursing school leadership to better understand nursing students and to help them deal with stressors.</td>
<td>All articles reviewed were Level VI evidence. Good discussions but would be helpful to have more information about common themes.</td>
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<td>Lo, R. (2002). A longitudinal study of perceived level of stress, coping and self-esteem of undergraduate nursing students: An Australian case study. <em>Journal of Advanced Nursing</em>, 39(2), 119-126. doi: 10.1046/j.1365-2648.2000.02251.x</td>
<td>The aim of the study was to identify the difference of stress occurrence throughout the terms of the nursing program, identify stressors nursing students encounter, coping measures utilized by students, coping systems used, and to identify coping differences between third- and first-year students.</td>
<td>A convenience sample of students was utilized at the rural university where the researcher worked. There was a total of $n = 120$ first year students, $n = 112$ second year students and $n = 101$ third year students.</td>
<td>Longitudinal descriptive analysis.</td>
<td>The General Health Questionnaire was used to measure chronic and transient stress. The Rosenberg Self-Esteem inventory was utilized to measure positive and negative self-esteem. The Lazarus and Folkman Ways of Coping inventory was used to measure how students dealt with stressful situations.</td>
<td>Students in year one experienced less stress compared with students in year two ($p = 0.02$). Positive self-esteem was positively correlated with proactive coping behavior, where students put more efforts into their studies and sought information from teachers and friends ($p &lt; 0.01$). 81.2% of students found the nursing studies their most frequent stressor. Other stressors included broken relationships, parenthood, work pressure, time management, commute time, and illness. $n = 22$ of third year nursing students ($N = 101$) indicated they have successfully reduced their stress levels since entering the program. Transient stress was greater for second year nursing students than the first year. This could be related to the second-year students' involvement in...</td>
<td>Due to the amount of stress created by the academic setting educators should focus on preparing students as much as possible for assignments and clinical rotations. Stress management techniques should be included in curriculum to equip students to control their stress levels.</td>
<td>Would have liked if the author provided more information about the study design and setting. Was very vague. No comparison group was utilized so it is difficult to know if the findings are generalizable.</td>
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<td>Lu, J., Mumba, M. N., Lynch, S., Li, C., Hua, C., &amp; Allen, R. S. (2019). Nursing students' trait mindfulness and psychological stress: A correlation and mediation analysis. <em>Nurse Education Today</em>, 75, 41-46. doi: 10.1016/j.nedt.2018.12.011</td>
<td>Examine the relationships between traits of mindfulness facets and psychological stress in nursing students.</td>
<td>University in south-eastern United States. Nursing students completed an online questionnaire that collected their demographics, trait mindfulness, psychological stress (using the PSS scale). Sample size was 99 nursing students completing their BSN degree. Seven were males, 92 were females. Average age 20.31 with range of 18-24 years old.</td>
<td>A cross-sectional design.</td>
<td>39 items questionnaire included 5 subscales: observing, acting with awareness, describing, non-judging, non-reactivity. (due to the aim of the study describing was not included). A 5 point Likert scale was used. The Perceived Stress Scale (PSS) tool was used to measure psychological stress.</td>
<td>The trait of mindfulness facet of observing, the remaining other three facets of acting with awareness, non-judging, and non-reactivity were negatively correlated with effect of psychological stress. Observing could indirectly predict psychological stress, when the facet of non-reactivity was the acting as the mediator. Non-judging was partially mediated the relationship between acting with awareness and the result of psychological stress. “Results from the Pearson’s bivariate correlation showed that observing had little correlations with actin with awareness and non-judging, but it reached moderately positive correlation with non-reactivity. Expect for observing the remaining three facets of trait mindfulness had moderately positive inter-correlations (r=0.30). The PSS-10 reached moderate to high degrees (r=0.50) of negative correlation.</td>
<td>Mindfulness training cannot reduce the fact that nursing students will have an increased psychological stress level. With mindfulness training nursing students will be training to listen to their bodies either emotionally or physically in order to observe it they are experiencing greater levels of stress. With learning mindfulness training techniques will aid them in listing to their...</td>
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| Moreland, J. J., Ewoldsen, D. R., Albert, N. M., Kosicki, G. M., & Clayton, M. F. (2015). Predicting Nurses’ Turnover: The aversive effects of decreased identity, poor interpersonal communication, and learned helplessness. | Examine how nurses identification with their small work groups or nursing role, or nursing floor relate to their willingness to confront conflict and feelings of learned helplessness and employment turnover. | 466 Nurses from a large teaching and research hospital in the Midwest. | A cross-sectional survey $N = 466$. Social Identity Theory was used to understand how nurse identify with group to which they belong. | Study completed with an on-line survey through Qualtrics. Study was announced by nurse managers. Survey measured on a 7-point Likert-type scale. Variables of the survey included nurse identity, interaction involvement, learned helplessness, tenure. | Did any of the following variables relate to nurse’s tenure:  
- identity  
- interaction involvement  
- learned helplessness,  
- willingness to confront negative conflicts if displayed by the nurse  
- aid in the commitment to tenure to a floor or hospital. | When a nurse does not identify with other nurses, this can lead to learned helplessness due to their inability to confront conflict and feel like part of the nursing group. There is an indirect link between nurse identity and learned helplessness through training programs can be incorpora ted into nursing schools. This can reduce negative norms (feelings of learned helplessness) are | Level VI |
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<td><em>Journal of Health Communication</em>, 20 (10), 1155-1165. <a href="https://doi.org/10.1080/10810730.2015.1018589">https://doi.org/10.1080/10810730.2015.1018589</a></td>
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<td>floor environment.” Nurse identity didn’t find feelings of learned helplessness, and nurses still can pose feelings of frustration and an inability to make changes. No statistical r values reported.</td>
<td>interactions that involve their willingness to confront conflict and learned helplessness. Nurses that identify with other nurses tend to confront conflict and stay in their profession.</td>
<td>identified then intervention s can be put into place to promote higher levels of positive nurse identity.</td>
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<td>Smith, G. D., &amp; Yang, F. (2017). Stress, resilience and psychological well-being in Chinese undergraduate nursing students. <em>Nurse Education Today</em>, 49, 90-95. doi: 10.1016/j.nedt.2016.10.004</td>
<td>To analyze the relationship between stress, resilience, and psychological well-being in nursing students.</td>
<td>N = 1538 Undergraduate nurses from three nursing schools in Zhejiang Province in Southeast China. Age ranged from 17-25 years old. 97.3% were females.</td>
<td>Cross-sectional survey. Lazarus and Folkman (1984) theoretical model of stress.</td>
<td>The stress in Student Nursing Scale (SINS) measured perceived stress. The General Health Questionnaire (GHQ 12) measured psychological well-being. Resilience scale (RS-CN) measured resilience in participants.</td>
<td>There were significant differences in total stress mean scores among year one, two, three, and four-year nursing students. Stress scores increased each year. (p &lt; 0.001) Significant differences in total psychological well-being between the four years. (p &lt; 0.000) Poorest psychological well-being scores in senior nursing students. The nursing students had moderate levels of resilience. No significant differences in total resilience scores between the four years. (p &lt; 0.485)</td>
<td>No difference seen in resilience between the four years, leading to potential for opportunity to teach skills. Stress highest for seniors. Teaching stress management techniques in early years may be beneficial. Entering the profession</td>
<td>Study done in China. Majority of Chinese nursing students do not choose nursing themselves.</td>
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<tr>
<td>Spadaro, K. &amp; Hunker, D. (2016). Exploring the effects of an online asynchronous mindfulness meditation intervention with nursing students on stress, mood, and cognition. <em>Nurse Education Today, 39</em>, 163-169. doi: 10.1016/j.nedt.2016.02.006</td>
<td>Study the effects of how an on-line mindful meditation intervention with nursing students that study from a distance, how it impacts stress, mood, and cognition.</td>
<td>26 distance nursing students. An eight week intervention was offered online to three different nursing programs in both undergraduate and graduate programs. Offered in a middle sized university setting in Atlantic US.</td>
<td>24 week descriptive study. Intentional Attention &amp; Attitude model was used to guide the study. Model includes: intention, attitude, attention.</td>
<td>Mindfulness intervention was based upon mindfulness-based stress reduction program that was delivered online. Stress and mood were measured at baseline, eight weeks, and twenty four weeks. While cognition was measured at baseline and eight weeks. Stress was measured using the Perceived stress scale. Mood was measured using the Hospital anxiety and Depression Scale. Cognition was measured using the Attention</td>
<td>Students who practiced medication demonstrated decrease in their perceived stress levels. ($p = 0.019$) Students who did practice also were noted to have lower stress levels at baseline. Mood was reported to be significant affected by the mindfulness intervention. Anxiety was decreased, but due to low sample size, the accuracy of the decrease in anxiety might not be significant. The sample size didn’t demonstrate depression at baseline, thus no change measured. Cognition demonstrated improvements in accuracy across alerting, orienting, executive control.</td>
<td>Limitations for inclusion and exclusion were broad in order to gain a large enough sample size. Preexisting characteristics such as life situations, mood, cognition, attitudes towards online learning, and skills with technology could have affected the results. In the further</td>
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<td>Taylor, J. (2015). Psychometric analysis of the ten-item perceived stress scale. <em>Psychological Assessment</em>, 27(1), 90-101. doi: 10.1037/a0038100</td>
<td>To address important gaps in the psychometric literature of the PSS-10. To clarify the dimensionality of the PSS-10 and assess the performance of the items.</td>
<td>$N = 1,236$ adults from the Biomarker project, which is a subset of MIDUS II participants. MIDUS II was initiated in 2004 and composed of five distinct projects to study links between psychological and social factors and an array of health outcomes of secondary analysis from a longitudinal, descriptive study.</td>
<td>Network Test. Intervention was measured using Mindfulness Based Stress Reduction Program Model.</td>
<td>PSS-10</td>
<td>One factor model did not fit the data well. Consistent with previous research, two factors, perceived helplessness and perceived self-efficacy, underlie the PSS-10. The negatively phrased items on PSS-10 examine the perceived helplessness factor and positively phrased items examine perceived self-efficacy. On the PHS, females tended to report higher score than males. On the PSES, females tended to report slightly lower scores than males. Statistically significant difference ($p &lt; 0.001$) between males and females.</td>
<td>This research supports our research question and examines perceived helplessness and self-efficacy as related to perceived stress. This study supports a conceptualization of stress as involving perceived helplessness.</td>
<td>Studies possible control group, and a larger sample size.</td>
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<td>Terp, U., Hjärthag, F., &amp; Bisholt, B. (2019). Effects of a cognitive behavioral-based stress management program on stress management competency, self-efficacy and self-esteem experienced by nursing students. <em>Nurse</em></td>
<td>To investigate short-term and long-term changes in self-rated stress management competency and self-efficacy after a 10-session stress management group intervention for nursing students.</td>
<td>Students from a 3-year nursing program in Sweden. Students recruited in second semester and chose to participate. Intervention group at start: N = 117 n = 104 women n = 13 men At follow up:</td>
<td>Quasi-experimental. Intervention group: data collected before, directly after, and 12 months after the intervention Control group: data collected once in fourth semester</td>
<td>Stress Management Competency Scale (SMCS) General Self-efficacy Scale (GSE)</td>
<td>Self-rated competency to manage stress increased at each measurement for the intervention participants. The intervention group SMCS scores were significantly higher at fourth semester compared to the fourth semester control group. (p &lt; 0.001) General self-efficacy significantly increased from the first to second, and from the first to third measurements for the intervention group. (F = 4.72, n² = 0.26, Power = 0.74) However, no significant difference was seen in GSE scores between intervention and control groups.</td>
<td>Stress management techniques can be taught effectively in a group format. Perceived stress management competency improved over time and sustained one year later in the intervention group. Increased self-efficacy for intervention group might</td>
<td>Poor sample size/attrition Good background info on stress, burnout, physical and psychological implications. This study contributes to gaps in knowledge.</td>
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| Educator, 44(1), E1-E5. doi: 10.1097/NNE.000000000000492 | Study conducted to examine reported stress in 12 areas commonly reported by nursing students. To investigate the factors that caused nursing students stress during their program of study. | $n = 34$  
Control group $N = 44$  
n = 41 women  
n = 3 men | Identified and taught. Based on 5-factor model. | Intervention and control groups in fourth semester. (no p-value listed) | be linked to increased stress management competency.  
No difference seen among intervention and control group GSE scores in fourth semester puzzling. | Research needs to be done regarding effective stress management interventions. | Level V |
1-Stress-related factors that are present in the clinical learning environment  
2-Academic stress  
3-Stress among nursing diploma students verses traditionally trained students  
4-Stress due to interpersonal relationships | $N = 110$  
Nursing students enrolled in a 3 year diploma nursing study in Ireland.  
A 12 item questionnaire was conducted using a Likert scale. It was distributed to third year nursing students in two hospitals in the city of Dublin. | Of the 12 factors the top five that caused significant stress were identified.  
The majority agreed that the following were most stressful.  
Scheduled exams 99%, being involved in the death of a patient 97%, theoretical content 96%, travelling to secondments 92%, clinical placement 84%, classroom contact hours 81%, relationships with staff and ward 68%. | Small exploratory study of only 12 common student stress factors. | Level V |
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<tr>
<td>Wang, L., Tao, H., Bowers, B., Brown, R., &amp; Zhang, Y. (2018). Influence of social support and self-efficacy on resilience of early career registered nurses. <em>Western Journal of Nursing Research, 40</em>(5), 648-</td>
<td>To explore the relationship among social support and self-efficacy and resilience in early career registered nurses.</td>
<td>Convenience sample of 900 nurses. $N = 747$ completed survey $n = 725$ female Average age = 23.53 years old Participants were RN’s from six cross-regional hospitals in Shanghai China.</td>
<td>Cross-sectional descriptive design. Self-administered survey questionnaire.</td>
<td>General self-efficacy scale (GSES) Perceived Social Support Scale Nurse Resilience Scale</td>
<td>Family support had no significant effect on self-efficacy. Friend support had a significant positive direct effect on self-efficacy ($p &lt; 0.037$). Co-workers support was strongly associated with self-efficacy ($p &lt; 0.032$). Stronger perceived social support from friends and co-workers resulted in higher levels of general self-efficacy. Early career registered nurses with higher levels of self-efficacy tend to exhibit greater levels of nurse resilience.</td>
<td>Supportive work/school environments can heighten self-efficacy and improve professional performance. Student nurses are paired with clinical preceptors. Co-workers help them deal with difficult situations by providing emotional support, advice.</td>
<td>Done in China. Good sample size.</td>
<td>Level VI</td>
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<td>664. doi: 10.1177/0193945916685712</td>
<td>Inclusion criteria: RN working full time for less than 3 years.</td>
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<td>General self-efficacy has a significant positive effect on resilience and helps maintain a sense of psychological well-being.</td>
<td>and hands-on assistance. Nursing leadership should understand how to increase self-efficacy to improve early career nurse’s resilience, which can mitigate factors that lead to turnover.</td>
<td>Level VI</td>
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<td>Zhao, F. F., Lei, X. L., He, W., Gu, Y. H., &amp; Li, D. W. (2015). The study of perceived stress, coping strategy and self-efficacy of Chinese undergraduate nursing students in clinical practice. International Journal of Nursing Pract</td>
<td>Explore the coping strategy and the effects of self-efficacy in Chinese undergraduate nursing students who have stress during clinical practice.</td>
<td>Convenience sampling of undergraduate nursing students in three hospitals in autumn of 2011 in Southeast China. Inclusion criteria: practicing for 3 months, comprehend English. 231 students participated. A total of 221 students</td>
<td>Cross-Sectional Survey</td>
<td>Demographic information was gathered from survey questions. Perceived stress was measured by the PSS tool. Coping behavior Inventory was used to identify student avoidance behaviors, optimistic coping behaviors and transference behaviors. Generalized Self-Efficacy scale was used to identify levels of self-efficacy.</td>
<td>The most common stressors students experienced were assignments and workload, followed by stress from peers and daily life and taking care of patients. The most common coping behavior used by nursing students was transference, followed by staying optimistic and problem solving. The least used was avoidance. Slope analysis revealed self-efficacy was beneficial in motivating problem solving behavior when stress was high. When stress from taking care of patients was high, students with high self-efficacy were less</td>
<td>Interventions to encourage students to improve their self-efficacy could be beneficial to encourage the use of positive coping strategies. Bolstering student self-efficacy can help promote effective and positive coping.</td>
<td>Small sample size different educational experience as the students were in China. These students had not all been in the program (3 months)</td>
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<td><em>ice, 21</em>(4), 401-409. doi: 10.1111/jjn.12273</td>
<td>responded to the survey, incomplete and invalid data were excluded. Total of 217 surveys were analyzed. Students 21-25 years old, 6% male and 94% female.</td>
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<td>likely to use transference behavior. High stress from taking care of patients predicted the transference behavior of students.</td>
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**Type/Levels of Evidence:**
Level I: Evidence from a systematic review or meta-analysis of all relevant RCTs (randomized controlled trial) or evidence-based clinical practice guidelines based on systematic reviews of RCTs or three or more RCTs of good quality that have similar results.
Level II: Evidence obtained from at least one well-designed RCT (e.g. large multi-site RCT).
Level III: Evidence obtained from well-designed controlled trials without randomization (i.e. quasi-experimental).
Level IV: Evidence from well-designed case-control or cohort studies.
Level V: Evidence from systematic reviews of descriptive and qualitative studies (meta-synthesis).
Level VI: Evidence from a single descriptive or qualitative study.
Level VII: Evidence from the opinion of authorities and/or reports of expert committees.

Figure 1. Conceptual Map.
Table 3

*Conceptual Map Citation Key*

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Appendix A

Perceived Stress Scale-10

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way.

Name ___________________________ Date ____________

Age ______ Gender (Circle):  M  F  Other ___________________________

0 = Never  1 = Almost Never  2 = Sometimes  3 = Fairly Often  4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly? .................................................. 0 1 2 3 4

2. In the last month, how often have you felt that you were unable to control the important things in your life? .................................................. 0 1 2 3 4

3. In the last month, how often have you felt nervous and "stressed"? .......... 0 1 2 3 4

4. In the last month, how often have you felt confident about your ability to handle your personal problems? .................................................. 0 1 2 3 4

5. In the last month, how often have you felt that things were going your way? .................................................................................. 0 1 2 3 4

6. In the last month, how often have you found that you could not cope with all the things that you had to do? .................................................. 0 1 2 3 4

7. In the last month, how often have you been able to control irritations in your life? .................................................. 0 1 2 3 4

8. In the last month, how often have you felt that you were on top of things? .... 0 1 2 3 4

9. In the last month, how often have you been angered because of things that were outside of your control? .................................................. 0 1 2 3 4

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? ........................ 0 1 2 3 4
Appendix B

Letter of Permission to Use Dataset

April 20, 2019

To the Winona State University IRB Review Committee:

I will provide the secondary data needed for Emily Vore, Abbie McGee, and Amy Henderson for their thesis titled: Perceived Stress in Undergraduate Nursing Students. The data will be de-identified and provided to them in an Excel file. It will only include data for the part of the Perceived Stress Scale (PSS) de-identified results and demographic data needed for their thesis.

Please contact me if I can be of further assistance.

Sincerely,

Diane McNally Forsyth, PhD, RN
Professor, Graduate Programs in Nursing
Winona State University – Rochester.
Appendix C

Qualitative Responses

I learned the importance of taking time to care for myself first. If I am not taking care of myself or managing my own stress, I cannot properly care for my patients.

Taking time for myself helped in future challenges

I learned to recognize my own individual traits and find ways that I could feel in control of my life and its stressors. Since then, I have increased my frequency of using the stress reduction techniques taught in the Symposium. These include yoga, stretching, deep breathing, exercising, talking with friends and family, humor, taking breaks and occasional distraction, guided imagery, and pet therapy.

I don't remember what SMART stands for.

I don't remember what I was taught during the Symposium.

I honestly don't really remember what SMART stood for or was? If I was reminded, I may have remembered. I apologize. If this includes walking or taking a break I have done that more since the program started, and have noticed when I am stressed and that deep breathing and closing my eyes also helps

I am able to use mindful reflection and take time to meditate or relax better in my school, work, and personal life.

I was able to think of good things that were going on in my life when I was stressed, or develop positive coping mechanisms, like exercise or talking to someone, for stressful situations.

Mental health for a nurse is very important. I honestly don't feel like my mental health was very good through the first two terms of nursing school. Through the third and fourth, I was able to utilize the tools that were provided to help deal with the stress.

I have been better about being mindful of my environment which helps me to focus on tasks and situations at hand. This helps reduce stress and improve my mental state during these situations.

Physical activity has been very helpful!

I do not remember what the smart program is.

Recognizing areas of strength and areas of weakness by taking the "skills" survey before the symposium has made a difference in how I look at situations and what I bring to them. Thinking of meditation/prayer and other small stress relief techniques (self-talk,
deep breathing), these have proved useful throughout the duration of my nursing school career and I will bring these skills into my nursing career.

Take time for myself because being too stressed and over worked will lead to nonproductive work and studying. It is alright to watch a movie, hang out with friends, go for a run or go to church. These are all things I do to help ease my mind and become more at peace with myself so I am better able to focus.

n/a

I honestly don't remember anything from the SMART program

I was able to utilize stress and resilience techniques when I was stressed during exams and big projects - deep breathing exercises, rest

I honestly don't remember much from the symposium.

The SMART program was in the middle of my third term, so I did not have much time to apply it. I don't think I used it very often to be honest.

I feel that most of the techniques were things I was already aware of. Considering I do not remember many of the techniques I feel that I am not able to apply them.

I mostly forgot about it, and/or I already did some of the things that were taught, so I continued them.

I just workout when I'm stressed

I was able to use specific techniques before exams to destress such as the mindfulness. I also would use physical activity throughout the week to provide me with a way to destress during particularly rough weeks.

In term 4 there is more free time.

I used it from time to time. I tried to be present in the moment and spend less time in "default mode"

I don't attempt to decrease my stress. Stress and demands are something successful people need to learn how to deal with. I exercise (3 times weekly) not to decrease my stress but to make myself stronger and better able to handle my stress. These are two very different ways of looking at this problem. People that try to reduce their stress end up taking on fewer demands instead of increasing their resilience and I suspect this is related to several other issues (marijuana use, anxiety disorders, depression, etc.). Personally I believe stress is a driving force in my life and I would be much less productive without it.
Before each big exam, I would ask my friends what they were grateful for. It provided a nice distraction and a positive spin on the day. At night, I think about three things that went "right" for the day, no matter how bad the day was.

I use working out as a stress reliever. Even though i know i have a busy schedule, i make time for working out or talking on the phone with my family to help relieve anxiety. It is nearly impossible to de-stress without talking to someone (family member/ friend) about it.

When stressed I would go on a walk with friends or workout to get my mind off everything. It really helped when I was studying and stressed I would workout and when I came back I was ready to get after it again without the feeling of stress.

N/A

take time to destress

I was able to be not as hard on myself in the morning being frustrated that I was late once again-be more gentle on myself and move forward. I used a deep breathing technique the other day to control my stress instead of biting my nails.

Pay attention to small details and take a step back to think about and appreciate the positive things in life.

More time should have been spent focusing on how to handle stress at work during the symposium. We addressed the fact that nurses need to be resilient but I feel that more time should have been spent on how to handle stress in the workplace and outside of it. Breaking into our clinical groups was not as helpful either because we were unable to mingle with new people, either from other terms or from Rochester. The entire day could have been shortened into about three hours. Overall, I do not think that the innovations symposium was overly beneficial and it was disappointing to have our University Improvement day (day off from classes/clinical/immersion) filled up with a full day of activities. My classmates and I could have spent the day filling out job applications or studying, whereas the day was spent talking about stress, which added further anxiety and stress to our lives.

Simply being mindful about when I am stressed and then being intentional on decreasing and dealing with that.