THE RELATIONSHIPS AMONG NURSING STUDENTS' STRESS, POST-TRAMUTIC STRESS DISORDER, AND CARING BEHAVIORS DURING THE COVID-19 PANDEMIC

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Among the challenges that higher education faces, students' mental health issues have become prominent. Academic stress is the state that students attempt to prevent but unavoidably face at some point in schools (Magnavita & Chiorri, 2018). The Coronavirus Disease 2019 (COVID-19) pandemic has further exacerbated the world and impacted higher education globally. As part of higher education, professional schools, including nursing schools, faced even more challenges (International Association of Universities [IAU], 2020). In addition to the regular classroom education disruption, nursing school students also faced clinical placement and practice struggles and licensure exam scuffles (American Association of Colleges of Nursing [AACN], 2021).

Nursing colleges/schools face growing requests to educate nursing students with adequate knowledge and skills to succeed in the workplace (Morton, 2019; Wolf et al., 2018). Nursing is a profession caring for patients 24/7, requiring nurses and nursing students to have high alertness and professional skills. Nursing students often feel taken over by stress and anxiety from their learning environments and programs (Labrague et al., 2018; Magnavita & Chiorri, 2018). Clinical settings and environments are considered a major stressor during the nursing educational process because of students' fear of making a mistake while performing nursing procedures, perceptions from the nursing staff and hospital departments, evaluations from clinical instructors, and caring for patients suffering severe illnesses (Labrague et al., 2018). Students want to be clinically proficient at practicing nursing, but the stress may overcome their ability to grow and develop professionally (Wei, Dorn et al., 2021).

The COVID-19 pandemic taxes nursing students more than before. The pandemic added more uncertainty stressors, and nursing students were unsure about their education from face-to-face courses to complete online courses and abbreviated clinical rotations (AACN, 2021). They were worried about the insufficient nursing skills needed for graduation and clinical practice (Aslan, 2020). One particular need identified during the pandemic was to assess the impacts of COVID-19 on students in the short and long terms (IAU, 2020). During the pandemic, frontline nurses reported PTSD symptoms and psychological changes (Leng et al., 2020; Zhang et al., 2020). Thus, in this uncertain and stressful time, it is vital to study and understand students' current emotional status and its relationships with students' caring behaviors, a core value of the nursing profession.

Human caring is a fundamental characteristic of a nurse. Caring is how nurses interact with their patients to feel respected, safe, and cared for (Watson, 2018). Research suggests that clinical expert nurses need professional knowledge and caring characteristics, including competence, compassion, altruism, respect, and empathy (Wei et al., 2018). Through these characteristics, nurses demonstrate their clinical expertise to patients and make patients feel cared for. However, nursing students' education routines were interrupted during the pandemic, and some students could not receive the same experience as they did before the pandemic. It is vital to evaluate students' current mental state, caring behaviors, and perceptions of faculty support during challenging times. The knowledge is valuable to provide insights into future strategies to promote students' health, well-being, and caring behaviors. Therefore, the purpose of this study is to examine the relationships among nursing students' current state of mental health, including perceived stress and PTSD, and the relationships among students' stress, PTSD, and caring behaviors.

Methods

Design

This is a cross-sectional descriptive survey study aimed to examine nursing students' stress, PTSD symptoms, and caring behaviors during the COVID-19 pandemic.

Ethical considerations

The Institutional Review Board of the university where the study took place approved this study.

Setting and Sample

This study occurred at a college of nursing in the southeastern United States, a rural area of the state. This college includes eight programs, including traditional undergraduate, accelerated bachelor's, RN-BSN, master's, and doctoral nursing programs. The National Council of State Boards of Nursing (NCLEX) passing rate is 97% for undergraduate students.

A convenience sample of the traditional BSN students (N = 487) was recruited. The inclusion criteria were that the students were currently enrolled in the undergraduate BSN program in the spring semester of 2021. The exclusion criteria included the students in the accelerated bachelor, master's, and doctoral programs.

Instruments

The study utilized the following instruments:

Demographic Survey

The demographic survey was designed based on the study purpose. This survey collected data on participants' age, race, and gender. The demographic survey also included five one-item questions: 1) Please rate your satisfaction level with your instructor teaching (0 = least satisfied and 10 = most satisfied); 2) Please rate the impact of faculty caring on your confidence level in

learning (0 = with no impact and10 = with significant impact); 3) Please rate your perceptions of faculty support during your program (0 = minimal-level support and 10 = highest-level support); 4) Please rate your stress level related to your learning from (0 = no stress and 10 = extremely stressed); 5) Please rate your perceptions of the impact of faculty caring on the ability to practice with empathy (0 = with no impact and10 = with significant impact).

Perceived Stress Scale

The PSS (Cohen et al., 1988) is used to measure the perception of stress. It illustrates the degree to which circumstances are stressful in one's life. Ten items ask the participant to rate their thoughts and feelings within the past month. The items are scaled as 0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, and 4 = very often. The scale's reliability was evaluated by examining internal consistency (Cronbach's α and factor analysis) coefficients. A Cronbach's α of 0.82 was found in a study on nursing students' views of the COVID -19 pandemic (Aslan & Pekince, 2021). The Cronbach's α for this study population is 0.847.

Caring Behavior Inventory (CBI)-16 Student Version

The CBI-16 Student Version is utilized to measure how students perceive their caring behaviors (Fenizia et al., 2019; Wolf et al., 2018). The survey consists of 16 items, each scaled as 1 = never; 2 = almost never; 3 = occasionally; 4 = usually; 5 = almost always; 6 = always. Each score may be summed to formulate a total score. The Cronbach's alpha internal consistency coefficient for the CBI-16 Student Version was 0.83 in Wolf et al.'s (2018) study. The Cronbach's alpha is 0.908 in this study, indicating that the scale has high reliability in the study population (Wei, Henderson et al., 2021). The Cronbach's α for this study population is 0.929.

The Posttraumatic Stress Disorder Checklist-5 (PCL-5)

The PCL-5 is a 20-item assessment tool outlining the 20 symptoms of PTSD. Participants were asked to rate how much they were bothered by a certain problem in the past month. The items were scaled as 0 = not at all, 1= a little bit, 2= moderately, 3= quite a bit, and 4= extremely. In an empirical calibration, Blevins et al. (2015) found the psychometric properties for the PCL-5 for a U.S. university convenience sample with subjects who self-identified as having PTSD as follows: internal consistency [alpha] = 0.94 and test-retest reliability r = 0.82, 95% CI [0.71, 0.89] (Verhey et al., 2018). The Cronbach's α for this study population is 0.959.

Data Collection

Qualtrics software was used to develop an electronic survey. Data were collected through a Qualtrics survey from April 1st to June 1st, 2021. The four surveys, the students' demographic survey, PSS, PTSD Checklist (PCL-5), and CBI-16, were entered into the Qualtrics software, with an anonymous survey link created. The survey link was sent out to the traditional BSN program students via the school's email listserv.

The email described the purpose of the study and provided the contact information for study questions. After clicking the survey link, the students first read the study instruction, followed by an electronic consent form. If students decided not to participate, they could stop. If they wanted to participate, they would click the agree to continue. A reminder email was sent out after a couple of weeks to students as a reminder. Participation was voluntary and anonymous.

Data Analysis

The data analysis was conducted using SPSS 25.0. First, the demographic characteristics were calculated by frequency count and percentages. Mean, standard deviation, and the range was computed for faculty impact, self-rated stress, perceived stress scale, the students' caring

behaviors inventory, and post-traumatic stress disorder checklist 5. Additionally, Pearson's chi-square test was done to determine the correlations between study variables. Multiple linear regression was performed to find out how the predictor variables were related to dependent variables. The assumption of independent errors and multicollinearity were tested by using Durbin – Watson statistic value and variance inflation factors (VIF), respectively. Statistical significance was set at $p<0.05$.

Results

Demographics

The surveys were sent to the traditional undergraduate students via the school's email list. A total of 117 students answered the survey, with a 24% return rate, and 95 of the respondents gave complete and valid answers. Most participants were female (n = 86; 90.5%), White (n = 80; 84.2%), and under the age of 30 years (n = 84; 88.4%). Table 1 displays participants' demographic characteristics.

The mean satisfaction level with instructor teaching was 6.79 ± 2.03 out of 10, with 40% (38/95) students scoring above the average. The impact of faculty caring on confidence level was 7.04 ± 2.74, with 38% (36/95) scoring above the mean, and ability to practice with empathy was 7.28 ± 2.58, with 39% (37/95) scoring above the mean. Students' self-rated stress level related to learning was 8.83 ± 1.40 out of 10 (Table 2).

Students' Perceived Stress Scale (PSS) scores

Over 90% of the students reported moderate to high levels of stress. Based on the PSS, the highest score was that students felt nervous and "stressed" last month. The mean total score of the scale was 22.65 ± 6.52 (out of a total score of 40). Table 2 shows the details of the scores.

Students' Caring Behavior Inventory-16 (CBI-16) Student Version scores

The total mean score of students' CBI-16 was 69.56 ± 9.12 (out of a total score of 80) (Table 2). The scores of the majority of items were over 4, only the mean scores of three items were less than four points: *Giving instructions or teaching them* (3.94 ± 1.02), *spending time with them* (3.89 ± 1.10), and *relieving their symptoms* (3.98 ± 0.76).

Students' PTSD Checklist Scores

Students' PTSD checklist scores ranged from 0 to 80, with a mean score of 31.20 ± 19.44. Table 2 shows the details of the scores. Forty-three of 95 (45.3%) students reported the overall scores of the PTSD checklist over 31 points, a cutoff value indicative of PTSD symptoms.

Correlation Among Variables

The PSS, PTSD checklist, and self-rated stress relationship were negatively and weakly correlated with faculty support. As faculty support increases, the students' PSS, PTSD checklist, and self-rated stress decrease. The relationship between PSS, PTSD checklist, and self-rated stress was positive, moderate, and statistically significant. Students' age and CBI-16 were not significantly correlated with any other variables. The details are displayed in Table 3.

Predicting Factors of PTSD Checklist

Table 4 includes the results on predictors of PTSD from multiple regression analysis. Faculty support, PSS, and self-rated stress were selected as independent variables to test which variables could predict students' PTSD. Our study suggested that PSS was the only significant predictor variable of PTSD ($P = 0.000$).

Discussion

This research study analyzed nursing students' stress levels, PTSD, caring behaviors, and students' perceptions of faculty support, satisfaction with instructors, and the impact of faculty caring on students' confidence level in learning and ability to practice with empathy during the COVID19 pandemic. The data indicated a high prevalence of students' stress and PTSD, which were highly correlated. The study also showed significant negative relationships between faculty support and students' stress and PTSD, suggesting the higher the faculty support, the lower the students' stress and PTSD levels. Student caring was found to be uncorrelated to students' stress and PTSD levels. This study did not provide evidence of significant correlations between students' caring behaviors and their stress and PTSD levels.

The data showed that nursing students were under high levels of stress during the COVID-19 pandemic. However, the students' stress levels were comparable to the research findings before the pandemic (Onieva-Zafra et al., 2020). The total mean score of the PSS in this study was 22.65 (±6.518), which was similar to a study done before the pandemic, with a mean of 22.78 (±8.54; Onieva-Zafra et al., 2020). Students experience stress and burnout in schools, affecting their well-being and academic success (Wei, Dorn et al., 2021). Research indicates that common sources of stress in nursing school include the pressure to achieve high grades, impress professors and clinical instructors, and become overwhelmed by the amount of material presented each week. This study indicates that these stressors did not seem to be altered by COVID19 because students' stress levels did not change significantly from pre-COVID-19.

Post-traumatic stress disorder is another aspect to consider as these students complete schooling during the COVID19 pandemic. Survey results from the PTSD checklist present a total average score of 31.2, which falls at the cutoff scores for PTSD based on the research using

the PTSD Checklist-5 (U.S. Department of Veterans Affairs, 2021; Weathers et al., 2013). This finding indicates symptoms of PTSD are prevalent in the current students. With few studies on students' PTSD before and after the pandemic, we searched the literature on nurses' PTSD. A study compared nurses' PTSD symptoms before and after the COVID19 pandemic and found that the number of nurses with PTSD increased by 60% after the COVID19 pandemic (Li et al., 2021), suggesting that COVID-19 could have an impact on PTSD symptoms.

Nursing faculty play an essential role in the stress levels of nursing students. Faculty members' support plays a significant role in students' health and academic success (Wei, Henderson et al., 2021). Faculty could decrease or increase students' stress levels, depending on how faculties present content and create relationships with their students. Students are under an immense amount of pressure in school. Having a trusting relationship with professors can allow for open conversation and collaboration to decrease this pressure. Students with higher perceptions of faculty support reported the less frequent use of nonprescribed stimulants for academic enhancement (Boulton & O'Connell, 2017). Faculty may facilitate this by creating trustworthy relationships and empowering students.

This study indicated that students' stress or PTSD did not significantly correlate with their caring behaviors toward patients, which is a reassuring finding. The ability of nurses to care for their patients when dealing with high amounts of stress is one of the qualities of a clinical expert nurse (Strandas & Bondas, 2018). Caring behaviors can be learned and mentored, and students learn how to care for others from faculty and clinical instructors. Students indicate that trusting, caring, and supporting relationships with their instructors are key factors predicting their caring behaviors (Wei, Henderson et al., 2021). Faculty members need to understand students' stress phenomenon to better evaluate, support, and educate students (Stubin, 2020). Nursing

schools need to develop strategies to cultivate an inclusive learning environment and students' resilience beyond the COVID-19 pandemic (Dowling et al., 2021).

Faculty members play a significant role in promoting students' academic success and emotional well-being. Faculties are instructors, mentors, and role models for students throughout their nursing school studies (Strandas & Bondas, 2018; Stubin, 2020; Wolf et al., 2018). Students translate faculties' kindness and caring behaviors toward others. Stress does not predict students' caring behaviors, but faculty members' support and caring behaviors do.

Limitations

This study has limitations. This study is a cross-sectional study that only used surveys. This design did not allow students to express their concerns and thus, could not fully capture students' deep thoughts and feelings. This study included only undergraduate students at one college, limiting the depth of the finding and generalization. A broader population of students from multiple colleges and programs would have allowed for a more diverse response set. However, this study shows the current state of nursing students' psychological status, including stress and PTSD, and caring behaviors, a core value of nursing.

Recommendations

Based on the results of this study, we suggest a few recommendations to nursing faculty. Nursing faculty should recognize the prevalence of psychological concerns in nursing students, including stress and PTSD. It is essential for faculty members to create caring learning environments, build trusting and caring relationships with students. Nursing schools may look for ways to develop strategies to assist students in forming coping strategies for high-stress situations and provide programs that foster and promote students' mental health and

reduce stress. Schools and faculties may develop a formal system to support students, especially when undergraduate students are primarily in online classes.

Conclusion

A large portion of students experiences moderate-to-high-level of stress during the COVID-19 pandemic. It is reassuring that faculty support may help students offset students' stress and PTSD symptoms. When students perceive faculty support, they report significantly less stress and PTSD symptoms, suggesting the importance of faculty support in reducing students' stress and improving students' emotional well-being. This study indicates that students' stress levels are not correlated with their caring behaviors toward patients, which may need further exploration to study the long-term effects on caring behaviors. The study emphasizes the importance of promoting faculty caring and support.

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