

Addressing Students Stress Levels in Nursing Education Programs

A Senior Honors Thesis

Submitted in Partial Fulfilment of the requirements for graduation in the Honors College

Chantell S. Belnavis

Nursing Major

State University of New York- The College at Brockport

May 1, 2019

Thesis Director: Dr. Susan Lowey

Table of Contents

Chapter 1: Introduction and Significance ... p. 3

Chapter 2: Background ... p. 9

Chapter 3: Methods ... p. 14

Chapter 4: Results ... p. 16

Chapter 5: Discussion & Implications ... p. 26

Conclusion ... p. 31

References ... p. 32

Introduction

Eustress or good stress is beneficial, as it gives a burst of energy and help us to be motivated, perform task more efficiently and even boost memory. Bad stress can be described as anxiety provoking and if it takes place habitually, it can lead to health problems (ULifeline, 2019). For this reason, excessive stress has a delirious effect on the overall health of any individual. It is primarily a physical response defined by the Stress Management Society (SMS) (2017). The article further explained that when an individual is stressed, the body shifts into the “fight or flight” response that allows blood flow to divert from the brain to important muscles needed to fight or flee (SMS, 2017) .The body under this constant mechanism can be detrimental to one’s health as it can lead to individuals having an inability to cope with stressors associated with work, school, and home (SMS, 2017). Additionally, persons could have lapse in judgment of constantly being in an overwhelmed state of mind that enables them to not “think straight”, and to not perform to one’s highest capabilities (SMS, 2017). Stress attributes to individuals experiencing insomnia, fatigue, headaches, upset stomach, diarrhea, constipation, nausea, aches and pain, frequent colds and fever, moreover, sometimes lose their ability to perform sexually (Segal et al. 2018). These symptoms under any circumstance prevent individuals from being productive and has visibly shown that it reduces the capabilities for a person to learn and retain any material.

It has been observed that stress is a serious problem in the health sector (Sihag & Bidlan, 2014). The healthcare sector can be very competitive and stressful and has been responsible to the development of occupational stress and burnout. Possessing an occupation in healthcare can produce a demanding workload, not only in terms of hard work for long hours but also because of their daily intense emotional involvement with the critically ill patients. The health

maintenance system can be an emotionally and physically demanding profession where the employees are extremely stressed due to the interaction with patients, especially children, which demands emotional involvement and empathy. In agreement with Sihag and Bidlan (2014), regular audits, staff shortage, workload, inadequate salaries, critical patients, emergencies death, dying and bereavement, results in immense stress and pressure on individuals employed in the healthcare industry. Research has suggested that professionals have not analyzed any of the stressors presented in their workplace which means they put their own personal lives on the back burner which adds to the high level of stress and burnout they experience on the job. Occupational stress if “not handled properly and timely leads to ineffectiveness, exhaustion, lack of personal accomplishment and detachment which is nothing but burnout” (Sihag & Bidlan, 2014, pg. 2).

Although stress is present at every stage of life, the combined effect of academic rigor, shifts in social support, and changes in living situations may notably increase stress for college and university students (Lippink, et al. 2016). According to research, college students faces a set of unique stressors when examined in comparison to different populations. These new experiences associated with college may be regarded as exciting, however this excitement can be combined with several stressors. For instance, Holinka (2015), found that the most common personal stressors identified by college students were developing a future career plan, followed by finances, interpersonal relationships, personal appearance, intimate relationships, personal achievement and goal setting. It was reported that, “academic stressors specifically were grades and competition, career and future success, too many demands and meeting deadlines, interpersonal issues in school, and issues related to taking classes and selecting majors” (Holinka, 2015, p.301). Although, majority of stressors recorded from college students were

interpersonal sources of stress, 67.2 percent of daily hassles were reported as academic sources of stress (Holinka, 2015, p.301). Nonetheless, college could be an appealing and beneficial experience for many, but “students are still largely susceptible to stress in various domains” (Holinka, 2015).

High stress and burnout are associated with adverse psychological and physical health consequences in many populations but may also impact the work of individuals in helping disciplines and subsequently impact the well-being of their patients and clients. Students enrolled in nursing and other helping disciplines experience high levels of stress (Enns, Eldridge, Montgomery & Gonzalez, 2018). The demands of post-secondary education experienced by most students, with the addition to increasing responsibility, financial demands, and workload has allowed students to be at adverse risk of physical and psychological health. In helping disciplines, students tend to face increase level of stressors with the added pressures related to their training, which includes clinical placement demands and developing the skills needed to provide services to others (Enns, Eldridge, Montgomery & Gonzalez, 2018). The personal burden of anxiety, depression, and suicidal ideation, the high levels of psychological distress among healthcare students may contribute not only to impaired academic performance but also to attrition, cynicism, and lack of empathy when working with patients (Jacob, Itzhak & Raz, 2013). For example, there is evidence to suggest that burnout and elevated stress as students is associated with poorer career preparedness (e.g., poorer learning of job-related skills) and a higher likelihood of leaving their intended profession (Rudman and Gustavsson, 2012).

Reasons for high levels of stress among healthcare students may be related to the expansion of these professions in recent years, the rate and amount of new knowledge, the changes in healthcare needs and services, and the increased range of responsibilities borne by

healthcare professionals (Jacob, Itzchak & Raz, 2013). Moreover, the teaching addresses the correspondence to healthcare subjects in institutions of higher education must ensure that students not only acquire knowledge but also graduate capabilities, including problem solving, research, interpersonal interactions, and lifelong learning skills. All of these require many hours of theoretical and practical study and, consequently, may lead students to perceive themselves as functioning under a great deal of pressure (Jacob, Itzchak & Raz, 2013). These include having to undergo longer class sessions, putting in additionally class hours in simulation labs and completing a set amount of practicum hours in the clinical setting. Nursing students need to do also engage in many extra things to enhance their education such as fairs, clinics, blood drives, presentations in addition to enduring pressures of testing and minimum grades that need to be attained to continue in the program. Therefore, these factors contribute to the stress level experienced in nursing school which could limit their ability but also affect their progress within these education programs which could lead them to fail out or face nurse burnout when they eventually work as registered nurses.

Significance

The World Health Organization (WHO) has estimated that stress-related disorders will be one of the leading causes of disability by the year 2020 (Bilali & Bilali, 2013). According to research, stress experienced by nursing students led to an inability to function at an optimal level and inhibited growth and development. As reported by Shultz (2011), stress can cause nursing students to feel indifferent, helplessness, and as though they had lost control. Cognitively, stress can cause a decrease in focus and concentration. The effects of stress on nursing students include somatic anxiety, psychic anxiety, depressive and cognitive symptoms. Some physical symptoms include; (nausea, vomiting, diarrhea, vertigo, chest pressure), emotional symptoms; (anxiety, nervousness, fear, depression), and social behavioral symptoms (lack of optimism, inability to work,

think clearly, and/or make decisions, feel undervalued). The effects of stress extend beyond physical, emotional, and behavioral symptoms as students may have trouble in attaining educational goals. In this regard, the nursing student's ability to cope with multiple stressors is recognized as an important determinant of retention (Prato, Bankert, Grust & Joseph, 2011).

The importance of this issue resulted from the increase number of students experiencing test anxiety and increase stress levels that ultimately affect their performance and negatively affect their chance of finishing their prospective programs. Stress has been a highly researched topic corresponding to its occurrence, relevance and impact on students' school and social life. However, addressing the issue of high stress levels within nursing education programs have not been heavily researched, which could prove a challenge as nursing databases primarily consist of analyzing stress in relation to nurse burnout. Furthermore, could stress in nursing school effect or increases the likelihood to nurse burnout within the healthcare setting.

The purpose of this thesis is to allow change to happen that aids in developing and implementing strategies to decrease stress levels among nursing students in their program. The culture of perfection and the conducive environment of high stress level should be dismissed as nursing students balancing clinical and classwork workload are placed under intense pressure. Nursing students needs active support from faculty and research has shown that they help to deduce their stress level in addition to making the curriculum less taxing. Consequently, if stressors are not lessened and major support implemented within nursing education programs, these programs will have an increase dropout rate for nursing students in addition to adding to nurse burnout rates and job dissatisfaction. This could prove to be a long-standing issue has there have been an increasing numbers of nurse shortage that is projected to rise more in further years.

Theoretical Applications

Stress Theory

Lazarus and Folkman defined stress as “a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her wellbeing” (Prato, Bankert, Grust & Joseph, 2011). They posit that cognitive appraisal of a stressor determines whether the stressor is interpreted as a challenge, threat, or harm/ loss, and defined challenge as the aptitude for mastery or growth, threat as the possibility of harm, and harm/loss as an injury or loss which has already occurred. An event will be perceived as stressful if the individual evaluates that event as threatening (primary appraisal) and also perceives a lack of personal resources and depleted coping capacity to deal with the threatening situation (secondary appraisal). Furthermore, Lazarus and Folkman suggest an inverse relationship between stress and learning; that is, as stress increases, learning decreases (Prato, Bankert, Grust & Joseph, 2011).

Jean Watson’s theory

The Nursing Model theory was derived from Dr. Jean Watson’s Human Caring Theory, of which this was used to demonstrate the foundation that nursing programs were built upon. Watson explains that human interaction that is guided by a caring ethic promotes knowledge, wellbeing, and health. Further, Watson supports the notion that congruence of perceptions and experience are critical elements in achieving harmony within the person, between person and environment, and in transpersonal interactions. Within this context, stress has the potential for leading to perceptions of disharmony, a lack of wellbeing, and difficulty in acquiring knowledge (Prato, Bankert, Grust & Joseph, 2011).

A caring learning environment promotes harmony and supports the collaborative

engagement of faculty and students in a process that leads to mutual respect and regard as both parties advance professionally. Each person becomes an active contributor to the learning process. As they progress through the educational experience, students and faculty become transformed and empowered (Prato, Bankert, Grust & Joseph, 2011).

Background

Stress

According to the National Institute of Mental Health (NIMH), stress is how the brain and body respond to any demand. Every type of demand or stressor-such as exercise, work, school, major life changes, or traumatic events-can be stressful. Stress has been recognized as a hindrance for concentration, problem-solving skills, and other abilities indispensable for student learning (Abdollahi et al., 2018). Furthermore, stress has been identified as an important psychosocial factor in the educational process because it may influence both academic performance and student well-being (Abdollahi et al., 2018).

According to a study by Yaribeygi et al., It appears that being exposed to stress can cause pathophysiologic changes in the brain, and these changes can be manifested as behavioral, cognitive, and mood disorders (2017). In fact, authors have found that chronic stress can cause complications such as increased plasma cortisol, with decreased amounts of cyclic monophosphate (cAMP) responsive element binding protein and brain-derived neurotrophic factor (BDNF), which is very similar to what is observed in people with depression and mood disorders that exhibit a wide range of cognitive problems (Yaribeygi et al., 2017).

The prevailing attitude between the association of stress and immune system response has been that people under stress are more likely to have an impaired immune system and, as a

result, suffer from more frequent illness (Yaribeygi et al., 2017). Following stress, some neuroendocrine and neural responses result in the release of corticotropin-releasing hormone (CRH), adrenocorticotrophic hormone (ACTH), and other stress mediators. Severe stress can lead to malignancy by suppressing the immune system. In fact, stress can decrease the activity of cytotoxic T lymphocytes and natural killer cells and lead to growth of malignant cells, genetic instability, and tumor expansion (Yaribeygi et al., 2017). Stress adversely affects the normal function of GI tract. There are many studies concerning the effect of stress on the function of the GI system. For instance, studies have shown that stress affects the absorption process, intestinal permeability, mucus and stomach acid secretion, function of ion channels, and GI inflammation (Yaribeygi et al., 2017). Stress also increases the response of the GI system to inflammation and may reactivate previous inflammation and accelerate the inflammation process by secretion of mediators (Yaribeygi et al., 2017). Also, stress can both decrease the removal of water from the lumen, as well as induce sodium and chloride secretion into the lumen. This most likely occurs by increasing the activity of the parasympathetic nervous system (Yaribeygi et al., 2017).

Stress in College Students

The varieties of social, personal, and academic demands are commonly reported as sources of stress affecting undergraduate students, such as academic challenges, finding new friends and getting along with friends, adjusting to new educational environment, changes in eating or sleeping habits, and perceived pressures for academic achievement (Abdollahi et al., 2018). One study reported that depression and anxiety that resulted from stress related to attending a university are common psychological problems among students, especially among female students (pg.1322). This highlights the idea that undergraduate students constitute an at-risk population. Many studies highlighted mental health issues in young adult, especially during

their studying years at university (Saleh, Camart & Romo 2017).

In reference to health surveys, young people from ages 12 to 25 years old suffer from an insufficient level of psychological health. This survey elaborated by suggesting that compared to “individuals of the same age, and in general to any other population, college students have more psychological problems. These problems are reflected in ways such as depression, anxiety, stress and sleeping disorders” (pg. 19). Students in tertiary education settings face a wide range of ongoing normative stressors, which can be defined as normal day to day hassles such as ongoing academic demands. They commonly self-report experiencing ongoing stress relating to the pressure to achieve high marks and concerns about receiving poor grades (Pascoe, Hetrick & Parker, 2019). It was reported in the United States that undergraduate university students, have higher self-reported anxiety and depression symptoms which correlated to achieving poorer grades on examination.

This is also consistent with studies that support self-reported depressive symptoms associated with concentration difficulties and trouble completing task. Enhancing support in the education setting may improve the mental health of young people. According to Pascoe, Hetrick & Parker (2019), a national telephone survey of the United States households showed that the incidence of depression in college students decreases if students have positive adjustments to academic life as well as adequate social support. Academic-related stress can increase substance abuse in young people especially college students. Substance abuse is associated with a greater desire for academic achievement, higher perceived stress, less effective coping strategies, and less closeness with parents.

Stress in Health Care Majors

The study of medicine is life-long and boundless. It has been described as a path that

never ends and places the student under heavy stress and burnout (Siddiqui, Alamri, Alkatheri & Alhassani 2017). The stressful environment during medical student's life in medical college often negatively affects the academic performance, physical health and psychological well-being of the student. The prevalence of emotional disturbance found in different studies on medical students is higher than that in the general population. In a large USA study of over 4000 medical students, undergraduate medical students were found to be under psychological stress to the extent of burnout and suicidal ideation (Siddiqui, Alamri, Alkatheri & Alhassani 2017). Medical students are expected to learn huge amount of knowledge and fact which is the leading factor that keeps them under tension. Moreover, the social and personal sacrifices they make for their studies also put them at high risk for stressed (Sajid, Ahmad & Khalid, 2015). Academic achievements of the medical students can be measured in the form of academic scores and their learning of various skills. High level of stress can obstruct the learning of medical students by impairing their concentration, problem solving and decision-making skills (Sajid, Ahmad & Khalid, 2015).

Stress in Nursing Education

It has long been perceived by nursing faculty and students that nursing students experience higher levels of stress than other college (Reeve et al., 2013). Nursing students believe that they have little free time due to the demands of studying, with assignments for didactic and clinical work. Another factor contributing to high levels of stress is that clinical assignments require nursing students to spend considerable time away from campus and requires them to be responsible for the well-being of patients. These activities remove students from the normal social developmental activities of their same age peers (Reeve et al., 2013). In accordance with Lazarus's stress theory, stress among nursing students in clinical settings can be

viewed as the students' perceived gap between the demands in a specific clinical situation and their resources or abilities to perform the tasks. Undergraduate nursing students re-ported significantly higher stress levels compared to undergraduate students from the general student population. Qualitative studies found that nursing students' experiences in the clinical practice were influenced mainly by their relationships with patients, clinical preceptors and other nursing students in their group. Sense of inadequacy, being ignored, ineffective communication, ambivalence, disgust, frustration and conflict were themes that emerged (Reeve et al., 2013).

Stress and Burnout in Nurses

Nurses have been found to experience higher levels of stress-related burnout compared to other health care professionals. Burnout is typically characterized by emotional exhaustion depletion of emotional resources and diminution of energy, depersonalization negative attitudes and feelings as well as insensitivity and a lack of compassion towards service recipients and a lack of personal accomplishment negative evaluation of one's work related to feelings of reduced competence (Khamisa, Peltzer & Oldenburg, 2013). High levels of burnout among nurses have often been attributed to prolonged direct personal contact of an emotional nature with many patients. This, amongst other factors such as prolonged exposure to work related stress as well as low levels of job satisfaction, have also been recognized as factors contributing to high levels of burnout among nurses. Burnout in nurses has been shown to lead to emotional exhaustion as well as a loss of compassion for others (depersonalization) and a sense of low personal accomplishment. These experiences can have very significant implications for the health and wellbeing of nurses. Research has confirmed that prolonged exposure to work related stress is associated with burnout, through active interactions between an individual and their working environment. During such interaction, environmental demands exceeding individual resources

may be perceived as stressful and result in negative outcomes such as low job satisfaction, burnout and illness. In nursing, these demands also include role ambiguity, role conflict, responsibility for others' lives, work overload, poor relationships at work, inadequate salaries, lack of opportunities for advancement, a lack of personnel, patient care, lack of support, staff issues and overtime (Admi, Moshe-Eilon, Sharon & Mann, 2018).

Methods

A literature review was performed to identify stressors that students experience within nursing education programs, as well as current models of addressing students' stressors. Databases used were Medline, CINAHL, PubMed and Google Scholar. These articles were peer reviewed and published from the year 2002- 2018. In order to elicit the most relevant articles to construct this literature review, keywords were used while searching the various databases. Keywords included: *nursing student, stress, coping strategy, nurse education, clinical practice, main stressors, interventions*. The research questions for the literature review included the following: What are the main stressors associated on student nurses? What are the implications of these stressors? What can nurse faculty do to decrease stressors within the program? What is the level of stress perceived by baccalaureate nursing students in clinical practice? What type of stressors is commonly experienced by the students during clinical practice?

The inclusion criteria for the fifteen articles that will be discussed in this systematic review is as follows:

- a. Articles must be peer-reviewed.
- b. Articles that are research studies must be IRB approved.
- c. Articles must be either research studies or literature reviews.
- d. Articles must be focused on stress levels of students in nursing education

programs.

- e. Articles that include nurse burnout should reference that fact that nursing education programs contribute this problem
- f. Articles are aimed at finding interventions or solutions to decreasing stress levels in students in nursing education programs

Exclusion criteria are as follows:

- a. Articles concentrated on stress levels in nurses in the clinical setting.
- b. Articles that focus on stress in other programs not relating to nursing or healthcare professions

Articles retrieved from the databases were screened for applicability and the abstracts of those articles determined to be relevant were reviewed. Articles that met both inclusionary criteria and found to have utilized sound methodological standards were included in the sample for this literature review.

The final search retrieval resulted in twenty-eight articles that were reviewed. Twelve of these were further analyzed to help answer the research questions stated above. The publication dates ranged from 2002 to 2018, and six of the fifteen articles were published within the last five years. It is valuable to note that there is no exclusion criterion listed for articles that were not based in the United States. While many of these articles implemented interventions in other areas (Macau, United Kingdom & Jordan), there is no plausible reason to exclude these studies. After analyzing the articles, the methods and technology used in these various international interventions are all available in the United States. While not stated as an “inclusion criterion” it is also important to note that most of the articles being reviewed were developed by either registered nurses and/or individuals with advanced degrees in nursing, medicine and education.

Results

According to a study conducted by Timmins and Kaliszer (2001), students were asked to consider statements about factors that may cause stress, and to select one of four stress levels in response to each statement. Table 1 represents the overall results from this study. According to the table, factors associated with academic performance, clinical placements, financial constraints, death of a patient and relationships with staff on the wards cause considerable stress (mean >2), whereas relationships with nurse tutors and clinical placement coordinators were reported to be at most moderately stressful (mean <1.5). Financial stress received the highest mean score and most students found this factor extremely stressful.

All subjects agreed that the assignments on the course, the workload of the course and the financial constraints of the course caused some degree of stress. The majority of subjects agreed that scheduled examinations (99%), being involved in the death of a patient (97%), the theoretical content (96%), travelling to secondments (92%), clinical placements (84%), the classroom contact hours (81%), and relationships with staff on the ward (68%) caused some degree of stress. A small proportion of subjects indicated that relationships with nurse tutors (33%) and relationships with clinical placement coordinators (28%) caused stress.

Table 1 Distribution of percentage and mean response to factors that may cause stress

No.	Stress Factor Description	Levels of stress- percent breakdown				Mean Score
		Not at all stress	Moderately Stressful	Very Stressful	Extremely Stressful	
1.	Theory	4	41	44	11	2.63
2.	Examinations	1	23	53	23	2.97
3.	Assignments	0	32	44	24	2.92
4.	Workload	0	21	52	27	3.06
5.	Classroom hours	19	53	21	7	2.16
6.	Financial constraints	0	14	14	72	3.59

7.	Secondments: travel	8	44	27	21	2.61
8.	Clinical placements	16	68	15	1	2.01
9.	The death of a patient	3	45	36	16	2.65
10.	Relationships with ward staff	32	58	6	4	1.82
11.	Relationships with nurse tutors	67	29	3	1	1.37
12.	Relationships with clinical placement coordinators	72	25	1	2	1.33

(Timmins, Kaliszer, 2001)

The main themes identified in this literature review answered the research questions stated in the methods. These answers can be classified into two broad topics: stressors identified in nursing students and what are the interventions that can improve the stressors or eliminate immense stress levels within nursing students. One of the stressors identified for nursing students explained that stress in the clinical environment is a contributing factor. Preceptors may not be always be helpful and students may feel incompetent when they are in the clinical setting. Secondly, faculty and student relationships were indicated to be stressors. This was identified as nursing instructors having a unsupportive relationships with students. Faculty incivility and behaviors were described to be another stressor for students in nursing education programs. Faculty members are predominantly focused on the evaluations and student performance in the clinical setting instead of learning. Additionally, students reported their encounters with faculty as aloof, intimidating, demeaning, arrogant and unfair.

Interventions that proved to promote lesser stress levels consists of: peer and staff mentorships and modeling, caring learning environments, faculty role and behaviors, reflective learning model, social support and professional networks, empowering students through mindfulness and proactive learning strategies.

The search retrieval for this study resulted in twelve articles, with consistent themes regarding stressors associated with nursing education programs. Of the twelve articles, four (33%) were literature reviews. Of these reviews, four (100%) described and outlined interventions that could help students to have decreased stress levels in nursing education programs. The remaining eight articles were a mixture of quantitative studies, questionnaires' or surveys resulting in a qualitative study. The sample sizes ranged from seven to 181 nursing students. The publication dates for all twelve articles ranged from 2002-2018. All of the literature reviews focusing on the specific interventions to implemented to reduce stress levels among nursing students, only two of the four were published in the last five years. The other reviews were more broad, focusing and discussing on the stressors associated with nursing educations programs and suggested ways on how to lower students stress levels in nursing students. This search of various aspect of nursing students' stressors and interventions to be used to address these issues, will help conclusions and implications to be drawn for further research.

Article name	Purpose	Type of study (review or research study)/Sample size	Methods	Main outcomes
“Aspects of nurse education programmes that frequently cause stress to nursing students-fact-finding sample survey” (Timmins & Kaliszer, 2002)	To examine reported stress in 12 commonly reported to cause stress to nursing students.	Questionnaire was distributed to 110 third-year nursing students.	Qualitative and Quantitative study.	Five factors emerged as sources of stress. Firstly, “academic’ stress factors. The second and third components concern relationships, the former involving teaching-related staff, and the latter involving the clinical experience.
“Transforming nursing education: a review of stressors and strategies that support students’ professional socialization” (Del Prato, Bankert, Grust, Joseph, 2011)	To review the literature on stress and its effects on nursing students and offer strategies for mitigating stress while fostering learning and professional socialization of future nurses.	Literature review. 53 articles	Qualitative research	Major sources of students’ stress include clinical setting and faculty-student relationships. Peer staff mentorships and modeling, caring learning environments, faculty role and behaviors, social support and professional networks, proactive learning strategies and empowering students through

				mindfulness are future directions for managing stress in nursing students.
“Nursing students’ stress and satisfaction in clinical practice along different stages: A cross-sectional study” (Admi, Moshe-Eilon, Sharon, Mann, 2018)	To investigate the perceptions of stress and satisfaction of undergraduate nursing students during three stages of clinical learning experiences: Preclinical, clinical and advanced clinical.	Cross-sectional study. 39 articles	Questionnaire. Scales: Nursing Students Stress Scale (NSSS); Nursing Students Professional Satisfaction (NSPS); demographic characteristics.	The top most stressful situations for second year students were related to inadequate preparation to cope with knowledge and skill demands, whereas the third- and fourth-year students they were conflicts between professional beliefs and the reality in hospital practice.
“A literature review on stress and coping strategies in nursing students” (Labrague et al., 2017)	To identify the level of stress, its sources. To explore coping methods used by student nurses during nursing education.	Literature review. 13 articles.	Quantitative study.	Stress levels in nursing students range from moderate to high. Main stressors identified included stress through the caring of patients, assignments and workloads, and negative interactions with staff and faculty. Common coping

				strategies utilized by nursing students included problem-solving strategies to solve problems and finding the meaning of stressful events.
“Nursing education stress levels of nursing students and the associated factors” (Aslan & Akturk, 2018)	To determine the stress levels experienced by nursing students during the nursing education and the associated factors.	Descriptive study. 489 university students-The University of WHERE faculty of Health Sciences Nursing Department.	Qualitative study. Questionnaire. Nursing Education Stress Scale (NESS)	It was determined that the nursing students experience high level of stress and their demographic characteristics were affected by their education stress, practical stress and academic stress subscale scores. Stress scores of students who preferred the nursing profession willingly or liked it while studying and found the profession prestigious were lower.
“Stress, coping and burn-out in nursing students” (Gibbons, 2010)	To explore the relationship between sources of stress and psychological burn-out and to consider the moderating and	A questionnaire was administered to 171 consented final year nursing students	Qualitative study.	The sources of stress likely to lead to distress were more often predictors of wellbeing than sources of stress likely to lead to

mediating role-played sources of stress and different coping resources on burn-out.

positive, eustress states. However, placement experience was an important source of stress likely to lead to eustress. Self-efficacy, dispositional control and support were other important predictors. Avoidance coping was the strongest predictor of burn-out and, even if used only occasionally, it can have an adverse effect on burn-out. Initiatives to promote support and self-efficacy are likely to have the more immediate benefits in enhancing student well-being.

“Student nurses' experiences of anxiety in the clinical setting” (Melincavage, 2011)	To better understand the anxiety of students' nurses during clinical experience to be able to develop educational interventions to	Unstructured face-to-face interviews with 7 student nurses.	Qualitative, phenomenological research study.	Decreasing anxiety has a two-fold effect. First, when anxiety is decreased, learning may be increased. Second, decreasing
---	--	---	---	---

	minimize students' anxiety.			anxiety may help alleviate the nursing shortage because more students complete their nursing education.
"Stress and anxiety among nursing student: A review of intervention strategies in literature between 2009 and 2015" (Turner, McCarthy, 2017)	To determine which interventions are effective to address the issue of excessive stress and anxiety among undergraduate nursing students.	Literature review. 26 articles.	Qualitative	Majority of interventions in this review aimed to reduce numbers or intensity of stressors through curriculum development or to improve students' coping skills. Studies reported interventions using only cognitive reappraisal while three interventions combine reappraisal with other approaches.
"The Effects of Simulated Clinical Experiences on Anxiety: Nursing Students' Perspectives" (Gore et al., 2011)	To assess the effect of simulation as an initial clinical experience on nursing students' anxiety levels.	Experimental. 92 first semester junior year nursing students.	Quantitative	The anxiety scores of the experimental group (n = 47) were 11.0 (2.8). The control group (n = 23) reported anxiety levels at 13 (3.4; Figure 2). In a two-tailed t

				test, the results from this study also showed a statistically significant difference in STAI mean scores ($p \leq .01$).
“Nursing and midwifery students' stress and coping during their undergraduate education programmes: An integrative review” (McCarthy et al., 2018)	To examine the literature related to the sources of stress, coping mechanisms and interventions to support undergraduate nursing and midwifery students to cope with stress during their undergraduate education.	Integrative literature review. 25 articles.	Qualitative study	The key sources of stress emanated from clinical, academic and financial issues but predominantly from the clinical environment. Students used a variety of coping strategies, both adaptive and maladaptive. These appear to be influenced by their past and present circumstances such as, their needs, what was at stake and their options for coping. Interventions for student nurses/midwives to cope with stress were varied and in the early stages of development. Mindfulness

				showed some promising positive results. Interventions focused on the individual level excluding the wider social context or organization level.
“Undergraduate nursing students’ stress sources and coping behaviors during their initial period of clinical training: A Jordanian perspective” (Shaban, Khater, Akhu-Zaheya, 2012)	To identify the level and types of stress perceived by baccalaureate nursing students in Jordan in their initial period of clinical practice and to identify the coping strategies that students used to relieve their stress.	Descriptive Cross-sectional study. 181 nursing students.	Qualitative study	The source of stress for these students came mainly from assignment work and the clinical environment. The most common coping strategy used by students was problem-solving behavior followed by staying optimistic and transference attention from the stressful situation to other things while avoidance was the least frequent used
“Perceived stress among Macao nursing students in the clinical learning environment” (Liu et al., 2015)	To investigate the stress perceived by Macao nursing students in the clinical learning environment	Cross-sectional research. 203 nursing students	Quantitative and quantitative study.	The most common stressors were related to clinical and educational dimensions. The study suggests that teaching and

learning modalities and the workload of nursing students should be reviewed.

Discussion

This study supports the view that factors concerning both academic and clinical component of nurse education programs are sources of stress to nursing students (Timmins & Kaliszer, 2001). Nursing is a career that entails an abundance of responsibilities that may produce stress derived from the accountability of a patient's life in their hands and requires not just intelligence but also physical capabilities. A caring learning environment that promotes harmony and supports collaborative engagement of faculty and students is critical to achieve mutual respect as both parties develop professionally. However, due to major stressors identified such as stress in the clinical environment and faculty incivility and behaviors, students encounter a stressful environment within their program.

Peer and staff mentorships and modeling can be effective strategies to reduce students' stress levels both in the classroom and clinical setting as this promote a non-threatening learning environment. Seniors nursing students can mentor incoming students so as for them to not only develop leadership skills, communication skills in addition to helping to nurture self-efficacy and self-esteem among themselves. Faculty role and behaviors fosters the caring learning environments that is needed for student nurses. A mutual respect and genuine presence that requires student/faculty partnership, collaboration, commitment, self-direction and creativity could help decrease stress in nursing students. Faculty should continually establish rapport and communicating words of encourage as research has shown that gave students confidence and helped them to believe in themselves as future nurses (Prato, Bankert, Grust, Joseph, 2011).

Reflective learning model suggest that reflection be incorporated within clinical and classroom settings to help decrease students stress levels by being implemented to promote a supportive learning environment. Social support and professional networks are effective for

reducing distress and preventing unhealthy levels of stress. Having networks and support that help to prepare students for the process of nursing in addition to preparing students for the reality in addition to exploring the incidence of stress and effective interventions and having in place services that support a positive learning experience. Student nurses can be taught stress identification and stress reduction techniques provide learners with an effective (Prato, Bankert, Grust, Joseph, 2011).

Mindfulness is a study that has shown to reduce stressors in nursing students. This technique requires individual gains insight into the nature and frequency of their thoughts from the feeling and/or behavior, and a more balanced emotional state leading to decreased stress. Studies have shown the efficacy of incorporating mindfulness training as part of the curriculum. Proactive learning strategies involves peer and professional tutoring which helps with confidence, self-esteem and satisfaction. In addition to nursing faculty members take a proactive approach by providing timely and constructive feedback on assignments, establishing reasonable and purposeful course assignments, establishing reasonable, exploring innovative strategies for instruction and evaluation of learning, and by preparing students for the clinical experience and supporting them as they administer care. Informal faculty support has been identified as being as significant and as effective as that received from family and peers in empowering students to cope with stress (McCarthy et al.,2018).

This literature review has some limitations that include: It was a small literature review study that explores information from twenty articles. One of which, a table was used from that explored 12 common stressors that students face within nursing education programs. Additionally, solutions to addressing nursing educations are limited because research is mainly focusing on stress within nurses or after they are working in the clinical setting. Research has

not shown any ways in which nursing education programs can be reformed and how interventions can be implemented within the curriculum to have reduce stress levels in nursing students during their prospective programs. This poses a challenge as nursing education programs are rigid and the approach is not given to suggest how a successful nursing education program will both have a higher success rate with students that report lower stress levels both in the classroom and clinical setting.

Implications

Nursing educators are in a prime position in which to assist nursing students in dealing with stress and stressors. Educators should try to explore and implement new interventions within nursing courses that can facilitate students not having to experience high levels of stress which could help to reduce burnout rates of students and working nurses. Additionally, nurse educators should create supportive learning environments that promote wellbeing and are conducive to successful outcomes. Consequently, if these stressors are not lessened and solutions are not implemented, nursing programs will encounter an increasing drop-out rate or nurse burnout and job dissatisfaction.

Clinical Implications

This topic is important because it impacts the flow of new nurses into the profession. It not only influences nursing student but also impacts practicing nurses as they work with training nursing students completing their programs. The stress influences how well the nursing students can support the practicing nurses. Students in nursing education programs have shown that they are experiencing high stress levels associated with their nursing education. These stressors associated with both classroom and clinical work may allow them to feel stretched thin before they are even practicing nurses in the clinical setting. Thus, when they encounter stressors in the

clinical setting, they may choose to leave and then units will become understaffed which contributes to the stressors associated to the profession. Hence, this problem supplements to nurse burnout within the clinical setting. Nurse burnout rates are on the rise and this career is projected to have a high demand and low supply for nurses in the future, especially nurses with a Bachelor of Science degree. Therefore, if the interventions discussed in this research are implemented, nursing education programs will allow for students to experience less stress within their programs and may be able to limit the issue of nursing shortage experienced in the clinical setting.

Education Implications

Majority of students that attend nursing school because of their desire to care for people or from a first positive interaction with a nurse in the hospital. However, some are deterred because of the stress reported from other nurses that graduated from nursing school. Therefore, could one assume that stress levels contribute to the nursing shortage? One possibility, individuals desiring to become nurses are unmotivated to attend school to receive this higher-level degree due to the stress reported during these programs. The system should be designed to be more inviting to individuals that have the unyielding desire to help fulfill the shortage of highly educated and motivated registered nurses.

Additionally, could one assume that stress in education programs have led to burnout in new nurses more than experienced nurses? In the clinical setting it is rumored that new graduates leave their units to seek higher education opportunities. This may be as a result that new graduates do not want to deal with the stressors associated with being a bedside nurse, for example twelve-hour shifts, that they are succumbed to working in the hospital setting. Furthermore, it can be correlated that nurses experiencing stress in their undergraduate studies

may be more inclined to refuse to work in an environment that brings stress as well? How can we make the education of nurses less stressful to ultimately help nurses stay within the hospital setting?

A proposition to change how nursing education are conducted includes, programs allowing student to stay within the program until they are at mastery levels for examinations and clinicals. Mastery levels would be defined as: having satisfactory completion of important nursing skills needed for practice. This will aid to alleviate stress among students in order to produce a caring environment that help to nurture them to make confident and help make their education more engaging and fun. This will then entice individuals to attend nursing school not only for the job availability of the profession but also knowing that they will be in a less stressful and engaging environment. As described in the result, financial problem is the biggest stressor described by participants within the study. Hence, addressing the financial barrier of nursing education programs will coax individuals to attend, seeing that it will not post an additional economical strain. This could allow for more minorities representing the patient population to attend nursing school because they will not have a financial barrier to attend. This will be a conscious step forward to address the issue of lack of diversity within higher nursing education level.

Policy Implications

In nursing education, policies such as mandated counseling and mindfulness should be incorporated into classwork and clinical requirements. These interventions have shown positive effects in decreasing stress levels amongst nursing students. Henceforth, these practices should be regulated into every nursing education programs. Students in nursing education programs are encouraged to maintain healthy coping habits and limit stress levels but the programs are not

facilitating these behaviors. Therefore, if it nationally regulated for nursing education programs to incorporate these interventions throughout the semesters for these students, then signs of decrease stress levels in nursing students can be seen. Additionally, nursing education programs are mandated for students to fulfil certain requirement for coursework and predetermined hours in the clinical setting, hence it should be mandated that students complete a predetermined number of hours for these sessions to engage in mindfulness and counseling. These requirements will have both students and nurse educators accountable for the mental health and decreased stressors associated with nursing education programs.

Research implications

Further research is needed on how to reform nursing education programs to limit the stressors associated with classwork and clinical requirements. Majority of the research conducted reveals that there are many stressors associated with not only nursing education programs but with practicing nurses as well. However, little is known on how to fix these issues with one of the most important professions in healthcare. Research suggests that there is indeed a problem but fails to express the solution, hence the never-ending cycle of increase stress, burnout and nurses' shortage in the healthcare field.

Conclusions

Nurse educators are challenged to tailor stress reduction interventions according to the students' perceptions of stress. It is not only critical for their wellbeing and attrition, but also important in developing nursing professionals who will provide better care and caring for patients.

References

- Abdollahi, A., Talib, M. A., Carlbring, P., Harvey, R., Yaacob, S. N., & Ismail, Z. (2016). Problem-solving skills and perceived stress among undergraduate students: The moderating role of hardiness. *Journal of Health Psychology, 23*(10), 1321-1331. doi:10.1177/1359105316653265
- Admi, H., Moshe-Eilon, Y., Sharon, D., & Mann, M. (2018). Nursing students stress and satisfaction in clinical practice along different stages: A cross-sectional study. *Nurse Education Today, 68*, 86-92. doi:10.1016/j.nedt.2018.05.027
- Aslan, H., & Akturk, U. (2018). Nursing education stress levels of nursing students and the associated factors. *Annals of Medical Research, 25*(4), 660. doi:10.5455/annalsmedres.2018.06.108
- Bilali, V., & Bilali, S. (2015). Students stress in nursing school. *International Journal of Science and Research (IJSR), 4*(1). Retrieved from <https://pdfs.semanticscholar.org/e56b/c682d12e0fc7e610fa3a0cd5363374200e03.pdf>.
- Enns, A., Eldridge, G. D., Montgomery, C., & Gonzalez, V. M. (2018). Perceived stress, coping strategies, and emotional intelligence: A cross-sectional study of university students in helping disciplines. *Nurse Education Today, 68*, 226-231. doi:10.1016/j.nedt.2018.06.01
- Gibbons, C. (2010). Stress, coping and burn-out in nursing students. *International Journal of Nursing Studies, 47*(10), 1299-1309. doi:10.1016/j.ijnurstu.2010.02.015
- Good Stress, Bad Stress. (n.d.). Retrieved from <http://www.ulifeline.org/articles/450-good-stress-bad-stress>

- Gore, T., Hunt, C. W., Parker, F., & Raines, K. H. (2011). The effects of simulated clinical experiences on anxiety: Nursing students perspectives. *Clinical Simulation in Nursing*, 7(5). doi:10.1016/j.ecns.2010.02.001
- Holinka, Cassandra. (2015). Stress, emotional intelligence, and life satisfaction in college students. *College Student Journal*. 49(2), 300-309. Retrieved from *Academic OneFile*, <http://link.galegroup.com/apps/doc/A419267909/AONE?u=brockport&sid=AONE&xid=d83f5dac>. Accessed 14 May 2019.
- Jacob, T., Itzhak, E. B., & Raz, O. (2012). Stress among healthcare students – A cross disciplinary perspective. *Physiotherapy Theory and Practice*, 29(5), 401-412. doi:10.3109/09593985.2012.734011
- Khamisa, N., Peltzer, K., & Oldenburg, B. (2013). Burnout in relation to specific contributing factors and health outcomes among nurses: A systematic review. *International Journal of Environmental Research and Public Health*, 10(6), 2214-2240. doi:10.3390/ijerph10062214
- Labrague, L. J., Mценroe-Petitte, D. M., Gloe, D., Thomas, L., Papathanasiou, I. V., & Tsaras, K. (2016). A literature review on stress and coping strategies in nursing students. *Journal of Mental Health*, 26(5), 471-480. doi:10.1080/09638237.2016.1244721
- Leppink, E. W., Odlaug, B. L., Lust, K., Christenson, G., & Grant, J. E. (2016). The Young and the stressed: Stress, impulse control, and health in college students. *The Journal of Nervous and Mental Disease*, 204(12), 931-938. doi:10.1097/nmd.0000000000000586

- Liu, M., Gu, K., Wong, T. K., Luo, M. Z., & Chan, M. Y. (2015). Perceived stress among Macao nursing students in the clinical learning environment. *International Journal of Nursing Sciences, 2*(2), 128-133. doi:10.1016/j.ijnss.2015.04.013
- Mccarthy, B., Trace, A., O'Donovan, M., Brady-Nevin, C., Murphy, M., Oshea, M., & Oregon, P. (2018). Nursing and midwifery students stress and coping during their undergraduate education programmes: An integrative review. *Nurse Education Today, 61*, 197-209. doi:10.1016/j.nedt.2017.11.029
- Melincavage, S. M. (2011). Student nurses experiences of anxiety in the clinical setting. *Nurse Education Today, 31*(8), 785-789. doi:10.1016/j.nedt.2011.05.007
- Pascoe, M. C., Hetrick, S. E., & Parker, A. G. (2019). The impact of stress on students in secondary school and higher education. *International Journal of Adolescence and Youth, 1*-9. doi:10.1080/02673843.2019.1596823
- Prato, D., Bankert, E., Grust, P., & Joseph, J. (2011). Transforming nursing education: A review of stressors and strategies that support students professional socialization. *Advances in Medical Education and Practice, 109*. doi:10.2147/amep.s18359
- Reeve, K. L., Shumaker, C. J., Yearwood, E. L., Crowell, N. A., & Riley, J. B. (2013). Perceived stress and social support in undergraduate nursing students educational experiences. *Nurse Education Today, 33*(4), 419-424. doi:10.1016/j.nedt.2012.11.009
- Rudman, A., & Gustavsson, J. P. (2012). Burnout during nursing education predicts lower occupational preparedness and future clinical performance: A longitudinal study. *International Journal of Nursing Studies, 49*(8), 988-1001. doi:10.1016/j.ijnurstu.2012.03.010

Sajid, A., Ahmad, T., & Khalid, T. (2015). Stress in medical undergraduates; its association with academic performance. *Bangladesh Journal of Medical Science*, 14(2), 135-141.

doi:10.3329/bjms.v14i2.21815

Saleh, D., Camart, N., & Romo, L. (2017). Predictors of Stress in College Students. *Frontiers in Psychology*. Retrieved from

<http://link.galegroup.com/apps/doc/A478916603/AONE?u=brockport&sid=AONE&xid=892d9284>

Shaban, I. A., Khater, W. A., & Akhu-Zaheya, L. M. (2012). Undergraduate nursing students' stress sources and coping behaviours during their initial period of clinical training: A Jordanian perspective. *Nurse Education in Practice*, 12(4), 204-209.

doi:10.1016/j.nepr.2012.01.005

Siddiqui, A., Alamri, S., Alkatheri, A., & Alhassani, K. (2017). Perceived stress in Saudi undergraduate medical students. *Journal of Medical and Allied Sciences*, 7(1), 41.

doi:10.5455/jmas.252925

Sihag, A., & Bidlan, J. S. (2014). Coping with occupational stress and burnout in healthcare.

Indian Journal of Positive Psychology, 5(3), 325–328. Retrieved from

<http://search.ebscohost.com/login.aspxdirect=true&db=a9h&AN=99729927&site=ehost-live>

Stress. (n.d.). Retrieved from <http://www.ulifeline.org/topics/133-stress>

Timmins, F., & Kaliszer, M. (2002). Aspects of nurse education programmes that frequently cause stress to nursing students – fact-finding sample survey. *Nurse Education Today*,

22(3), 203-211. doi:10.1054/nedt.2001.0698

Turner, K., & McCarthy, V. L. (2017). Stress and anxiety among nursing students: A review of intervention strategies in literature between 2009 and 2015. *Nurse Education in Practice*, 22, 21-29. doi:10.1016/j.nepr.2016.11.002

What Is Stress? (n.d.). Retrieved from <http://www.stress.org.uk/what-is-stress/>

Yaribeygi, H., Panahi, Y., Sahraei, H., Johnston, T. P., & Sahebkar, A. (2017). The impact of stress on body function: A review. *EXCLI journal*, 16, 1057–1072. doi:10.17179/excli2017-480