

FACTORS RELATED TO STRESS IN NURSING STUDENTS

by

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A thesis submitted in partial fulfillment of the requirements
for the Honors in the Major Program
in the College of Nursing
and in The Burnett Honors College
at the University of Central Florida
Orlando, Florida

Spring Term 2011

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ABSTRACT

The purpose of this review of literature was to explore and critically analyze relevant literature regarding stress factors and the consequences of stress in nursing students. Findings from this review of literature aimed to provide a better understanding of stress factors and the physical and psychological impact of stress on nursing students. Information was collected from the Cumulative Index to Nursing and Allied Health Literature, PsycINFO, and MEDLINE-EBSCOhost databases to explore what research has been conducted and to assess the current knowledge base. Analysis of the literature indicated that nursing students reported experiencing increased levels of stress during the academic year. Nursing students reported higher levels of stress in conjunction with elevated external stressors, including increased responsibilities and course requirements. Analysis of the findings suggested that factors related to stress in nursing students arose from clinical sources, academic sources, and personal sources. Further analysis indicated that experiencing elevated levels of stress had a negative impact on the student. Increased levels of stress, combined with poor coping mechanisms, may lead to poor academic performance and burn-out among nursing students. Future research may evaluate means to reduce stress levels and mitigate stress in nursing students through targeting specific causative factors. Findings from this review of literature aim to influence student management of stress.

DEDICATION

To my family: without all of your love, support, and guidance, this thesis would have never been possible. I love you all very much. Thank you for always believing in me.

ACKNOWLEDGEMENTS

I would like to give immense recognition my committee members, Dr. Maureen Covelli, Dr. Kelly Allred, and Dr. Jane Compson. Thank you for sharing your knowledge and for supporting me through this experience. This thesis would not have been possible without each of you. Thank you for your time, energy, and patience throughout this process. I am exceedingly grateful for all of your support.

I would like to thank the amazing faculty and staff from the College of Nursing and the University of Central Florida for all of the opportunities that were presented to me during my undergraduate career.

I would also like to give a very special thank you to the Ronald E. McNair Postbaccalaureate Achievement Program for their unwavering support throughout this process.

Lastly, I would like to thank the Burnett Honors College for all of their guidance and for allowing me to participate in the Honors in the Major program.

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INTRODUCTION

Stress affects every individual and has a powerful impact on the mind and on an individual's health and well-being (Lewis & Shaw, 2007). Stress is defined as a physiological and psychological response to an environmental demand that occurs after an individual perceives that they are not able to adequately cope with the present demand (Lewis & Shaw, 2007). The stress reaction can only occur if the individual perceives the circumstance or event as a stressor. Various events or stimuli may be referred to as a stressor and may be physiologic or psychologic in nature. Perceived stress is defined as the degree to which a situation in one's life is deemed stressful (Cohen, Kamarck, & Mermelstein, 1983). Individuals perceive events differently, and the same event may elicit different stress responses from different people. Studies suggest that environmental conditions, one's reaction to the event, and the emotional response to the demand are the major components of stress (Fliege et al., 2005).

Undergraduate college students report experiencing increased levels of stress during the academic year (American College Health Association, 2007). College students report that stress is the greatest inhibitor of academic performance (American College Health Association, 2007). Balancing school schedules and work schedules, preparing for exams, taking exams, and balancing personal life with the demands of school are all potential stressors in a student's life (Araas, 2008). Undergraduate nursing students also have similar demands combined with a rigorous course load and clinical competency requirements (Jimenez, Navia-Osorio, & Diaz, 2010). Among the nursing student population, the additional clinical experiences,

responsibilities, and professional expectations of nursing programs further influence the experience of stress (Gibbons, 2010; Jimenez et al., 2010; Prymachuk & Richards, 2007).

With advancements in the healthcare field, course curricula must change to educate students on the continuous advancements. The evolution of health care and the presence of more acutely ill patients require changes to be made to nursing curricula to accommodate for the advancements. Curriculum enhancements result in information overload, additional emphasis on critical thinking and problem solving, and more rigorous competency assessments that are based on performance examinations and demonstration of clinical skills (Lenburg, 2008). Nursing students are required to possess more theoretical knowledge and more refined clinical judgment skills than ever (Johnson, 1995; Forbes & Hickey, 2009). Changes to the nursing curriculum lead to a more rigorous course load and a more competitive and stressful learning environment for nursing students (Gibbons, Dempster, & Moutray, 2008).

Problem

Undergraduate college students report experiencing elevated levels of stress during the academic year. Additionally, undergraduate college students report stress as the greatest inhibitor to academic performance and the greatest health impediment during the academic year (American College Health Association, 2007). Nursing students report perceiving higher levels of stress than other students in conjunction with elevated external stressors, including increased clinical responsibilities and course requirements (Jimenez et al., 2010). Increased levels of stress may lead to poor academic performance, burn-out, and the development of inadequate coping mechanisms (Lewis & Shaw, 2007; Gibbons, 2010). Burn-out is defined as emotional exhaustion and diminished interest (Gibbons, 2010).

Stecker (2004) investigated stress levels among graduate school and professional students. Results indicated that nursing students reported higher levels of stress than pharmacy students, physical therapy students, and students in dentistry, medicine, and graduate school. Nursing students reported higher stress scores for academic and external stressors. Nursing students also reported higher overall levels of stress than professional students, medical students, and graduate students.

The nursing shortage has emphasized the need to prepare qualified nursing students to provide the best nursing care for patients. The nursing shortage is expected to increase as the baby boomer population ages, thus increasing the need for qualified health care employees (Lenburg, 2008). According to Lenburg (2008), the nursing shortage also impacts students, as they may have limited instruction within the clinical setting and fewer opportunities to practice clinical skills. Students may be unable to achieve clinical competencies because of the increased faculty-student ratio and limited time to strengthen clinical skills. Additionally, the healthcare environment is changing, as more complex and acutely-ill patients require nursing students to possess more theoretical knowledge and more refined clinical judgment skills than ever (Johnson, 1995; Forbes & Hickey, 2009). In the United States, to sit for the National Council Licensure Exam (NCLEX), students must complete a required amount of clinical hours and have documented proficiency levels as mandated by each state (Lenburg, 2008). Internationally, students must also demonstrate proficiency levels in core course areas, as well as complete a required number of clinical hours to obtain the registered nurse (RN) licensure (Gibbons et al., 2008; Chan, So, & Fong, 2009). Changes to nursing curricula result in more rigorous and

challenging courses and a more competitive and stressful learning environment for students (Gibbons et al., 2008).

Elevated levels of stress negatively impact the physical and psychological well-being of nursing students. Freeburn and Sinclair (2009) evaluated the impact of stress on nursing students through conducting in-depth interviews among nursing diploma students. Results suggested that stress experienced by nursing students led to an inability to function at an optimal level and inhibited growth and development. Participants reported that the stress caused them to feel indifference, helplessness, and as though they had lost control. In terms of cognitive effects, participants reported a decrease in focus and concentration during periods of stress. The stress also resulted in physiological discomfort, including weight changes, chest pain, fear, panic, nausea, and lack of sleep. The emotional effects of stress were reported as checking behaviors, crying, avoidance, withdrawal, and consumption of increased levels of alcohol.

In an effort to mitigate elevated levels of stress, nursing students may develop detrimental coping habits. Murdock, Naber, and Perlow (2010) surveyed 95 admitted baccalaureate nursing students to determine their stress level and stress management. Participants reported that they managed their stress through exercise, socializing, listening to music, smoking and drinking alcohol. Additionally, Freeburn and Sinclair (2009) evaluated coping mechanisms of nursing students. Participants reported utilizing negative coping mechanisms including denial, avoidance, internalizing feelings, and increased alcohol consumption. Students also reported feeling unable to cope with the stress and expressed difficulty admitting their inability to cope. Hegge and Larson (2008) also surveyed coping strategies of 137 nursing students enrolled in an accelerated baccalaureate program. Participants reported mental disengagement, alcohol and

drug disengagement, behavioral disengagement, and denial as coping strategies. Results further indicated that the utilization of denial and disengagement as coping strategies was an impediment to learning.

From the elevated levels of stress, nursing students may develop burn-out prior to the completion of the academic program. Gibbons (2010) evaluated stress, coping, and burn-out in 171 final year nursing students. Results suggested that as stress levels increased, emotional exhaustion and depersonalization increased and personal achievement decreased. Elevated stress levels positively correlated with increased levels of burn-out. The researcher divided the concept of burn-out into emotional exhaustion, depersonalization, and personal achievement. Results indicated that as stress levels increased, levels of emotional exhaustion and depersonalization also increased. Additionally, as stress levels increased, personal achievement decreased. Results indicated that elevated levels of stress lead to an increased chance of burn-out among the nursing student population.

Understanding the levels of stress, the causative factors, and the relationship to health within the undergraduate nursing student population is essential to the identification of lifestyle approaches to manage physiological and psychological health. Through further exploration of the role and impact of stress on the undergraduate nursing student population, efforts may be taken to identify methods to mitigate stress in an attempt to prevent negative effects from stress and maintain optimal health.

Purpose

The purpose of this integrative review of literature was to explore and critically analyze relevant literature regarding stress factors and the consequences of stress in nursing students.

Findings from this review of literature aimed to provide a better understanding of stress factors and the physical and psychological impact of stress on nursing students. Future research may evaluate means to reduce stress levels and mitigate stress in nursing students through targeting specific causative factors. Findings from this thesis also aimed to influence student management of stress.

Methods

A review of literature was completed to identify factors related to stress in nursing students. Information was collected from Cumulative Index to Nursing and Allied Health Literature, PsycINFO, and MEDLINE- EBSCOhost databases to explore what research has been conducted and to assess the current knowledge base. Current research and physiological textbooks were also examined to assess the mechanism of stress and the impact of stress on the body. Inclusion criteria for this thesis consisted of research focused on identifying factors related to stress in college level nursing students. Key words utilized during the literature search include stress and college level nursing students. Inclusion criteria for the review included studies published between 2002 and 2011. Exclusion criteria for the study included research focused on a population other college level nursing students and studies published before the year 2000. No age or other demographic factors were excluded from the literature review.

BACKGROUND

Stress is a complex process that may be initiated by the perception of any event or circumstance as a stressor (Lewis & Shaw, 2007). Selye labeled the physical response to stress as the general adaptation syndrome (GAS). Comprised of three stages, the GAS describes the body's complex response to an actual or perceived stressor. Within the alarm reaction stage, the individual perceives a stressor and initiates the "fight-or-flight" response. During this stage, the body increases secretion of corticosteroids, increases activity of the sympathetic nervous system, and increases norepinephrine production (Lewis & Shaw, 2007). Ideally, the individual quickly shifts from the alarm stage to the stage of resistance. The stage of resistance occurs as physiologic reserves are mobilized to increase the individual's resistance to the stressor. During this stage, the fight or flight response is deactivated, and the sympathetic nervous system activity returns to baseline. If the perceived stressor persists, the individual may reach a stage of exhaustion in which the individual loses the ability to resist the stressor (Lewis & Shaw, 2007). If stress continues and the adaptation is not successful, the excessive stress may impair the immune response or lead to heart or kidney failure (Forshee & McCance, 2008).

Physiologic and psychologic stress may manifest the stress response. Physiologic stress is defined as a change in the external environment or a change within the body that causes a chemical or physical disturbance within the cells which requires some sort of response to counteract the change (Forshee & McCance, 2008). Psychologic stressors may also activate the stress response. The central nervous system and endocrine system display sensitivity to emotional, psychologic, and social influences. This sensitivity suggests that the way an

individual thinks and feels about a stressor may produce the neuroendocrine response.

Psychologic stressors may lead to a reactive or anticipatory response. A reactive response to a stressor is a physiologic response that results from a psychologic stressor (Forshee & McCance, 2008). Although no physical stressor is present, the psychologic stressor elicits a reactive physiologic stress response. For example, stress from examinations may cause an individual to experience profuse sweating or an increased heart rate. Although no physical stressor is present in this situation, the psychological stress from the examination results in a physical response to the stress. An anticipatory response may occur as the body produces a physiologic response simply in anticipation of a disruption in homeostasis (Forshee & McCance, 2008). Anticipatory responses may result from fears or memories. The response may be a conditioned response, as the individual associates a specific stimulus with danger. Anticipating encounters with the stimuli may result in a physiologic stress response. For example, a man who is afraid of dogs may experience a physiologic stress response when he sees a dog on the street (Forshee & McCance, 2008).

During the stress response, the sympathetic nervous system is activated, releasing norepinephrine and stimulating the medulla of the adrenal gland to release catecholamines into the bloodstream. During the stress response, norepinephrine elevates blood pressure through constricting peripheral blood vessels (Forshee & McCance, 2008). Norepinephrine also has a role in dilating the pupils, causing piloerection, and increasing the action of the sweat glands in the armpits and palms. In response to a stressor, epinephrine is also released. Epinephrine has a greater impact on cardiac actions and metabolic regulation. The release of epinephrine during the stress response leads to bronchodilation, increased force and rate of cardiac contraction, and

increased lipolysis. Additionally, epinephrine acts on the liver to decrease glycogen synthesis, increase glycogenolysis, and increase gluconeogenesis to increase blood glucose levels (Forshee & McCance, 2008). Epinephrine also stimulates the pancreas to decrease insulin production, which decreases glucose uptake in skeletal muscle and adipose tissue, further increasing blood glucose levels. Catecholamines stimulate a massive systemic effect when released during the stress response (Forshee & McCance, 2008).

In addition to the release of catecholamines, the hypothalamic corticotrophin releasing hormone (CRH) stimulates the pituitary gland to release additional hormones, including antidiuretic hormone (ADH) and adrenocorticotrophic hormone (ACTH). ADH functions to stimulate water retention. ACTH stimulates the release of cortisol from the cortex of the adrenal gland. During the stress response, ACTH stimulates the adrenal cortex, increasing the adrenocortical secretion of glucocorticoid hormones (Forshee & McCance, 2008). Cortisol is secreted and functions to mobilize substances needed for cellular metabolism, as well as stimulates gluconeogenesis. Cortisol's action on carbohydrate metabolism lead to an increase in blood glucose levels, which energizes the body to fight off the stressor. Physiologic effects of cortisol are seen systemically during the stress response. Cortisol increases blood pressure and cardiac output, decreases luteinizing hormones, diminishes peripheral uptake and utilization of glucose, promotes lipolysis in adipose tissue, and decreases digestion (Forshee & McCance, 2008).

Excessive stress may have damaging effects on one's health. Stress may cause or worsen multiple diseases, including coronary artery disease, hypertension, inflammatory diseases, asthma, and lead to immunosuppression. An acute stress response activates the

sympathetic nervous system which leads to an increase in heart rate, respiratory rate, blood pressure, muscle tension, brain activity, and a decrease in skin temperature (Lewis & Shaw, 2007). Excessive or prolonged perception of a stressor may prolong the acute response and have detrimental effects on one's health. Prolonged perception of stress may affect cognitive function and lead to behavioral changes. Prolonged exposure to catecholamines released during activation of the sympathetic nervous system may also lead to an increased risk of cardiovascular diseases. Additionally, prolonged exposure to perceived stressors may result in stress-induced immunosuppression, in which the body's defenses can no longer meet the demands and the individual is at an increased risk for developing a stress related illness (Lewis & Shaw, 2007).

Literature indicates that stress negatively impacts an individual's health and well-being (Karademas, Karamavakalis, & Zarogiannos, 2009; Klainin, 2009; Dunser & Hasibeder, 2009). Karademas, Karamavakalis, and Zarogiannos (2009) evaluated the relationship between stress and the experience of chronic illness. Results indicated that stress experiences were associated with illness perceptions. Participants that reported elevated levels of stress also reported more adverse consequences of illness and feeling less control over the illness. Furthermore, Klainin (2009) evaluated the relationship between stress and health outcomes in female health care workers. Results indicated that stress from multiple sources, including occupations and family stress, had a significant impact on poor physical health and psychological distress. Among female healthcare workers, higher levels of stress were correlated with poor health and more reports of depression and anxiety. Dunser and Hasibede (2009) evaluated adverse effects of stress in critically ill patients in a review of literature. Results indicated that adrenergic stress may be more prominent in critically ill patients, and the elevated adrenergic stress levels may negatively

impact multiple organ systems, specifically the cardiovascular system. Implications indicated that steps must be taken to reduce endogenous adrenergic stress to prevent further complications in critically ill patients.

A number of research studies have focused on stress related factors within the nursing student population (Prymachuk & Richards, 2007; Murdock et al., 2010; Gibbons et al., 2008; Jimenez et al., 2010; Hegge & Larson, 2008). Evidence suggested that nursing students experience increased levels of stress, in relation to program stressors, during the academic year. Murdock et al. (2010) surveyed 95 admitted baccalaureate nursing students to determine their stress level. The mean stress level was 3.8 out of 5, with 5 being the highest reported level of stress, among the participants, and no significant difference in stress level was noted between semesters of educational experience. Gibbons, Dempster, and Moutray (2008) aimed to explore stress and coping among sixteen senior nursing students. The general themes of stressors identified among the students included their clinical experience, learning experience, and course structure. Additionally, research studies of Hegge and Larson (2008) reported that stressors included financial, personal, professional, and academic sources. Multiple factors appear to contribute to stress within the nursing student population.

FINDINGS

Many studies have evaluated common stress factors among nursing students and the psychological and physiological impact of stress on the nursing student population. A total of nineteen studies that met the inclusion criteria were used to determine factors associated with stress among nursing students and the impact of stress on the nursing student population. The literature review included journal articles published between 2002 and 2011. Articles reviewed included an international range of students and programs. Literature supported that multiple factors contribute to stress among nursing students. General themes noted within current literature indicate that stress arose from clinical aspects, academic aspects, and personal aspects associated with the nursing curriculum (Prymachuck & Richards, 2007; Sheu, Lin, & Hwang, 2002; Jimenez et al., 2010). Further analysis of the literature sought to determine the psychological and physiological impact of stress on nursing students (Gibbons, 2010; Rella, Winwood, & Lushington, 2008; O'Donnell, 2009).

Stress Factors

Clinical

Analysis of the literature revealed that clinical factors contributed to stress within the nursing student population. Prymachuk and Richards (2007) evaluated sources of stress within 990 nursing students enrolled at a large university in northern England. The study evaluated students in both diploma programs and degree-level studies in which the students could specialize in a preferred area of nursing. The students completed the Student Nurse Stress Index, General Health Questionnaire and Coping Inventory for Stressful Situations. Statistically

significant results were obtained for clinical concerns ($p = 0.031$). Among the students specializing in a children's track, 51.3% indicated that fear of carrying out a clinical procedure correctly was a stressor. Similarly, Sheu, Lin and Hwang (2002) examined perceived stress and the physio-psycho-social status of students during their initial period of clinical practice. The study evaluated 561 nursing students in a five year associate degree program in Taiwan. The participants had already completed their initial clinical practice. Results ranked the factors and the individual items of each scale based on the participants' responses. Stress from lack of professional knowledge and skills ranked number one among the most perceived factor stressors. Participants also reported unfamiliarity with medical history and terms, unfamiliarity with professional nursing skills, and unfamiliarity with patient diagnosis and treatment as perceived stressors. Stress from taking care of patients ranked as the second most perceived factor stressor. Within this factor, lack of experience and ability in providing nursing care and making judgments ranked as the number one most perceived stressor among the individual items within the scale.

Jimenez, Navia-Osorio, and Diaz (2010) investigated factors related to stress in 357 nursing students from a three year nursing diploma program at a Spanish nursing college. Items were ranked according to the level of perceived stress reported by the participants. Results suggest that nursing students report high levels of stress from clinical stressors rather than academic and other external stressors. Among the stress factors, stress from taking care of patients ranked as the number one perceived stressor. Additionally, participants indicated that the greatest perceived clinical stressor was 'seeing the pain and suffering of patients and relatives'. The most commonly perceived stressors were clinical stressors such as providing patient care,

lack of knowledge and skills within the clinical environment, and practical assignments and workload. Differential analysis among the three kinds of stressors indicated that students perceived clinical stressors as more intense than academic or external stressors ($p < 0.01$).

Sharif and Masoumi (2005) surveyed 90 baccalaureate nursing students utilizing a focus group to examine nursing student experiences of clinical practice. Of the 90 baccalaureate nursing students, 30 were in the second year, 30 were in the third year, and 30 were in the fourth year of the nursing program. Participants indicated that the clinical experiences were deemed stressful and anxiety producing. Among all students, qualitative results suggested that the initial clinical experience was a major source of stress. Participants indicated that the first month in clinical placement was the most stress producing. Further stress resulted from the fear of making mistakes in the clinical setting and being evaluated on their clinical skills during the initial clinical experience. Second year students indicated that stress resulted from concerns of harming patients during the clinical experience because of lack of knowledge. Fourth year students reported that their stress reduced as the training experience progressed, but indicated that the initial clinical experience was perceived as the most stressful clinical experience. Among all participants, the theory-practice gap was also a source of stress. Participants indicated that the lack of integration of theory into clinical practice was a stressor, as the differences between the actual behavior and expected behavior in the clinical setting created further conflict in the students. Students reported feeling stressed because they received instructions for procedures that differed from what they had learned in the classroom.

Chan, So, and Fong (2009) examined sources of stress within 205 Hong Kong baccalaureate nursing students. Participants completed a demographic survey, a Perceived Stress

Scale, a Physio-psycho-social Response scale, and a Coping Behavior Inventory. Items within the scale were ranked according to the level of perceived stress reported by the participants. Participants indicated that the number one perceived stressor resulted from lack of professional knowledge and skills during clinical rotations. Participants reported feeling stressed from being unfamiliar with medical terminology and being unfamiliar with diagnoses and treatments. The third most common perceived stressor was taking care of patients, and the fourth most common stressor was the clinical environment. Participants reported perceiving “moderate” levels of stress during clinical practice.

Gibbons et al. (2008) surveyed sources of stress among 16 final year United Kingdom students following the adult nursing branch. Focus group interviews evaluated sources of stress for the students. Participants reported that clinical experiences were a major source of stress. The clinical experience was defined as the activities that the students participated in to develop the clinical skills necessary for clinical placement. Participants reported that the difference between theory and practice was also a source of stress. Results suggested that students struggled from learning a skill in the classroom and then learning a different means to perform the skill in the clinical setting.

Weitzel and McCahon (2008) evaluated stressors and supports for baccalaureate nursing students completing an accelerated nursing program. The study evaluated stressors among 69 students in the last week of a four-semester accelerated baccalaureate program in the United States Midwest. Participants completed a survey created by the researchers that reflected various aspects of the educational experience. The scale utilized a five point Likert scale to indicate if each item was a stressor. Participants were also interviewed with open-ended questions

regarding stressors within the nursing program. Results indicated that 49% of the interviewees reported not enough clinical experience as a major stressor. Participants also reported that they did not feel as though they had enough time in the clinical setting during the accelerated nursing program.

Gorostidi et al. (2006) evaluated stress sources among nursing students through implementing a cohort study utilizing students registered for their first year at San Sebastian Nursing School in Spain. San Sebastian utilizes a three year program in which the students graduate with a university degree in general nursing. Recruitment yielded 69 students, and the participants were tested at four different points in the program, before the beginning of the program, at the end of the first year, at the end of the second year, and at the completion of the program. Participants completed the KEZKAK, a bilingual questionnaire to assess nursing students' stressors in clinical practice, and the State Trait Anxiety Inventory throughout the course of the study. Results indicated that lack of competence in the clinical setting (23.2%) and uncertainty and impotence (21.2%) were major stressors before the beginning of the nursing curriculum. At the completion of the program, the students reported that lack of competence (18.6%) and uncertainty and impotence (18.1%) in the clinical setting remained the major stressors. Participants reported that the fear of mixing up medication was a major stressor prior to the beginning of the program ($p < 0.05$) and at the completion of the program ($p < 0.01$). Results further indicated that the factors that were identified as most stressful at the beginning of the program were also identified as most stressful at the end of the program.

Edwards, Burnard, Bennett, and Hebden (2010) examined stress and self-esteem in student nurses. The study surveyed 169 students enrolled in nursing program in the United

Kingdom. Participants completed the Stress in Nurse Education Questionnaire and the Culture Free Self-Esteem Inventory at various points in the program. Participants were assessed after two clinical placements, at the beginning of the second year, after five clinical placements, at the beginning of the third year, and at the end of the third year on the last day of the term after exam results had been released. Items were ranked according to the level of perceived stress reported by the participants. Participants reported that, after two clinical placements, stress evolved from clinical factors, specifically the fear of making a mistake when caring for a patient and watching patients suffer. Both aspects persisted during the course of study as major stressors. At the completion of the program, the sources of stress remained the same, as participants reported stress from clinical factors, specifically from fear of making a mistake when caring for a patient and watching a patient suffer. Levels of stress associated with the clinical setting varied throughout the program. At the completion of the program, perceived stress from clinical sources increased.

Academic

Analysis of the literature indicated that academic factors also contributed to stress within the nursing student population. Pryjmachuk and Richards (2007) evaluated sources of stress within 990 pre-registration nursing students. Statistically significant results indicated that academic load ($p < 0.001$) was a stressor among all branches of the nursing students. Among the participants, 67.3% reported examinations/assessments as a major stressor. Additionally, 57.5% reported fear of failing the course as a major stressor. Results from additional studies further supported the notion that academic factors led to stress within the nursing student population. Hegge and Larson (2008) surveyed 137 accelerated nursing students enrolled in the last 12

weeks of three public and three private university nursing programs. The most frequently indentified major stressor was amount of material to be mastered in a short time frame, as reported by 45.3% of participants.

Gibbons et al. (2008) surveyed sources of stress among 16 final year United Kingdom students following the adult nursing branch. Focus group interviews evaluated sources of stress for the students. Qualitative results revealed that the learning and teaching experience was deemed a source of stress for the participants. Participants reported that classes were poorly structured and teaching styles did not facilitate learning. Course structure was also indicated as a source of stress. Participants reported that many of the courses were disorganized and that key information was not clearly communicated to the students. Within course structure, the pace and intensity of the course was also deemed overwhelming. The demands of the course led to elevated levels of stress during the academic period. Participants also reported that they were unable to cope with the demands of the nursing curriculum.

Weitzel and McCahon (2008) evaluated stressors and supports for baccalaureate nursing students completing an accelerated nursing program. The study evaluated stressors among 69 students in the last week of a four-semester accelerated baccalaureate program in the United States Midwest. Participants completed a survey created by the researchers that reflected various aspects of the educational experience. The scale utilized a five point Likert scale to indicate if each item was a stressor. Participants were also interviewed with open-ended questions regarding stressors within the nursing program. Results indicated that 74% of the participants stated that the pace of the program was a major stressor. Results suggested that major stressors also included group assignments (62%), number of reading assignments (74%), and number of

projects (65%). Of the 51 student interviewed, 30 reported that the required paperwork was too much, and 30 of the students reported that the workload was too heavy.

Omigbodun et al. (2006) examined stressors and psychological symptoms in students of medicine and allied health professions in Nigeria. Students pursuing a degree in medicine, dentistry, physiotherapy, and nursing were recruited for the study. Recruitment yielded 155 nursing and physiotherapy students. Self-report questionnaires created by the researchers were utilized that assess perceived stressful factors, counseling needs, and desired facilities for counseling. Participants also completed the General Health Questionnaire. For ease of analysis, the nursing students and physiotherapy students were combined as one group, as the nursing and physiotherapy students had a similar schedule during the semester system. The most common stressors identified by the students included excessive school work (31.6%). Further statistical analyses indicated that excessive schoolwork was associated with mental distress ($p < 0.001$).

Edwards et al. (2010) examined stress and self-esteem in student nurses. Items within the scales were ranked according to the level of perceived stress reported by the participants. Participants indicated that perceived stress arose from academic sources. Results indicated that sitting for examinations, continuous pressure to meet deadlines for assessments, and the amount of academic work necessary for the program were major stressors at the beginning of the program following two clinical rotations. Stressors remained consistent throughout the program, as participants reported that major stressors arose from sitting for examinations and the amount of academic work necessary for the program at the completion of the program. Results for stress across time indicated that stress associated with the academic factors did not decrease as the

students progressed through the program. At the completion of the program, participants indicated that perceived stress from academic sources increased.

Sheu, Lin and Hwang (2002) examined perceived stress and physio-psycho-social status of students during their initial period of clinical practice. The study evaluated 561 nursing students in a five year associate degree program in Taiwan. The participants had already completed their initial clinical practice at the time of the study. Results ranked the factors and scale items according to participant responses. Stress from assignments and workload ranked as the third most perceived stressor among the participants. Within this factor, worrying about bad grades was the most prominent perceived stressor among participants. Participants also reported the discrepancy between theory and practice was another source of stress.

Personal

Further review of the literature indicated that personal factors also contributed to stress within the nursing student population. Pryjmachuk and Richards (2007) evaluated sources of stress within 990 pre-registration nursing. Among the participants, 56.6% indicated that managing finances was a stressor. Research studies of Hegge and Larson (2008) surveyed 137 accelerated nursing students enrolled in the last 12 weeks of an accelerated nursing program at three public and three private universities. Results suggested that the stress experienced during the nursing program far exceeded previous experiences with stress. Participants reported that the emotional response to the program was the main cause for elevated levels of stress during the nursing program. The second most stressful item was personal and family life issues, as reported by 27.7% of participants.

Gibbons et al. (2008) surveyed sources of stress among 16 final year United Kingdom students following the adult nursing branch. Focus group interviews evaluated sources of stress for the students. Qualitative analysis indicated that participants reported time management as a source of stress, as they had difficulty balancing the day to day demands of clinical assignments and the educational workload. Many of the participants also indicated that they needed to work part time to cover living expenses. The added pressure of managing time between classes, clinical, and the part-time job was deemed another source of stress.

Furthermore, Omigbodun et al. (2006) examined stressors and psychological symptoms in students of medicine and allied health professions in Nigeria. Results suggested that financial problems (39.4%) and lack of holidays (23.2%) were deemed major sources of stress by the students. Additionally, Gorostidi et al. (2006) evaluated stress sources among nursing students through implementing a cohort study utilizing students registered for their first year at San Sebastian Nursing School in Spain. Results ranked the factors and the individual items based on the participants' responses. After two clinical placements, participants indicated that major sources of stress arose from emotional involvement in patient care, contact with suffering, and lack of control in relationships with patients. At the completion of the program, participants reported that personal stressors were still associated with emotional involvement in patient care, contact with suffering, and lack of control in relationships with patients. Participants were questioned about their sources of stress throughout the program, and the personal stressors persisted throughout the program.

Impact of Stress

Academic

Two studies evaluated the impact of stress on academic performance among nursing students (Kernan & Wheat, 2008; Goff, 2011). Kernan and Wheat (2008) evaluated the academic impact of various health issues on nursing students. A sample of 198 nursing students enrolled in Columbia University's School of Nursing participated in the study. Participants completed the National College Health Assessment. Students reported stress as the most often experienced health related impediment to academic performance (23.1%). Results suggested that 28.5% of students indicated that stress was the greatest perceived academic threat. Results further indicated that stress is a major factor in poor academic performance among nursing students.

Goff (2011) evaluated the impact of stress on academic performance in baccalaureate nursing students. A convenience sample of 53 students enrolled at different levels of the nursing program at a large university in the southeastern United States participated in the study. Participants completed the Student-life Stress Inventory, Self-Control Scale, and provided their previous semester grade point average (GPA) as part of a demographic data sheet. A cross-sectional study design was utilized. Self-reported grade point averages from the semester prior to the study ranged from 2.29 to 4.0 among the participants. Results indicated a positive, but not statistically significant, correlation between stress and academic performance ($p = .955$). Further analysis indicated that no apparent linear relationship appeared to exist between stressors and academic performance among nursing students.

Personal Well-Being

Further analysis of the literature revealed that stress negatively impacted the personal well-being of nursing students. Watson, Deary, Thompson, and Li (2008) investigated the impact of stress on nursing students in Hong Kong. The study followed a cohort of nursing students from entry into the program to the end of the first year of a university program in Hong Kong. A sample of 147 nursing students completed the study. Participants were pre-tested and post-tested during two different points in the program, first at the start of the program and then seven months later. At the start of the program, the participants were tested with the NEO Five Factor Inventory, the Coping Inventory for Stressful Situations, the General Health Questionnaire – 12, the Stress in Nursing Students Scale, and the Maslach Burnout Inventory. Seven months later, the participants were pre-tested and post-tested with the General Health Questionnaire-12, the Maslach Burnout Inventory, and the Stress in Nursing Students Scale. Results indicated that stress levels and psychological morbidity increased over time. Elevated levels of stress were also strongly correlated with emotional exhaustion during the first round of testing and the second round of testing ($p < 0.01$). Results also indicated that participants that reported using emotion-oriented coping during the beginning of the program also reported higher levels of stress and burn-out than other students.

Freeburn and Sinclair (2009) evaluated the impact of stress on nursing students. In-depth interviews using open ended questions were conducted among five nursing students enrolled in a diploma program in Ireland. Themes identified from the interviews included effects of stress, ability to move beyond stress, influence on life, and constraints and demands. Results suggested that stress experienced by nursing students negatively impacted the students, led to an inability to

function at an optimal level, and inhibited growth and development. Participants reported that the stress caused them to feel indifferent, helpless, and as though they had lost control over their lives. Participants also reported a decrease in focus and concentration during periods of stress. The stress resulted in physiological discomfort, including weight changes, chest pain, fear, panic, nausea, and lack of sleep, and signs of exhaustion. The emotional effects of stress were reported as checking behaviors, crying, avoidance, and withdrawal. Participants reported utilizing negative coping mechanisms including denial, avoidance, internalizing feelings, and increased alcohol consumption. Students also reported feeling unable to cope with the stress and had difficulty admitting the inability to cope.

Edwards et al. (2010) examined stress and self-esteem in student nurses. The study surveyed 169 students throughout the course of their curriculum. Participants completed the Stress in Nurse Education questionnaire and the Culture Free Self-esteem Inventory at various points in the program. Participants were assessed after two clinical placements, at the beginning of the second year, after five clinical placements, at the beginning of the third year, and at the end of the third year on the last day of the term after exam results had been released. Participants indicated that perceived stress levels were the highest at the beginning of the third year of study. Results indicated a statistically significant negative relationship between overall stress scores and self-esteem during the first testing session ($p < 0.05$), the third testing session ($p < 0.05$), and the fourth testing session ($p < 0.05$). Results indicated that students reported lower levels of general self-esteem at the end of the training in comparison with the beginning of the training. General self-esteem was defined as the individuals' overall perception of their own self worth. Results suggested that individuals with higher stress levels reported lower levels of self-esteem.

Gibbons (2010) evaluated the relationship between sources of stress, coping mechanisms, and psychological burn-out in nursing students. Results indicated that avoidance coping mechanisms displayed an inverse relationship with self-efficacy. As avoidance coping mechanisms increased, reports of self-efficacy decreased. Avoidance coping also displayed a positive relationship with emotional exhaustion. As the use of avoidance coping increased, reports of emotional exhaustion also increased. Results further indicated that as stress levels increased, levels of emotional exhaustion and depersonalization also increased.

Sheu et al. (2002) examined perceived stress and physio-psycho-social status of students during their initial period of clinical practice. The study evaluated 561 nursing students in a five year associate degree program in Taiwan. The participants had already completed their initial clinical practice at the time of the study. Results ranked individual items within the scale. Participants reported that the most frequently used coping behavior was to cry, feel sad, feel moody, and feel helpless. A multiple regression analysis indicated that avoidance behavior had a negative effect on the students' physio-psycho-social status ($p < 0.05$).

Gibbons, Dempster, and Moutray (2009) developed and validated the Index of Sources of Stress in Nursing Students to evaluate sources of stress within nursing students. A convenience sample of 120 final year nursing degree students participated in the study. Participants completed the Index of Sources of Stress in Nursing Students, the General Health Questionnaire, the Emotional Exhaustion Scale, and the Marlowe-Crowne Social Desirability Scale. Statistically significant correlations were noted between learning and teaching and the general health questionnaire ($p < 0.01$) and course organization and the general health questionnaire ($p < 0.01$). As reported perceived demands from the program increased, scores on the General Health

Questionnaire also increased. Additionally, statistically significant correlations were noted between emotional exhaustion and learning and teaching ($p < 0.01$), placement-related stressors ($p < 0.01$), and course organization ($p < 0.01$). Results also indicated that the risk of developing a transitory stress-related illness was 60% among the participants in relation to the learning and teaching demands associated with the nursing program.

Jimenez et al. (2010) investigated the impact of stress on nursing students enrolled in a three-year nursing program. Participants completed the Biopsychosocial Response Scale which indicated symptoms that related to the student's physical, psychological, and social health during the nursing program. Results ranked the individual items based on the participants' responses. Results indicated that first year students reported being generally healthy during the program. The most common reported symptoms were feeling worried and nervous, feeling pessimistic about the future, and experiencing episodes of nervousness and anxiety. Participants indicated that the most common responses to stress were psychological symptoms. Physiological symptoms were reported less frequently. Second year students reported poorer health and more psychic anxiety than first year and third year students. Among all of the participants, psychological responses to stress were reported more frequently than physiological responses.

Hegge and Larson (2008) surveyed coping strategies of 137 nursing students enrolled in an accelerated baccalaureate program. Results ranked the individual items based on the participants' responses. Participants reported mental disengagement, alcohol and drug disengagement, behavioral disengagement, and denial as the most frequently used negative coping strategies. Results further indicated that the utilization of denial and disengagement as coping strategies was a hindrance to learning.

Burn-out

Analysis of the literature suggested that elevated levels of stress contributed to burn-out among nursing students prior to the completion of the program. Gibbons (2010) evaluated the relationship between sources of stress, coping mechanisms, and psychological burn-out in nursing students. A convenience sample of 171 final year nursing students participated in the study. Participants completed the Index of Sources of Stress in Nursing Students, the Generalized Self-Efficacy Scale, the Maslach Burn-out inventory, the Brief COPE and the Marlowe-Crowne Social Desirability form. Burn-out among students was defined as a combination of three components, emotional exhaustion, depersonalization, and personal achievement. Results indicated that as stress levels increased, levels emotional exhaustion and depersonalization increased, whereas personal achievement decreased. Results revealed that elevated levels of stress led to an increased chance of burn-out among the nursing student population.

Rella, Winwood, and Lushington (2008) investigated the fatigue experience of Australian nursing students. A cross-sectional questionnaire study design evaluated symptoms of burn-out among nursing students enrolled in a three year Bachelor of Nursing program at a large university in Australia. The aim of the study was to investigate the evolution of maladaptive levels of chronic fatigue among nursing students. Participants completed the Occupational Fatigue Exhaustion Recovery Scale, the Nottingham Health Profile, and a Work Demands Questionnaire. Responses were collected from students at different points of study. First year students had not been involved in clinical work at the time of the study. Second and third year students had completed clinical work at the time of the study. Results indicated that levels of

maladaptive fatigue and poor recovery increased as students progressed through the program. Third year students reported higher levels of fatigue (22%) than first year students (15%). Participants also reported that the nursing program did not adequately prepare them to cope with the demands of nursing. Results suggested that a significant proportion of nursing graduates report completing their university training in a very fatigued state.

O'Donnell (2009) evaluated the emotional impact of the nursing student's decision to voluntarily withdraw from pre-registration nursing programs. A case study design was utilized to explore reasons for voluntary withdrawal among students enrolled in a School of Nursing and Midwifery. Semi-structured interviews were completed with fifteen students who had previously withdrawn from a pre-registration nursing program. Within the interview, the student was asked questions that reflected the conceptual explanation for voluntary withdrawal from the program. Participants reported that the academic demands of pre-registration nursing programs were excessive and had a negative effect on their health and well-being. Factors influencing withdrawal included feeling unable to cope with the stress to the point of becoming physically ill. Participants indicated that they chose to withdraw after realizing that the course demands would increase if they continued with the program and that their current coping difficulties would only be exacerbated if they continued with the program. Results indicated that several participants reported choosing to leave after academic adjustment difficulties resulted in the loss of relationships with loved ones. Participants reported that the academic demands also negatively affected their relationships with others. Stress from the demands of the curriculum lead to withdrawal from the program and feelings of personal failure and lowered self-esteem.

DISCUSSION

The purpose of this review of literature was to explore and evaluate current literature investigating factors related to stress in nursing students and the psychological and physiological impact of stress on the nursing student population. Analysis of the literature suggested that nursing students experienced more stress than undergraduate students, graduate students, and medical students (Jimenez et al., 2010; Stecker, 2004). The studies did not discuss the reasons for the higher rankings of stress, however, reasons may lie in the experiences and perceived maturity of different levels of students and the clinical experiences within the various disciplines. Findings from this review of literature indicated that multiple factors are related to stress among nursing students, specifically clinical, academic, and personal factors. Further analysis indicated that stress may lead to poor academic performance and led to the development of negative coping strategies, poor psychological health, and burn-out among nursing students. Gaps in the literature were noted among the relationship between stress and health and stress and academic performance of nursing students.

Programs that prepare students for the registered nurse licensure differ between countries. In the United States, multiple degree programs prepare students to take the NCLEX and obtain a license as a registered nurse, through creating a curriculum that provides core knowledge and a pre-determined number of clinical hours mandated by each state (Lenburg, 2008). Internationally, students must also demonstrate proficiency levels in core course areas, as well as complete a required number of clinical hours. Each country has a system of licensure for professional nursing based on a core curriculum standard (Gibbons et al., 2008; Chan, So, &

Fong, 2009). Interestingly, students from each type of degree program reported that stress was mainly attributed to three categories: clinical, academic, and personal (Prymachuk & Richards, 2007; Sheu et al., 2002; Jimenez et al., 2010). Furthermore, analysis of the literature indicated that the elevated stress levels negatively impacted the students' academic performance, personal well-being, and led to burn-out within the different types of nursing programs (O'Donnell, 2009; Gibbons, 2010; Kernan & Wheat, 2008).

Stress Factors

Clinical

Although the studies analyzed different nursing populations, results indicated that clinical factors were deemed a major source of stress among nursing students. Findings suggested that the clinical setting itself was a major source of stress (Gibbons, 2010; Hegge & Larson, 2008; Prymachuk & Richards, 2007). Interestingly, Prymachuk and Richards (2007) compared nursing specialty branches, and, among the children's specialty branch, participants indicated that the clinical setting was a major source of stress. This study was the only study to evaluate a program that offered the option to specialize (Prymachuk & Richards, 2007). Findings also suggested that perceived stress from clinical obligations persisted as a source of stress during all years of study (Gibbons, 2010; Hegge & Larson, 2008). Nursing students reported feeling incompetent and as though they lacked the professional nursing skills and knowledge necessary to care for patients (Sharif & Masoumi, 2005; Weitzel & MaCahon, 2008; Sheu et al., 2002). The pace and intensity of the clinical setting also resulted in stress among nursing students (Gibbons et al., 2008). Although the clinical setting was noted as a source of stress, many students, particularly accelerated nursing students, reported perceiving stress from a lack of

clinical experience (Weitzel & MaCahon, 2008). Within the clinical setting, the theory-practice gap was identified as another source of stress was (Sharif & Masoumi, 2005; Chan et al., 2009). Students reported feeling stressed because they received instructions for procedures in the clinical setting that differed from what they had learned in the classroom (Sharif & Masoumi, 2005). Studies suggested that integration of theory and practice may lessen the stressful impact of the clinical environment on nursing students (Sharif & Masoumi, 2005; Chan et al., 2009).

Interestingly, reports of stress from clinical settings varied depending on the year of the nursing program that the students were enrolled. According to Sharif and Masoumi (2005), second year students reported higher levels of stress than third and fourth year students. Another study, however, suggested that levels of self reported stress were at the highest during the third year of the nursing program (Edwards et al., 2010). A general theme noted within the literature indicated that nursing students reported that the initial clinical experience was a major source of stress (Sharif & Masoumi, 2005; Gibbons et al., 2008). First year students reported perceiving that mature students were more readily accepted during clinical rotations, which made the initial experience more stressful, as the students had a more difficult time fitting in with the staff. Students also perceived that upper level students possessed more knowledge and better communication skills in the clinical setting (Gibbons et al., 2008). Furthermore, the initial clinical rotation resulted in stress as students felt that they did not possess adequate knowledge and skills to properly care for patients and assume the role of nurse (Sheu et al., 2002).

Although the perceived levels of stress fluctuated during each year of the nursing program, analysis of the literature indicated that stress from clinical sources persisted throughout the nursing program (Gorostidi et al., 2006; Edwards et al., 2010). Participants indicated that

clinical rotations were a major source of stress throughout the nursing program. According to Edwards et al. (2010), stress levels decreased only after the students completed the program and were in the process of applying for jobs. Nursing students indicated that clinical requirements were a major source of stress throughout the program, but the levels of stress did not decrease while the students were enrolled in the program (Edwards et al., 2010; Gorostidi et al., 2007). Nursing students reported having a difficult time transitioning from the role of student to nurse in the clinical setting (Sheu et al., 2002). Conversely, research indicated that the perceived level of stress resulting from clinical factors declined as students progressed through the program (Gorostidi et al., 2006). Although the perceived stress levels declined throughout the program, clinical factors were reported as a major source of stress at the beginning of the program and also at the end of the program (Gorostidi et al., 2006).

With the increase of more complex and acutely ill patients, the nursing curriculum must change to provide students with more refined clinical judgment skills than ever (Johnson, 1995; Forbes & Hickey, 2009). The change, coupled with the potential of limited clinical instructors to provide students with time during clinical to refine skills, could further assist in explaining the recognition of the clinical setting as a major source of stress for students (Lenburg, 2008; Prymachuk and Richards, 2007).

Academic

Analysis of the literature indicated that the academic factor of nursing school was another major source of stress. Although the research investigated different nursing populations, the results indicated that students reported academics as a major stressor (Prymachuk & Richards, 2007; Chan et al., 2009; Hegge & Larson, 2008). Such results were contributed to the

academically intense aspect of nursing school. Though different programs exist that lead to the same registered nurse licensure, the academic components of these degrees are similar, in that they must cover specific core competencies to prepare students for a licensure examination (Lenburg, 2008; Gibbons et al., 2008; Chan et al., 2009). The increase of technology and patient health acuity challenges the nursing curriculum to maintain currency and relevancy in the foundation of theoretical knowledge and clinical judgment skills. Students are exposed to both acutely ill patients and chronically ill patients, and the students must be knowledgeable and competent in providing care for both types of patients (Johnson, 1995; Forbes & Hickey, 2009). Curriculum changes have resulted in more rigorous and challenging courses, further contributing to stress from academic factors (Gibbons et al., 2009).

Multiple aspects of academia were related to stress among nursing students. Students specifically perceived stress from examinations, assessments, and fear of failing a course (Prymachuk & Richards, 2007; Weitzel & McCahon, 2008; Sheu et al., 2002). Students perceived stress from assignments and the overall workload associated with the curriculum (Chan et al., 2009; Weitzel & McCahon, 2008; Omigbodun et al., 2006; Sheu et al., 2002). Stress also arose from the pace of the program, time constraints associated with the program, and changing course demands (Gibbons et al., 2008; Weitzel & McCahon, 2008). Furthermore, the amount of material to be mastered in a short time frame resulted in stress among the nursing students (Hegge & Larson, 2008). Such findings were related to the rigorous curriculum that baccalaureate nursing students are required to complete (Lenburg, 2008; Chan et al., 2009; Watson et al., 2008). Stress from the academic component left nursing students feeling little sense of control over their studies (Gibbons et al., 2008). The theory-practice gap was also

reported as an academic stressor, as nursing students indicated that the content learned in the classroom and the performance of the skill in the field were not cohesive (Sheu et al., 2002).

Stress levels from academic factors increased throughout the program, whereas other perceptions of stress decreased throughout the program (Omigbodun et al., 2006; Edwards et al., 2010). At the completion of the program, the perceived stress from academics was reported to increase (Edwards et al., 2010). Such results indicated that the academic component of the nursing program remained challenging throughout the nursing program, whereas perceived stress from clinical demands varied throughout the program as a result of students' gaining more knowledge and clinical experience as they progressed through the program (Gorostidi et al., 2006; Omigbodun et al., 2006; Edwards et al., 2010).

Personal

Personal factors further contributed to stress associated with the nursing program. Financial constraints were listed as a major source of stress (Gibbons et al., 2008; Hegge & Larson, 2008; Omigbodun et al., 2006). In light of financial concerns, many students needed to seek part-time employment, which added additional time management pressures (Gibbons et al., 2008; Gorostidi et al., 2006; Hegge & Larson, 2008). Family issues also presented as a personal source of stress among nursing students (Hegge & Larson, 2008). Additionally, forming relationships with patients contributed to stress among nursing students. Students feared emotional involvement, contact with suffering, and lack of control in relationships with patients (Gorostidi et al., 2006; Hegge & Larson, 2008). Personal stressors persisted throughout the course of the program, however, the intensity of stressors declined from the beginning of the program to the end of the program (Gorostidi et al., 2006). Findings suggested that the

experience with personal stressors decreased the intensity in which the students perceived stress from personal sources (Gorostidi et al., 2006). Furthermore, not all students experienced the same personal stressors, as not all students had the same financial burdens or family responsibilities.

Impact of Stress

Academic

Findings suggested that stress perceived from the nursing program negatively impacted academic performance, however, the relationship between stress and academic performance remained inconclusive. According to Kernan and Wheat (2008), participants reported feeling as though their stress levels were closely tied to their academic performance. Students also reported that stress most often negatively impacted their academic performance. Stress was ranked the number one most experienced health related impediment to academic performance. Stress was also the most frequently reported health related concern that had a threatening impact on academic performance. Goff (2011) investigated the relationship between stress and academic performance utilizing a self-reported grade point average from the previous semester. Findings suggested that no definitive relationship could be noted between levels of stress and academic performance. As the results are inconclusive, additional research is necessary to understand the relationship between stress and academic performance among nursing students. Utilizing a more objective measure, such as grade-point average throughout the nursing program, may better evaluate the impact of stress on academic performance (Kernan & Wheat, 2008). Although the students' perception of their own academic progress is important to note, utilizing a self-report as the sole measure of the impact of stress on academic performance leads to less

definitive results. A more objective measure may be combined with the self-report for a more accurate reflection of the impact on academic performance (Kernan & Wheat, 2008; Goff, 2011).

Personal Well-Being

Elevated levels of stress resulted in poor physiological and psychological health among nursing students. Stress resulted in physiological discomfort, such as weight changes, chest pain, fear, panic, nausea, and signs of exhaustion (Freeburn & Sinclair, 2009). Second year nursing students reported poorer health, including more somatic anxiety and more psychic anxiety than other levels of nursing students (Jimenez et al., 2010). Analysis of the findings suggested that second year students were assigned a heavier workload or perceived that they had a heavier workload. Professional demands also became greater with experience, as students were given more responsibility and knowledge as they progressed through the curriculum. Second year students reported feeling as though they were in limbo between being novice first year students and experienced third year students (Jimenez et al., 2010). Such findings were noteworthy, as they detected the most vulnerable point of the nursing program. Students reported that the perceived stress affected them more psychologically than physiologically. Although the physiologic impact of stress was not heavily indicated, the psychological impact was perceived as particularly damaging to the student's personal well-being. Providing this information to teachers and supervisors would allow them to pay more attention to the academic and clinical performance of students during more stressful stages of the program in an effort to identify factors that may determine the student's bio-psycho-social response to stress (Jimenez et al., 2010).

Stress negatively impacted self-esteem in nursing students. The inverse relationship between stress and self esteem strengthened throughout the program. Students that reported higher levels of stress reported lower levels of self-esteem throughout the program (Edwards et al., 2010). Results indicated that reported self-esteem levels were the lowest at the end of the program, after the students had taken their last exam and knew the outcome (Edwards et al., 2010). Further research is needed to evaluate the reasons for the lowered self-esteem during the nursing program and following the completion of the program.

Elevated levels of stress also led to the development of negative coping strategies as a means to deal with the extensive stress associated with the nursing program. Nursing students reported using denial, alcohol or drug use, and mental disengagement as coping strategies (Hegge & Larson, 2008; Gibbons, 2010; Freeburn & Sinclair, 2009). Utilizing negative coping strategies negatively impacted learning (Hegge & Larson, 2008). Social behavioral and emotional responses were the most frequently used ineffective means of coping, including crying, feeling sad, feeling moody, and feeling helpless (Sheu et al., 2002). Emotion-oriented coping skills negatively impacted nursing students, as students that utilized emotion-oriented coping strategies reported higher levels of stress and higher burn-out rates than other students (Watson et al., 2008). Students also reported utilizing avoidance behaviors as a means of coping with the increased stress levels experienced during the program. Avoidance behaviors were defined as avoiding difficult situations in clinical practice, avoiding teachers, students quarreling and losing their tempers, expecting others to solve problems, and expecting miracles to happen that would prevent the student from having to face the perceived difficulty (Sheu et al., 2002). Utilizing avoidance behaviors as a coping mechanism negatively impacted the students' physio-

psycho-social status, health, and performance during the nursing program (Sheu et al., 2002; Gibbons, 2010; Hegge & Larson, 2008).

Dimensions of stress became more strongly positively correlated with emotional exhaustion as students progressed through the nursing program. Also, stress levels and psychological morbidity increased throughout the nursing program (Watson et al., 2008). Such findings suggested that the students' perception of stress increased as they progressed through the program, and the increased stress levels resulted in psychological morbidity and burn-out prior to the completion of the program (Watson et al., 2008; Gibbons, 2010). As stress levels increased, emotional exhaustion and depersonalization among the students also increased. Conversely, personal achievement decreased with the increase in stress levels (Gibbons, 2010). Students that reported alcohol and drug use as a means of coping also reported higher levels of emotional exhaustion. Utilizing negative coping mechanisms to deal with stress resulted in emotional exhaustion, depersonalization, and a decrease in personal achievement (Gibbons, 2010).

Burn-out

Elevated levels of stress contributed to burn-out among nursing students before the completion of the nursing program. Findings indicated that higher levels of stress were a strong predictor of burn-out. Burn-out resulted from distress, which arose from the elevated levels of stress and the use of ineffective coping strategies (Gibbons, 2010). Combining elevated levels of stress with poor coping mechanisms also resulted in a stronger predictor of burn-out among nursing students. Avoidance coping was the strongest predictor of burn-out identified, even if the coping mechanism was utilized intermittently throughout the program. Elevated stress alone

and in combination with inadequate coping mechanisms resulted in higher burn-out rates among nursing students (Gibbons, 2010).

Nursing students have the risk of developing burn-out at various times in the program. Not one particular point in the program appeared to cause burn-out (Gibbons, 2010). Maladaptive fatigue and poor recovery increased as students progressed through the nursing program, placing them at a higher risk for burn-out than other students (Rella et al., 2008). Participants reported that fatigue increased as they progressed through the program because they felt unable to adequately cope with the stressors and demands of the nursing program. Findings revealed that emotional health was a major predictor of maladaptive fatigue, poor recovery, and poor sleep health. Students who experienced poor emotional health as a result of the elevated stress levels also experienced extreme fatigue with limited recovery and poor sleep health (Rella et al., 2008). In students that chose to withdraw from the nursing program, the inability to recover from the fatigue was a major factor in the student's decision (Rella et al., 2008). Interestingly, findings suggested that students with previous experience in nursing displayed no difference in fatigue levels than students that did not have previous nursing experience. This result suggested that both groups were equally unprepared for the strains of the nursing program and that both groups had the same chance of developing chronic fatigue from the stress. Shockingly, a significant proportion of the students reported reaching the end of the program in a dangerously fatigued state from which they were unsure if they could recover (Rella et al., 2008). Nursing programs include an environment of increased and persisting stress levels that increase the potential for maladaptive health outcomes, including burn-out and withdrawal from the program.

Students that chose to withdraw from the program experienced considerable emotional distress prior to making the decision. Participants reported experiencing anger and frustration when making the decision to withdraw and also felt as though they were unable to meet the demands of the program (O'Donnell, 2009). Withdrawal from the program led to feelings of personal failure. Stress from the program directly impacted the student's decision to withdraw. Nursing students reported that the excessive demands of the nursing program negatively impacted their health and well-being, ultimately leading to the decision to withdraw from the program in an effort to restore optimum well-being (O'Donnell, 2009). Feeling unable to cope with the demands and becoming physically ill from the elevated stress levels also led to the decision to withdraw from the program. Stress associated with nursing programs negatively impacted the health of students and ultimately led to their withdrawal from the program (O'Donnell, 2009).

Findings indicated that stressors are present within the nursing student population. Research suggested that clinical, academic, and personal factors contributed to stress among the nursing student population. Studies also indicated that stress had a negative impact on the nursing student population. Stress associated with the program negatively impacted academic performance, the personal well-being of the student, and led to burn-out prior to completion of the program.

LIMITATIONS

Limitations were present within the literature review. International studies were utilized that evaluated various types of nursing programs. Studies investigated diploma programs, accelerated nursing programs, and bachelor-degree programs within different countries (Hegge & Larson, 2008; Gibbons et al., 2008; Jimenez et al., 2010; Pryjmachuk & Richards, 2007). For example, one study evaluated students enrolled in a three year Bachelor of Nursing program in Australia, whereas another study surveyed nursing students enrolled in an accelerated degree program in the United States (Rella et al., 2008; Hegge & Larson, 2008). Studies also focused on nursing students in different countries. One study evaluated nursing students in the United Kingdom, whereas another study chose a sample from a nursing program the United States Midwest (Gibbons, 2010; Weitzel & Macahon, 2008). Studies conducting in various countries and utilizing different types of nursing programs were specifically chosen and evaluated to determine if the stressors differed between countries and type of nursing program. Results from each study, however, are not generalizable to every nursing student population because of the differences between the samples utilized in each study.

Additionally, the study design utilized, sample sizes, and demographics of the students varied between each study. Fifteen studies utilized cross-sectional study designs, whereas three of the studies utilized a longitudinal study design and one study utilized a case study design. Cross-sectional designs rely on retrospective reports that may fail to identify stressors that the students experienced intermittently throughout the program. Such results may be vital for understanding the impact of stress on burn-out and attrition (Rella et al., 2008; Jimenez et al.,

2010; Chan et al., 2009). Implementing a longitudinal study design that tracks stressors, burn-out, and attrition throughout the program may provide additional information regarding the impact of stress on attrition rates and burn-out (Gorostidi et al., 2006; Edwards et al., 2010). Furthermore, the number of participants within each study varied drastically. Sample sizes ranged from less than ten students to hundreds of students (Gibbons et al., 2008; Prymachuk & Richard, 2007; Gibbons, 2010; Freeburn & Sinclair, 2009). Student demographics also varied within each study. Each study evaluated students from various ages, genders, ethnicities, and social classes (Prymachuk and Richards, 2007; Jimenez et al., 2010). Demographic data indicated was not provided within some studies, which further limited the generalizability of the results (Rella et al., 2008). If the characteristics of the sample are unknown or vary greatly between studies, the results are not applicable to another nursing student population.

Although research studies have supported the concept that multiple factors relate to stress within the nursing student population, much of the research investigating stress factors was completed in the 1980's and 1990's. Many articles utilized these dated studies as the basis for their review of literature section (Sharif & Masoumi, 2005; Chan et al., 2009; Jimenez et al., 2010; Gibbons, 2010; Gibbons et al., 2008; Hegge & Larson, 2008). Technological advancements and changes in nursing care may have altered factors associated with stress among nursing students (Lenburg, 2008). Additional research is needed to re-evaluate factors related to stress and the consequences of stress among nursing students.

Analysis of the literature indicated that a gap in literature was noted in describing the relationship between stress and academic performance and stress and health on nursing students. Limited research examined the impact of stress on the student's academic performance.

Additionally, little research has evaluated the impact of stress on physical health and well-being of nursing students. Future research is required to examine the impact of stress on academic performance and the health of nursing students.

NURSING IMPLICATIONS

Nursing students reported experiencing higher levels of stress during the academic year in conjunction with increased clinical responsibilities and course requirements. Factors related to stress in nursing students arose from clinical sources, academic sources, and personal sources. Surprisingly, much of the literature was based on research that was completed in the 1980's and 1990's (Sharif & Masoumi, 2005; Chan et al., 2009; Jimenez et al., 2010; Gibbons, 2010; Gibbons et al., 2008; Hegge & Larson, 2008). Advancements in nursing care may have altered factors associated with stress among nursing students (Lenburg, 2008). Additional research is needed to re-evaluate stress factors and determine if factors related to stress among nursing students are associated with advancements in health care.

Findings from this review indicated that additional research is needed to assess the impact of stress on nursing students and the need for stress reduction methods for this population. Changes in technology, increased responsibility, increased workload, and caring for patients created a stressful environment for students (Johnson, 1995; Forbes & Hickey, 2009; Jimenez et al., 2010; Chan et al., 2009; Sheu et al., 2002; Omigbodun et al., 2006).

Academically, students reported experiencing difficulty with the advancing curricula and adequately managing time between academic and clinical requirements (Gibbons, 2010; Jimenez et al., 2010). Additional research is required to track students throughout the nursing program to determine if factors related to stress change with the evolving healthcare field. Furthermore, understanding the factors related to stress within the nursing student population would assist to

understand why nursing students perceive higher levels of stress than other college student populations.

Studies have described a negative impact on nursing students including poor academic performance, development of negative coping habits, and burn-out among nursing students (Hegge & Larson, 2008; Gibbons, 2010). Additional research is needed to provide a better understanding of the relationship between levels of stress and academic performance within the nursing student population (Kernan & Wheat, 2008; Goff, 2011). Furthermore, additional research is necessary to assess if stress negatively impacts the health of nursing students and if the impact of stress on nursing students is detrimental by any means. Through understanding the effects of stress on the nursing student population, additional research can evaluate the effectiveness of stress reduction methods.

Interventions that reduce stress and provide stress management skills may reduce levels of stress among nursing students and lead to the development of more appropriate coping mechanisms and less burn-out. Academic and clinical stress factors have been described as a source of stress within the nursing student population. Understanding the causes of stress, developing strategies to identify stress within these settings, and interventions to manage stress should be the focus for nursing student populations. Perceived stress could be reduced if students are made aware of the most common types of stressors that they will experience during the nursing program. Additional awareness would target the idea that stress factors become less stressful as the students acquire further theoretical knowledge and refine their clinical skills (Gorostidi et al., 2006). Students could also be instructed to maintain a secure distance when

providing patient care, which could further decrease personal stressors that arise from patient care (Gorostidi et al., 2006; Sheu et al., 2002).

Further analysis of the literature supported that stress reduction programs were effective in alleviating stress among nursing students. Providing nursing students with stress reduction methods would aim to decrease the amount of perceived stress among the students and decrease risks associated with maladaptive responses to stress (Paul et al., 2007; Kang et al., 2009; Jain et al., 2007). Additional research is required to identify beneficial stress reduction methods for nursing students and the most effective point in the nursing curriculum at which to implement a stress reduction course.

SUMMARY

Stress impacts every individual and has a powerful impact on the mind and on an individual's health and well-being. College level students reported experiencing elevated levels of stress during the academic year. Nursing students, however, experienced higher levels of stress during the academic year in conjunction with elevated external stressors, including increased clinical responsibilities and course requirements. Analysis of the literature indicated that factors related to stress in nursing students arose from clinical sources, academic sources, and personal sources. Furthermore, experiencing elevated levels of stress had a negative impact on the students' physical and psychological well-being. Increased levels of stress negatively impacted academic performance, personal well-being, and led to burn-out among nursing students. Research to identify stressors and evaluate means to reduce and mitigate stress levels in nursing students would promote the general welfare of the students.

APPENDIX: TABLES

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Table 1

Exclusion criteria: Any journal article published previous to 2000, studies evaluating stress among a population other than college level nursing students

Inclusion criteria: Book materials for theoretical models from any year, journal articles published from 2001 to 2011, and college level nursing students

Articles	Participants and Study Design	Intervention Details	Results (or Key Findings)
Chan, C. L., So, W. W., & Fong, D. T. (2009). Hong Kong baccalaureate nursing students' stress and their coping strategies in clinical practice. <i>Journal of Professional Nursing, 25</i> (5), 307-313.	n = 205 Hong Kong Baccalaureate Nursing students Quantitative Cross-sectional study design using self-report measures	The aim of the study was to evaluate sources of nursing students' stress and their coping strategies during clinical practice.	Stress arose from clinical sources. The number one perceived stressor resulted from lack of professional knowledge and skills during clinical rotations. Stress resulted from being unfamiliar with medical terminology and being unfamiliar with diagnoses and treatments. The third most common perceived stressor was taking care of patients, and the fourth most common stressor was the clinical environment.
Edwards, D., Burnard, P., Bennett, K., & Hebden, U. (2010). A longitudinal study of stress and self-esteem in student nurses. <i>Nurse Education Today, 30</i> (1), 78-84.	n = 169 Nursing students enrolled in a nursing program in the United Kingdom	The study evaluated stress and self-esteem among nursing students utilizing self-report methods.	Clinical rotations were indicated as a source of stress. A major stressor was the fear of making a mistake when caring for a patient and watching patients suffer. Clinical stressors persisted during the course of study as major stressors. At the completion of the program, perceived stress from clinical

	<p>Quantitative</p> <p>Longitudinal study design using self-report measures</p>		<p>sources increased.</p> <p>Academic factors contributed to stress. Sitting for examinations, continuous pressure to meet deadlines for assessments, and the amount academic work necessary for the program were identified as major stressors. At the completion of the program, participants indicated that perceived stress from academic sources increased.</p> <p>Results indicated a statistically significant negative relationship between overall stress scores throughout the nursing program. Students reported lower levels of general self-esteem at the end of the training in comparison with the beginning of the training. Students with higher stress levels reported lower levels of self-esteem.</p>
<p>Freeburn, M., & Sinclair, M. (2009). Mental health nursing students' experience of stress: burdened by a heavy load. <i>Journal of Psychiatric & Mental Health Nursing</i> 16(4), 335-342.</p>	<p>n = 6</p> <p>Nursing students enrolled in a mental health diploma program in Ireland</p> <p>Qualitative</p> <p>Cross-sectional study design using in-depth interviews</p>	<p>The study evaluated sources of stress among nursing students enrolled in a diploma program.</p>	<p>Stress experienced by nursing students led to an inability to function at an optimal level. Stress caused students to feel indifferent, helpless, and as though they had lost control over their lives. Participants reported a decrease in focus and concentration during periods of stress. The stress resulted in physiological discomfort, including weight changes, chest pain, fear, panic, nausea, and lack of sleep, and signs of exhaustion. Emotional effects of stress were reported as checking behaviors, crying, avoidance,</p>

			withdrawal, and consumption of increased levels of alcohol. Students developed negative coping mechanisms including denial, avoidance, internalizing feelings, and increased alcohol consumption as a means to mitigate stress.
Gibbons, C. (2010). Stress, coping and burn-out in nursing students. <i>International Journal of Nursing Studies</i> , 47, 1299-1309.	n = 171 Final year nursing students enrolled in a nursing program in the United Kingdom Quantitative Cross-Sectional study design using self-report measures	The study evaluated the relationship between stress, coping, and burn-out among nursing students.	Avoidance coping mechanisms displayed an inverse relationship with self-efficacy. As avoidance coping mechanisms increased, reports of self-efficacy decreased. Avoidance coping also displayed a positive relationship with emotional exhaustion. As the use of avoidance coping increased, reports of emotional exhaustion also increased. Results indicated that as stress levels increased, levels of emotional exhaustion and depersonalization also increased.
Gibbons, C., Dempster, M., & Moutray, M. (2008). Stress and eustress in nursing students. <i>Journal of Advanced Nursing</i> , 61(3), 282-290.	n = 16 Final year nursing students pursuing the adult nursing branch in the United Kingdom Qualitative Cross-sectional study design utilizing focus	The study evaluated sources of stress in final year nursing students.	Clinical experiences were a major source of stress. The difference between theory and practice was a major source of stress. Results suggested that students struggled from learning a skill in the classroom and then learning a different means to perform the skill in the clinical setting. Academic factors were a major source of stress. Course structure and the pace and intensity of the course was deemed overwhelming. The demands of the course

	groups		<p>lead to elevated levels of stress during the academic period.</p> <p>Personal factors also contributed to stress. Time management was a source of stress, specifically balancing the day to day demands of clinical assignments and the educational workload. Financial concerns were another source of stress. Many students needed to work part time to cover living expenses. The added pressure of managing time between classes, clinical, and the part-time job was overwhelming.</p>
Gibbons, C., Dempster, M., & Moutray, M. (2009). Surveying nursing students on their sources of stress: a validation study. <i>Nurse Education Today</i> , 29(8), 867-872.	<p>n = 120</p> <p>Final year nursing students enrolled in a nursing program in the United Kingdom</p> <p>Quantitative</p> <p>Cross-sectional design using self-report measures</p>	The aim of this study was to evaluate the proposed factor structure of the Index of Sources of Stress in Nursing Students (ISSN).	As reported perceived demands from the program increased, scores on the General Health Questionnaire also increased. Additionally, statistically significant correlations were noted between learning and emotional exhaustion. The risk of developing a transitory stress-related illness was 60% among the participants in relation to the learning and teaching demands associated with the nursing program.
Goff, A. (2011). Stressors, academic performance, and learned resourcefulness in baccalaureate nursing students. <i>International</i>	<p>n = 53</p> <p>Nursing students at a large university in the southeastern United</p>	This study was to evaluate the impact of stress on academic performance in baccalaureate nursing students.	Self-reported grade point averages from the semester prior to the study ranged from 2.29 to 4.0 among the participants. Results indicated a positive, but not statistically significant, correlation between stress and

<p><i>Journal of Nursing Education Scholarship</i>, 8(1), 1-20.</p>	<p>States Quantitative Cross-sectional design using self-report measures</p>		<p>academic performance. Further analysis indicated that no apparent linear relationship appeared to exist between stressors and academic performance among nursing students.</p>
<p>Gorostidi, X., Egilegor, X., Erice, M., Iturriotz, M., Garate, I., Lasa, M., & Cascante, X. (2007). Stress sources in nursing practice. Evolution during nursing training. <i>Nurse Education Today</i>, 27(7), 777-787.</p>	<p>n = 69 Nursing students at San Sebastian Nursing School in Spain Quantitative Longitudinal study design using self-report measures</p>	<p>The study evaluated sources of stress among nursing students throughout the duration of the nursing program.</p>	<p>Stress arose from clinical sources. Lack of competence in the clinical setting, uncertainty and impotence, and fear of mixing up medications were major stressors. Clinical factors that were identified as most stressful at the beginning of the program were also identified as most stressful at the end of the program. Personal factors also contributed to stress. Major sources of stress arose from emotional involvement in patient care, contact with suffering, and lack of control in relationships with patients. Personal stressors persisted throughout the program.</p>
<p>Hegge, M. & Larson, V. (2008). Stressors and coping strategies of students in accelerated baccalaureate nursing programs. <i>Nurse Educator</i>, 33(1), 26-30.</p>	<p>n = 137 Nursing students enrolled in an accelerated nursing program from 3 private and 3 public universities Quantitative</p>	<p>The aim of this study was to evaluate sources of stressors and coping strategies utilized by nursing students enrolled in an accelerated nursing program.</p>	<p>Stress arose from academic sources. The most frequently identified major stressor was amount of material to be mastered in a short time frame. Personal factors also contributed to stress. Participants reported the emotional response to the program was a major stressor. Personal and family life issues were also indicated as major sources of stress. Students develop coping strategies to deal</p>

	Cross-sectional study design using self-report measures		with the stress from the nursing program. Mental disengagement, alcohol and drug disengagement, behavioral disengagement, and denial were utilized as coping strategies. Utilizing denial and disengagement as coping strategies was a hindrance to learning. Stress experienced during the program far exceeded previous experiences with stress.
Jimenez, C., Navia-Osorio, P., & Diaz, C. (2010). Stress and health in novice and experienced nursing students. <i>Journal of Advanced Nursing</i> , 66(2), 442-455.	n = 357 Nursing students enrolled in a three year nursing diploma program at a Spanish nursing college Quantitative Cross-sectional design using self-report measures	The purpose of this study was to identify differences among novice and experienced nursing students' reports of stress and health.	Stress arose from clinical sources. Among the stress factors, clinical stressors were reported most frequently. Stress from taking care of patients ranked as the number one perceived stressor. Additionally, participants reported stress from witnessing pain and suffering of patients and relatives, lack of knowledge and skills within the clinical environment, and practical assignments and workload. Students perceived clinical stressors as more intense than academic or external stressors. In regards to health, first year students reported being generally healthy during the program. The most common reported experienced symptoms were psychological in nature and included feeling worried and nervous, feeling pessimistic about the future, and experiencing episodes of nervousness and anxiety. Second year students reported poorer health and more psychic anxiety than first year and third year students.

<p>Kernan, W.D., & Wheat, M.E. (2008). Nursing students' perceptions of the academic impact of various health concerns. <i>Nurse Educator</i>, 33(5), 215-219.</p>	<p>n = 198</p> <p>Nursing students enrolled in Columbia University's School of Nursing</p> <p>Quantitative</p> <p>Cross-sectional study design using self-report measures</p>	<p>The purpose of the study was to evaluate the perceived academic impact of health issues among nursing students.</p>	<p>Students reported stress as the most often experienced health related impediment to academic performance. Stress had a negative impact on academic outcomes. Results indicated that stress is a major factor in poor academic performance among nursing students.</p>
<p>O'Donnell, H. (2009). The emotional impact of nursing student attrition rates. <i>British Journal of Nursing</i>, 18(12), 745-754.</p>	<p>n = 15</p> <p>Nursing students that had withdrawn from a nursing school in Belfast</p> <p>Qualitative</p> <p>Case study design</p>	<p>The aim of the study was to identify the reasons for withdrawal and the emotional impact of withdrawal from a nursing program.</p>	<p>The academic demands of pre-registration nursing requirements were excessive and have a negative effect on the health and well-being of students. Factors influencing withdrawal included feeling unable to cope with the demands to the point of becoming physically ill. The academic demands also negatively affected the students' relationships with others. Stress from the demands of the curriculum lead to withdrawal from the program and feelings of personal failure and lowered self-esteem.</p>

<p>Omigbodun, O. O., Odukogbe, A. A., Omigbodun, A. O., Yusuf, O. B., Bella, T. T., Olayemi, O. (2006). Stressors and psychological symptoms in students of medicine and allied health professions in Nigeria. <i>Society of Psychiatry and Psychiatric Epidemiology</i>, 41(5), 415 – 421.</p>	<p>n = 155</p> <p>Nursing and allied health professionals in Nigeria.</p> <p>Quantitative</p> <p>Cross-sectional design utilizing self-report measures</p>	<p>The purpose of the study was to identify stressors among medical students and allied health professions students in Nigeria. Nursing students and physiotherapy students were evaluated together, as their course studies were similar at the university.</p>	<p>Academic factors lead to stress among nursing students. The most common stressors identified by the students included excessive school work. Personal factors also contributed to stress. Financial problems and lack of holidays were reported as major stressors among the students.</p>
<p>Prymachuk, S., & Richard, D. (2007). Mental health nursing students differ from other nursing students: some observations from a study on stress and coping. <i>International Journal of Mental Health Nursing</i>, 16, 390-402.</p>	<p>n = 990</p> <p>Nursing students from a large university in Northern England. Students enrolled in the program chose a specialty track to pursue: adult, mental health, children's, learning disability nursing</p> <p>Quantitative</p>	<p>The aim of the study was to evaluate sources of stress among nursing students and evaluate differences among the specialties.</p>	<p>Clinical concerns were a major source of stress. Students specializing in a children's track indicated that fear of carrying out a clinical procedure correctly was a stressor. Academic components were also deemed a major source of stress among all branches of the nursing students. Examinations/assessments and fear of failing the course were deemed major stressors. Personal factors, specifically managing finances, were a major source of stress.</p>

	Cross-sectional study design using self-report measures		
Rella, S., Winwood, P. C., Lushington, K. (2009). When does nursing burnout begin? An investigation of the fatigue experience of Australian nursing students. <i>Journal of Nursing Management</i> , 17, 886 – 897.	n = 15 Nursing students enrolled in a three year Bachelor of Nursing program at a large university in Australia. Quantitative Cross-sectional study design utilizing self-report measures	The purpose of this study was to evaluate the development of maladaptive fatigue in Australian baccalaureate nursing students.	Levels of maladaptive fatigue and poor recovery increased as the student progressed through the program. Third year students reported higher levels of fatigue than first year students. A significant proportion of nursing graduates reported completing their university training in a very fatigued state.
Sharif, F. & Masoumi, S. (2005). A qualitative study of nursing student experiences of clinical practice. <i>BMC Nursing</i> , 4(6), 1-7.	n = 90 Baccalaureate nursing students in Iran Qualitative Cross-sectional study design utilizing focus groups	The purpose of the study was to evaluate student experience with clinical practice.	Clinical experiences were deemed stressful and anxiety producing. Specifically, the initial clinical experience was a major source of stress. Clinical stress resulted from the fear of making mistakes in the clinical setting, being evaluated on clinical skills during the initial clinical experience, and the theory practice gap. Second year students indicated that stress resulted from concerns of harming patients during the clinical experience because of lack of knowledge. Fourth year students reported that their stress from clinical experiences decreased as they progressed through the nursing program.

<p>Sheu, S., Lin, H., & Hwang, S. (2002). Perceived stress and physio-psycho-social status of nursing students during their initial period of clinical practice: the effect of coping behaviors. <i>International Journal of Nursing Studies</i>, 39(2), 165-175.</p>	<p>n = 561</p> <p>Nursing students in a five year associate degree program in Taiwan</p> <p>Quantitative</p> <p>Cross-sectional study design using self report measures</p>	<p>Stressors and the physio-psycho-social status of students were examined during the initial period of clinical practice.</p>	<p>Stress arose from clinical sources. Lack of professional knowledge and skills ranked number one as the most perceived factor stressor. Unfamiliarity with diagnosis and treatment, lack of experience and ability in providing nursing care, and making judgments were sources of stress. Stress from taking care of patients ranked as the second most perceived stressor</p> <p>Students develop coping skills in response to the elevated levels of stress. The most frequently used coping behavior was to cry, feel sad, feel moody, and feel helpless. Utilizing avoidance behaviors had a negative impact on the students' physio-psycho-social status.</p>
<p>Weitzel, M., & McCahon, C. (2008). Stressors and supports for baccalaureate nursing students completing an accelerated program. <i>Journal of Professional Nursing</i>, 24(2), 85-89.</p>	<p>n = 69</p> <p>Baccalaureate nursing students completing an accelerated program in the United States Midwest.</p> <p>Quantitative and Qualitative</p> <p>Cross-sectional design utilizing self-report</p>	<p>The aim of this study was to evaluate factors that served as stressors among the nursing student population.</p>	<p>Students reported that the lack of time in the clinical setting was a major stressor. Academic sources of stress included the pace of the program and workload.</p>

	measures and interviews		
Watson, R., Deary, I., Thompson, D., & Li, G. (2008). A study of burnout in nursing students in Hong Kong: a questionnaire survey. <i>International Journal of Nursing Studies</i> , 45, 1534-1542.	n = 147 Nursing students enrolled in a university program in Hong Kong Quantitative Longitudinal study design utilizing self-report questionnaires	The objective of the study was to evaluate the relationship between personality, stress, coping and burn-out among a cohort of nursing students from the beginning of the program to the end of the first year.	Stress levels and psychological morbidity increased over time. Elevated levels of stress were strongly correlated with emotional exhaustion throughout the program. Students that utilized emotion-oriented coping also reported higher levels of stress and burn-out than other students.

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