



**AN ANALYSIS OF ANXIETY, DEPRESSION, PTSD, AND RESILIENCE IN
PRELICENSURE NURSING STUDENTS DURING A GLOBAL PANDEMIC**

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ABSTRACT

The COVID-19 pandemic has been a global tragedy. These unprecedented times have created and continue to create traumatic events: emotional stress, anxiety, and potentially depression and PTSD for many US residents (CDC, 2021). These negative feelings can be described as stressful emotions, an overwhelming feeling of despair, anxiety, depression, and even PTSD (Li et al, 2020). Many types of negative feelings have been associated with this pandemic, and for prelicensure nursing students and other allied health students, it has even caused them to reflect if they should continue within their respective studies related to their own health profession (Fowler & Wholeben 2020). This honors thesis is a descriptive cross-sectional study analyzing the perceived psychological health impact of the COVID 19 pandemic on prelicensure nursing students in 3 different cohorts of the prelicensure program at various time periods of the four-semester prelicensure nursing program. This Honors thesis project was a survey-based study. Our research findings conclude that anxiety, depression, and PTSD were present in the sample characteristics (nursing students) at various levels. The sample participants included 59 students, of which were mostly female 90% (n=50), white 90% (53), and single 63% (n=37). Our sample participants were asked to rank their level of distress related to the disruptions to their own social support due to COVID-19 on a 1 to 10 scale, with 1 being no distress and ten being extreme. Our sample participant's mean score for the level of distress in

these 59 nursing students was 5.68. The top three sources of stress were school concerns, financial concerns, and general well-being due to social distancing and/or quarantine (Table 11). Coping mechanisms reported at or above 50% included: "*Getting a good night's sleep,*" "*talking with friends,*" and "*exercise*" (Table 8). Most of our sample participant's coping mechanisms were achieved via phone calls, electronic communication, video-call, or in person. The majority of the social support was from family and friends. Most of the study participants, 76% (n=45), reported their satisfaction with current levels of support as "somewhat satisfied" or "extremely satisfied." The data retrieved from the questionnaires revealed that the self-reported resilience levels of nursing students had an inverse correlation with the sample participant's anxiety, depression, and pre-clinical PTSD symptoms. It's essential to understand, implement, and/or continue to foster a culture of resilience in nursing schools throughout the world due to the direct impact resilience levels have on the mental and physical well-being of nursing students' academic success and future career as registered nurses (Fowler & Wholeben, 2020).

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INTRODUCTION

According to Merriam-Webster (2021), resilience is defined as the capacity to recover quickly from difficulties, toughness, or the ability of a substance or object to spring back into shape, elasticity. In an acute care nursing setting, resilience is defined as the ability to overcome adversity and includes how one learns to grow stronger from experience (McAllister and McKinnon, 2009). Resilience is defined by Luthar et al. (2000) as "a dynamic process encompassing positive adaptation within the context of significant adversity" (p. 543). Luthar et al. (2000) explain that two circumstances are needed to exist for resilience to happen: (1) exposure to significant threat or severe adversity; and (2) the achievement of positive adaptation despite major assaults on the psych social developmental process (p. 543). A consistent definition of resilience in nursing students is lacking; nevertheless, in every definition of resilience found, a fundamentally similar concept exists between the profession of nursing and daily life (Thomas and Revell, 2016). This existential concept of resilience is summarized throughout the literature. Resilience is an adaptive and dynamic phenomenon that, over time, adjusts and evolves in accordance with daily life obstacles and challenges. To be resilient is to overcome adversity; there is no one way to overcome adversity, for adversity comes in many different ways. Resilience has manifested itself in many different forms throughout this pandemic. Different professions, essential workers, cultures, countries, and students have had to continue or become resilient during the COVID-19 pandemic.

Social isolation, death of (a) loved one(s), financial stressors, managing communication and work via the internet, the sense of abandonment resulting from governmental social isolation executive orders, and so many other reasons have caused a cluster of negative feelings to be associated with this pandemic. As early as June of 2020 (6 months from the first reported COVID-19 case), 40% of US adults reported struggling with their mental health (Czeisler et al.,

2020). A study conducted by the CDC (2021) assessed mental health regarding substance use and suicidal ideation during the pandemic. Representative panel surveys were conducted among adults aged ≥ 18 years across the United States during June 24–30, 2020. This representative panel survey concluded that 40.9% of respondents reported at least one adverse mental or behavioral health condition. Nearly one third (30.9%) reported symptoms of *anxiety disorder or depressive disorder*, and 26.3% reported symptoms of trauma- and stressor-related disorder (TSRD) related to the pandemic and having started or increased substance use to cope with stress or emotions related to COVID-19 (13.3%) (CDC 2021). *Additionally, the percentage of respondents who reported having seriously considered suicide in the 30 days before completing the survey (10.7%) was significantly higher among respondents aged 18–24 years (25.5%), minority racial/ethnic groups (Hispanic respondents [18.6%], non-Hispanic Black respondents [15.1%]), self-reported unpaid caregivers for adults (30.7%), and essential workers (21.7%).* Individuals in severely affected geographical regions where social isolation or high levels of COVID-19 transmission was ceaseless were more prone to develop a series of trauma-relevant psychological symptoms, namely Post-Traumatic Stress Disorder (PTSD) (Li et al., 2020). Research is showing that a significant number of individuals have begun or reported to exhibit anxiety, depression, and PTSD as the COVID-19 pandemic continues throughout the world (Bridgland et al., 2021).

The United Nations states that the COVID-19 pandemic has created the largest disruption of education systems in our human history, affecting nearly 1.6 billion learners in more than 190 countries and all continents. Closures of schools and other learning spaces have impacted 94 percent of the world's student population, up to 99 percent in low and lower-middle-income countries" (United Nations, 2020). For nursing students and other allied health students, it is no different. The pandemic and the US health system have even caused students in higher education

to reflect if they should continue within their respective studies (Fowler & Wholeben 2020). The responsibilities and education of nursing students have evolved in recent years; even before the COVID-19 pandemic, prelicensure nursing students reported high levels of anxiety (Turner & McCarthy, 2017). There is a considerable amount of evidence that nearly all levels of nursing education have been historically emotionally stressful and physically stressful for decades; whether that be for a nursing aide, nursing student, newly-graduated registered nurse, or an experienced nurse (Bhurtun et al., 2019; Turner & McCarthy, 2017; Jennings, 2008). Two 25+-year-old studies share similar conclusions about nursing school in the past. Johnston and Johnston (1997) concluded that, at the time, past nursing students bore not only all the stresses of their particular occupation or job, but also the full range of stresses faced by mainstream academic students, such as fear of failure, lack of free time, long hours of study, and inadequacy of college response to student's needs: safety, mental health resources, etc. An older study by Beck and Srivastava (1991) also points out that additional problems include the assimilation of difficult and often tentative information, intensely personal and emotional issues, and the pressures of clinical practice, which is essentially discussed as “imposter syndrome.” Doubts about nursing as a career are rooted in very long hours of study, examination pressures, and a lack of timely feedback. An obvious stress factor confronting modern student nurses is the instillment of university education on individuals who may well not be suited to the academic process (Bhurtun et al., 2019). In the 21st century, prelicensure nursing programs have incorporated online, in-person, and/or hybrid approaches for course delivery, each of which is nonetheless rigorous and emotionally stressful in its own way (Bhurtun et al., 2019). In addition to academic pressure, nursing students are exposed to many new clinical experiences, including death and dying, diverse lifestyles, workplace violence, and communicable diseases in real-time (Stephens, 2013). The students’ experiences are evidently stressful as they apply new concepts

and skills in a practice environment and real clinical rotations. This new role often necessitates that students reconsider personal beliefs and values (Stephens, 2013).

Understanding resilience levels during the COVID-19 pandemic is vital in nursing students due to prelicensure nursing students' higher levels of academic stress when compared to students in other health allied professional studies (Stephens, 2013). It's crucial to further investigate the impact of the COVID-19 pandemic in prelicensure students and the potential correlation between their perceived resilience levels and their perceived levels of depression, anxiety, and PTSD.

This thesis presents an analysis of the impact of the COVID-19 pandemic on depression, anxiety, PTSD, and resilience in prelicensure nursing students. My research goals were to identify the extent that COVID-19 has impacted the perceived levels of emotional distress, measured as anxiety, depression, and PTSD symptoms in those prelicensure students. My research questions were:

- 1) What are the perceived levels of depression, anxiety, PTSD, and resilience in prelicensure nursing students (recently admitted and attending courses) during the COVID-19 pandemic?
- 2) How do the perceived levels of resilience relate to depression, anxiety, and PTSD in prelicensure nursing students during the COVID-19 pandemic?

METHODS

The study evaluated the impact of the COVID-19 pandemic on perceived stress, emotional distress, and resilience among pre-licensure nursing students. Dr. Paula Meek was the primary investigator, and the original study was approved by the University of Utah's institutional review board (IRB). The overall purpose of *Dr. Meek's* study was to assess the perceived stress, emotional distress (anxiety, depression, and PTSD symptoms), and level of resilience of prelicensure nursing students at various semesters of the program, given the social

isolation and life disruption that resulted due to the COVID-19 pandemic. My Honors thesis addressed research questions that were secondary to Dr. Meek's primary aims. Data from this larger study that were used in my thesis were collected during the Summer and Fall semesters of 2020.

Dr. Meek's primary research objectives were to:

- 1) Identify the current level of perceived stress, emotional distress, and resilience in those prelicensure nursing students who are admitted but have not yet begun coursework and those who have begun coursework and are in either their 2nd or 3rd semester of the program.
- 2) Identify differences that existed between those admitted to the program who have not begun coursework and those who have begun coursework and are in either their 2nd or 3rd semester of the program.
- 3) Identify the relationship between the degree of social isolation experienced exposure to the virus (ill themselves, ill friend, or ill family member) and economic turbulence (loss of income, work, or educational support), and perceived stress, emotional distress, and resilience in students that were enrolled as prelicensure students during the stay-at-home period.
- 4) Identify prelicensure nursing students' emotional distress, perceived stress, and resilience development over time (16 weeks) in those who experienced the stay-at-home directive.

Study Design:

My Honors thesis used a descriptive cross-sectional study analyzing the perceived psychological health impact of the COVID 19 pandemic on prelicensure nursing students in 3 different cohorts of the prelicensure program.

Study Setting and Sample:

Eligible participants were prelicensure nursing students currently enrolled in the College of Nursing, those who had been admitted for Fall semester 2020, students currently enrolled in

their 2nd and 3rd semesters, and pre-nursing students who had received a commitment for entry through the Nursing Early Assurance Program (NEAP). Admission to the NEAP program is offered to eligible high school seniors and college freshman with fewer than 30 credit hours. The University of Utah prelicensure program is a four continuous semester-long program. Students begin course work in the fall or spring semesters of the academic year.

Because students are considered "*vulnerable participants*," the survey was structured to minimize the risk that sample participants could be identified. The responses of the participants were extremely difficult, if not impossible, to trace back to a specific participant, unless the student had voluntarily provided an email address.

Study Procedure:

The survey was distributed electronically using REDcap to collect the study measures, which included general demographics, COVID-19 pandemic social history, and other additional questionnaires. Students were only able to complete the study once. Students who were already enrolled in the prelicensure nursing program and were in their second and third semesters of their program of study were invited to complete study measures in July 2020, which was during the summer semester. The survey was redistributed shortly after the start of the fall semester in September 2020. Students who hadn't completed the study during summer semester 2020 were invited to participate again. The survey was also sent to students who were newly admitted to the College of Nursing and beginning their first semester as well as pre-nursing students who had received a commitment for entry through the NEAP program. As an incentive, students who completed the survey were offered the opportunity to be included in a drawing for a \$100 amazon gift card with one winner selected from each cohort. Those who wished to be included in the drawing provided their email address at the conclusion of the REDcap-based questionnaire.

Study Measures:

The demographic survey included general questions such as age, gender, race, ethnicity, employment, and income—afterward, respondents answered twenty questions related to their COVID-19 experiences, such as exposure and impact on daily life. The demographic survey portion of employment included questions about the financial situation and employment status: "*How would you describe your money situation right now?*". 5 options were given: 1. "*comfortable with extra,*" 2. "*enough but no extra,*" 3. have had to "*cut back,*" 4. "*cannot make ends meet,*" or 5. "*chose not to respond.*" The participants could potentially have chosen more than one option when asked about employment. The multiple-choice answers related to employment disruptions included: "*Loss of hours,*" "*Increased hours,*" "*Increased responsibilities,*" "*Remote working,*" "*Decrease in pay,*" or "*Loss of employment*" were options given to the sample participants.

Participants also completed the following measures:

The Patient Health Questionnaire- 9 (PHQ-9) is a 9-item self-report of depressive symptoms with items scored from 0=not at all to 3=nearly every day over the past two weeks. Scores of 0 to 9 are considered none to mild depression, and scores of 10 or more reflect moderate to severe depressive symptoms. PHQ-9 scores > 10 had a sensitivity of 88% and a specificity of 88% for Major Depressive Disorder.

The General Anxiety Disorder-7 (GAD-7) is a 7 item self-report of generalized anxiety disorder. The seven items are scored from 0=not at all to 3=nearly every day over the past two weeks. The GAD-7 is a validated questionnaire available to screen for and assess the severity of anxiety symptoms with a sensitivity of 89% and a specificity of 82% for detecting GAD. Scores of 0 to 9 are considered none to mild GAD, and scores of 15 or more are severe.

The Posttraumatic Symptom Scale 10 (PTSS-10) is a 10-item screening instrument that assesses the symptoms of post-traumatic stress disorder (PTSD) and can diagnose both pre-

clinical stages of PTSD as well as general acute and chronic stress reactions. Items are scored on a seven-point scale ranging from 0=never to 6=always with the total score ranging from 0 to 60, and scores over 24 suspected of a pre-clinical stage of PTSD. Dr. Paula Meek and I did not make any diagnosis of PTSD. We specifically analyzed their perceived self-reported pre-clinical PTSD symptoms that may be indicative of potentially being diagnosed with PTSD in the future.

The Connor-Davidson Resilience Scale (CD-RISC) 2-question quick score measures two aspects of resilience. The questions "I am able to adapt to change" and "I tend to bounce back after illness or hardship" were scored from 0=not true at all to 4=true nearly all of the time. Total CD-RISC 2 scores range from 0-8, with higher scores indicating greater perceived resilience.

Recruitment:

An email was sent to all potential participants explaining the study. The email included a cover letter indicating that completion of the survey implied consent to participate. The email included a REDcap link that, if clicked on, would direct the individual to answer a questionnaire through REDcap. Through the use of the REDcap system, Dr. Paula Meek monitored the actual responses of the sample participants to identify any respondents with self-reported scores at or above the clinically important thresholds. After completing the questionnaire, participants were invited to submit their email to be included in the optional "thank you gift card" drawing.

Data Management and Analysis:

REDCap data were downloaded into SPSS (Statistical Package for the Social Sciences) for analysis. Descriptive statistics were used to report the characteristics of the sample and the scores on anxiety, depression, PTSD, and resilience scales. Descriptive statistics and correlation analyses were completed using SPSS.

RESULTS

Participant Characteristics

The sample of 59 students was mostly female, white, and single. 79.7% (n=47) of the group was age 18-25 years of age. Only 15% (n=9) of the sample were first-generation college students. In the results you could add that 39 students responded to the survey during its initial distribution and that another 29 completed it following the second distribution.

Table 1: Study Sample Characteristics

		n (%)
Gender		
	Male	5 (9%)
	Female	53 (90 %)
	Gender Variant/Non-Conforming	1 (1 %)
Age Group		
	1) 18-25	47 (80 %)
	2) 26-35	6 (10 %)
	3) 36-45	3 (5 %)
	4) 46-55	1 (2 %)
	5) Over 55	2 (3%)
Ethnicity		
	Hispanic/Latino	2 (3 %)
	Non-Hispanic/Latino	57 (97 %)
Race (Check all that apply)		
	Black/African American	0 (0%)
	Asian	7 (12 %)
	Native American/Alaska Native	1 (2 %)
	White	53 (90 %)
	Native Hawaiian or Pacific Islander	0 (0%)
Relationship Status: "What is your relationship status?"		
	Partnered or married	22 (37 %)
	Single	37 (63 %)
First-generation college student: "Are you the first in your family to attend college?"		
	No	50 (85 %)
	Yes	9 (15 %)

COVID Exposure

Participants' self-reported exposure or possible exposure to COVID-19 is presented in Table 2.

Table 2 is about personal symptoms related to COVID-19 and contact with someone who is

perceived to have an actual positive COVID-19 test. Additionally, those who received a COVID-19 PCR test related to their perceived symptoms were also included in table 2. The majority (80%) of participants denied experiencing symptoms that they suspected to be related to COVID-19. Just over one-quarter of participants (n=16) reported having had contact with an individual who had COVID-19. Of the participants who responded "Yes" to being COVID-19 tested, which was 41% of the participants (n=24), only 2 had a positive COVID-19 result. One respondent had pending test results at the time the survey was completed.

Table 2: Self-Reported Exposure to COVID-19

		N=59 n (%)
Have you had " <i>Symptoms suspected to be COVID-19</i> "		
	Yes	12 (20%)
	No	47 (80 %)
Have you been in " <i>Contact with someone confirmed to have COVID-19</i> "		
	Yes	16 (27%)
	No	43 (73 %)
<i>"Have you been tested for COVID-19?"</i>		
	Yes	24 (41%)
	No	35 (59 %)
Of those that were tested " <i>What was the test result for yourself?</i> "		Valid (%)
	Positive	2 (8 %)
	Negative	21 (88 %)
	I don't have a result yet	1 (4 %)

Measures of Depressive Symptoms, Anxiety, Post-Traumatic Stress, and Resiliency

Table 3 presents measures of central tendency for the PHQ-9, GAD-7, PTSS-10, and CDR-RISC-2 scales. The mean is used for normal number distributions, which at times can have a low number of outliers. The median is generally used to return the central tendency for skewed number distributions due to the same outliers. In this instance, I have documented both mean and median for the convenience of the readers. 2 participants didn't respond to resilience question #1 or resilience question #2.

Table 3: Depression (PHQ-9) Anxiety (GAD-7), Posttraumatic Symptom Scale 10 (PTSS), and Resilience Scale scores

	Mean	SD	Median	Range
PHQ-9 (Depression)	8.09	5.62	7.00	0- 26.00
GAD-7 (Anxiety)	8.26	5.39	8.00	0-19.00
PTSS (Posttraumatic Symptom scale)	18.43	12.65	18.00	0-51.00
Resilience Q1 (<i>I am able to adapt to change</i>)	2.88	.73	3.00	0-4
Resilience Q2 (<i>I tend to bounce back after illness or hardship</i>)	2.98	.81	3.00	0-4

Figure 1 presents box plots to illustrate the distribution of scores across the PHQ-9, GAD-7, and PTSS-10, with dashed lines representing clinically significant thresholds for each measure (Figure 1). The blue-dashed line applies to PHQ-9 and represents a score of 10. The red dashed line indicates a GAD-7 score of 15, which indicates clinically significant anxiety. The purple-dashed line represents a PTSS score of 24, the threshold indicating the pre-clinical stage of PTSD.

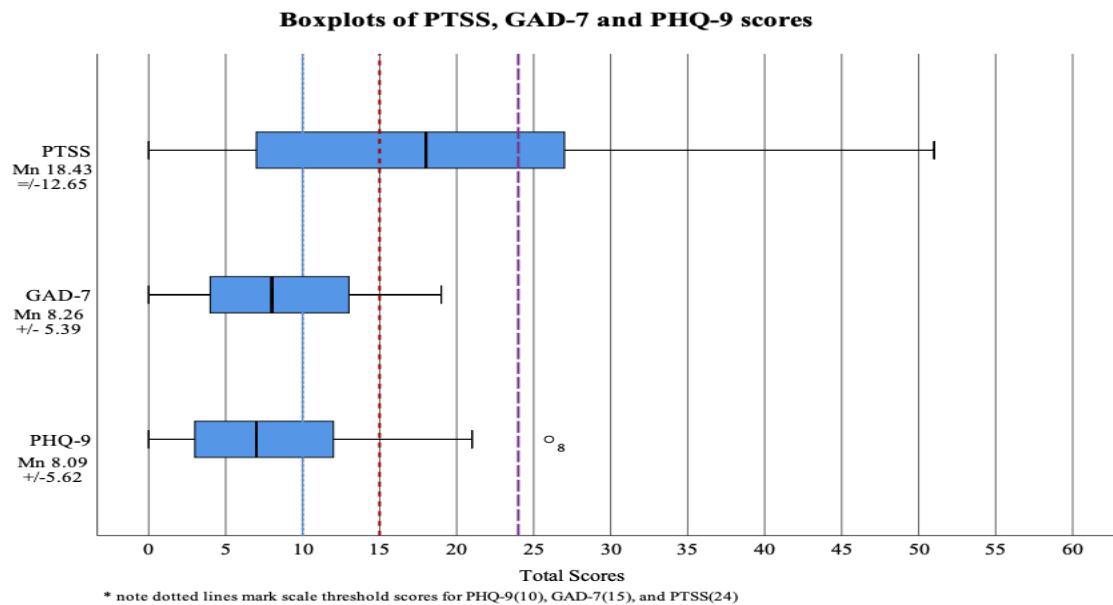


Figure 1: Post-traumatic, Generalized Anxiety disorder-7, and Patient health questionnaire-9 results.

Figure 2 illustrates the proportion of participants with and without depressive symptoms as measured by the PHQ-9. In this sample, 14% (n=8) of the participants reported PHQ-9 moderately severe to severe depressive symptoms (Figure 2).

Depressive symptoms PHQ-9

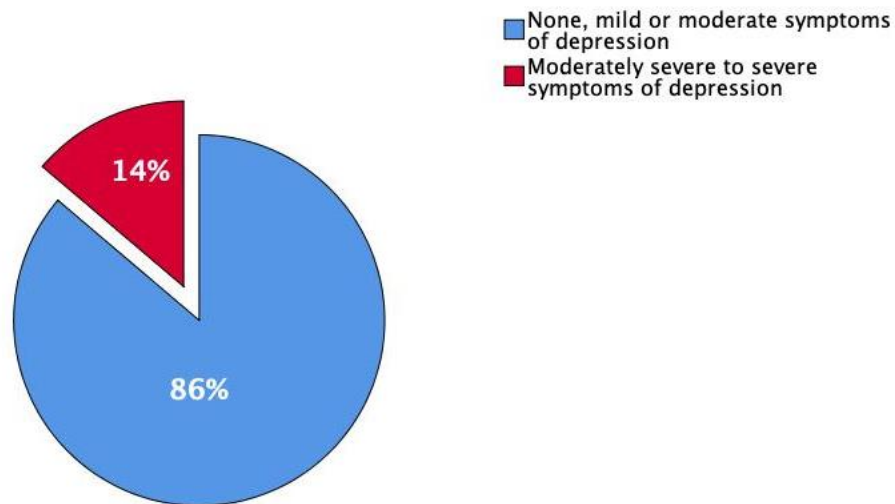


Figure 2: PHQ-9

Figure 3 represents the proportion of participants with severe anxiety. In this sample, 16% (n=9) of the participants reported GAD-7 scores in the severe symptoms of anxiety range (Figure 3).

Anxiety symptoms GAD-7

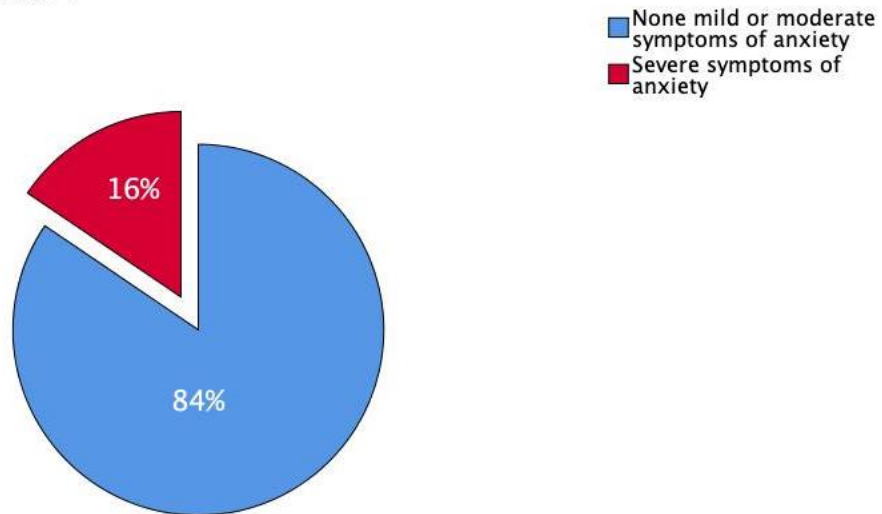


Figure 3: GAD-7

Figure 4 illustrates the proportion of participants who reported PTSS-10 scores greater than 24. Almost a third of the sample participants, 29% (n=17), reported scores over 24. This essentially means that these 17 participants fall within the parameters of the pre-clinical stage of PTSD, suggesting that further medical assessment is needed.

Preclinical PTSD

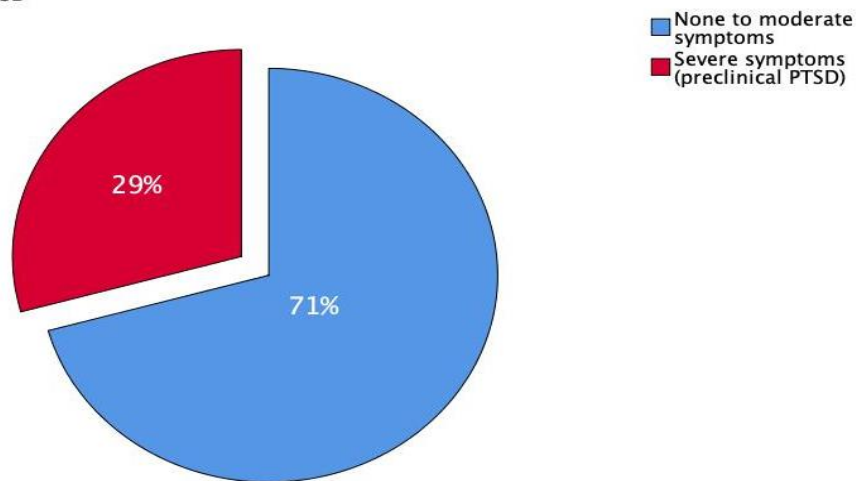


Figure 4: Preclinical PTSD severity results

To further identify how many participants had severe symptoms of depression, anxiety, and pre-clinical PTSD, we tabulated how many severe symptoms each participant experienced (Figure 5). Figure 5 summarizes the number of participants and the number of severe symptoms

identified using the various scales utilized: post-traumatic symptom Scale 10 (PTSS-10), General Anxiety Disorder 7 (GAD-7), and Patient Health Questionnaire 9 (PHQ-9). In this sample, 64% (n=38) of the participants did not have any severe symptoms on any questionnaire. 15% (n=9) had one severe symptom, and 19% (n=11) of the participants had two severe symptoms. Only one participant had all three possible severe symptoms as measured by the questionnaire.

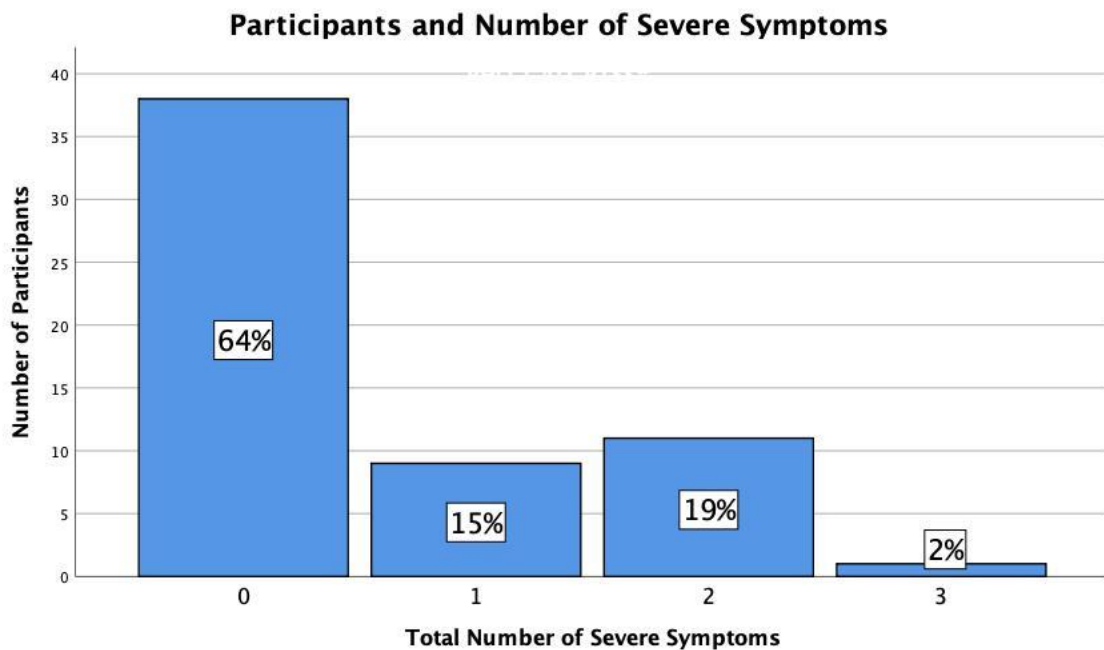


Figure 5: Total number of sample participants that had one or more “severe” symptoms in post-traumatic stress scale, GAD-7, and PHQ-9 scales.

Financial Situation and Employment Disruptions

Table 4 presents participants’ self-reported current financial situation and employment disruptions. As discussed in the methods section, participants responded to the question, “*How would you describe your money situation right now?*” The participants could potentially have chosen more than one option when asked about employment disruption. The vast majority (86%; n=50) of the participants responded “No” to the question about their employer relocating to remote work, and 88% (n=52) of the participants did not see a decrease in pay. A similar 85% (n=50) of participants that are employed reported “No” loss of employment. Nearly two-thirds

(65 %; n=38) of the participants reported having "enough but no extra" or "comfortable with extra money."

Table 4: Financial situation and employment disruptions

		n (%)
Financial Situation "How would you describe your money situation right now?"		
	Comfortable with extra	20 (34 %)
	Enough but no extra	18 (31 %)
	Have to cut back	12 (20 %)
	Cannot make ends meet	7 (12 %)
	Chose not to respond	2 (3 %)
Have you had a "Loss of hours"		
	No	45 (76 %)
Have you "Increased hours"		
	No	40 (68 %)
Have you had "Increased responsibilities"		
	No	31 (53 %)

Social Support, Sources of Support, and Social Concerns

Tables 5 and 6 presents how social support needs were met and from whom the participants were receiving the social support. "Phone calls" and "In-person" were reported as the least form or way of meeting social support. "Phone calls" was reported at 78% (n=46), and "in-person" was reported at 71% (n=42). "Electronic communication" and "video call" were the most frequently named ways social needs were being met. Most (76%; n=45) of the participants were somewhat extremely satisfied with their current levels of support. Social support needs were being met through various forms. The participants were able to choose one more of the options presented below.

Table 5: How are your social support needs being met?

How are you meeting your needs for social support? (Choose more than one)	Frequency n (%)
Phone calls	46 (78 %)
Electronic communication	51 (86 %)
Video call	48 (81%)

In-person	42 (71%)
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Social support was reported as being met by family and friends at 95% (n=56) of the time. The participants were able to select multiple answers. Four (7%) of the participants chose the option of "other" for social support. No follow-up was conducted for the 7% of the participants that chose that their social support needs were being met by "other." Social support was less frequently met by mental health providers at 24% (n=14) and religious community at 24% (n=14) but was overwhelmingly received by friends (95 %) (n=56) and family (95%) (n=56).

Table 6: Who are you receiving your Social Support from?

Who are you receiving social support from?	Frequency n (%)
Family	56 (95 %)
Friends	56 (95 %)
Religious community	14 (24 %)
Mental health care provider	14 (24 %)

Twelve (21%) of the participants were moderate to extremely dissatisfied with their social support (Table 7).

Table 7: Social Support	Frequency n (%)
<i>What is your satisfaction with your current levels of social support?</i>	
Extremely satisfied	12 (20%)
Somewhat satisfied	33 (56 %)
No impact	2 (3%)
Moderately dissatisfied	11 (19 %)
Extremely dissatisfied	1 (2 %)

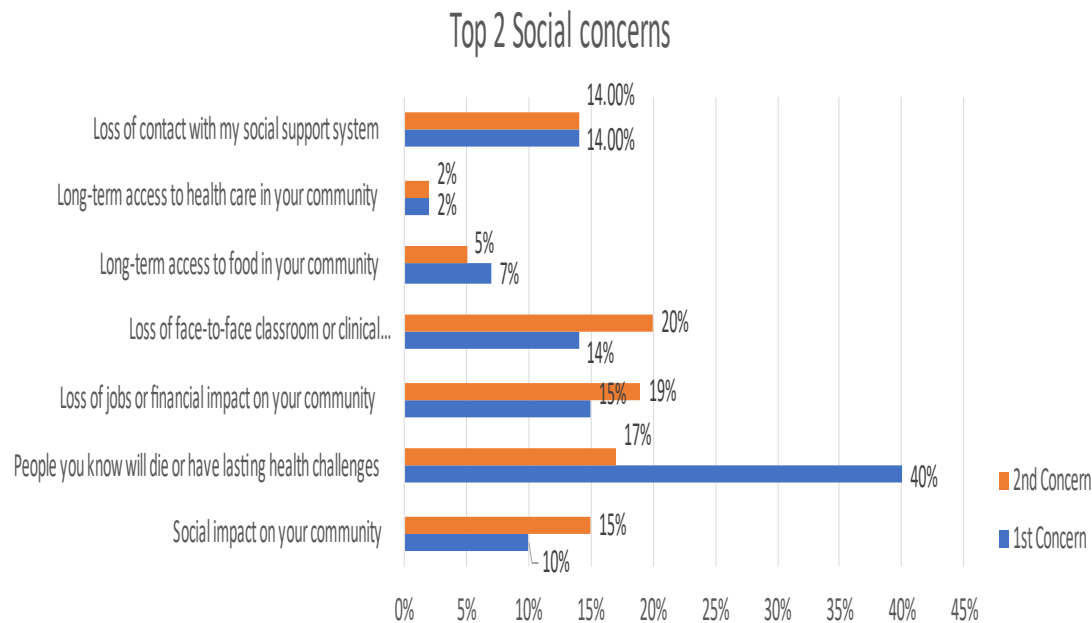
Participants identified their top two social concerns (Figure 6). Twenty-four (40%) of the participants ranked their #1 concern regarding "people you know will die or have lasting health

challenges." The least reported top two social concerns were "long-term access to health care in your community" and "long-term access to food in your community" (Figure 6)

Figure 6: Participant's top two social concerns.

Daily Life Disruptions

Figure 7 illustrates participants' self-reported academic disruptions. One participant did



	Social impact on your community	People you know will die or have lasting health challenges	Loss of jobs or financial impact on your community	Loss of face-to-face classroom or clinical placements	Long-term access to food in your community	Long-term access to health care in your community	Loss of contact with my social support system
2nd Concern	15%	17%	19%	20%	5%	2%	14.00%
1st Concern	10%	40%	15%	14%	7%	2%	14.00%

not select an answer; thus, the total percentage of answered responses equals 98% (n=58) of the total sample. Fifty-one (n=86) of the participants reported their academic progress to be "moderate" to "extremely" disrupted during the COVID-19 Pandemic. Only 12% (n=7) of the participants reported: "no disruption" to "some disruption" since the onset of the COVID-19 pandemic.

Figure 7: Disruption in academic activities

Social activities disruption related to COVID-19 was mostly reported at moderate to extreme disruption. None of the participants reported their social activities had "no disruption," thus concluding that all participants had some degree of disruption in their social lives (Figure 8). The majority of the participants (59%) of this study reported their social activities had an "extreme disruption" (Figure 8).

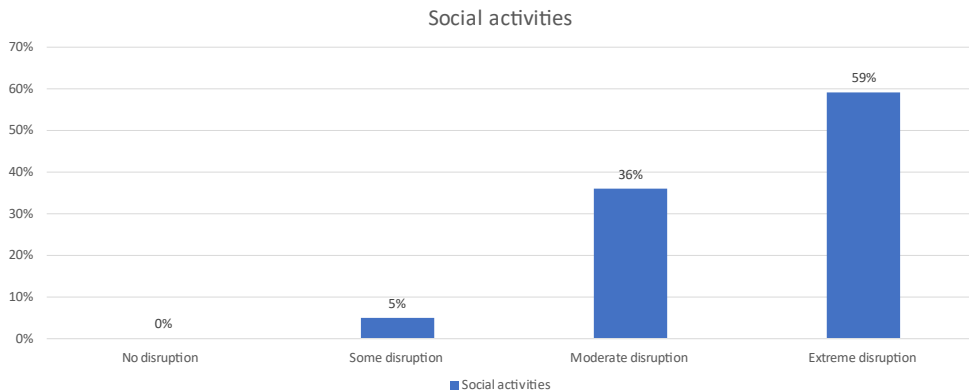
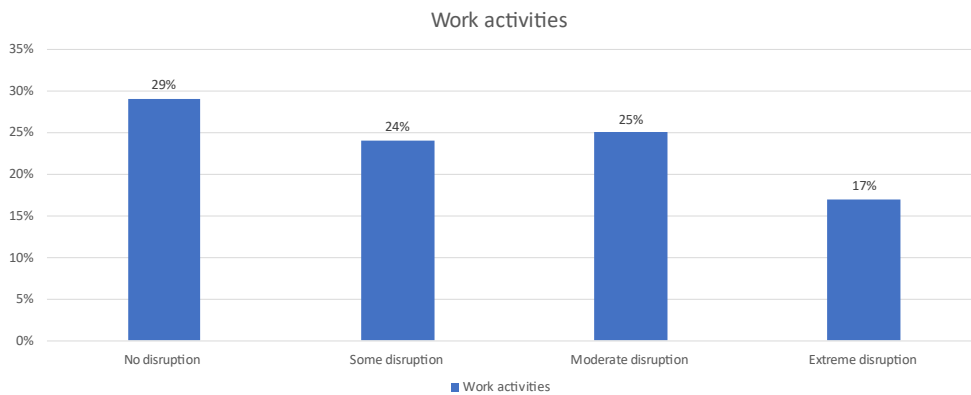


Figure 8: Disruption in social activities related to COVID-19

Three participants did not respond to the questionnaire section regarding work activities disruption (Figure 9). Thus, the total percentage of sample participants that reported "no disruption" to "extreme disruption" equates to 95% (n=56) of the total sample participants



(Figure 9). 66% (n=39) of the participants reported "some" to "extreme disruption" regarding their work activities (Figure 9)

Figure 9: Work activities disruption

Figure 10 presents disruptions in physical activity following the onset of the COVID-19 pandemic. Two participants did not respond to this portion of the research questions. Twenty-three (39%) of the participants reported some disruption, 32% (n=19) reported "*moderate disruption*," and 22% (n=13) of the participants reported, "*extreme disruption*." In summary, 92% (n=54) of the participants reported "some" to "extreme disruption of their physical activities lifestyle.

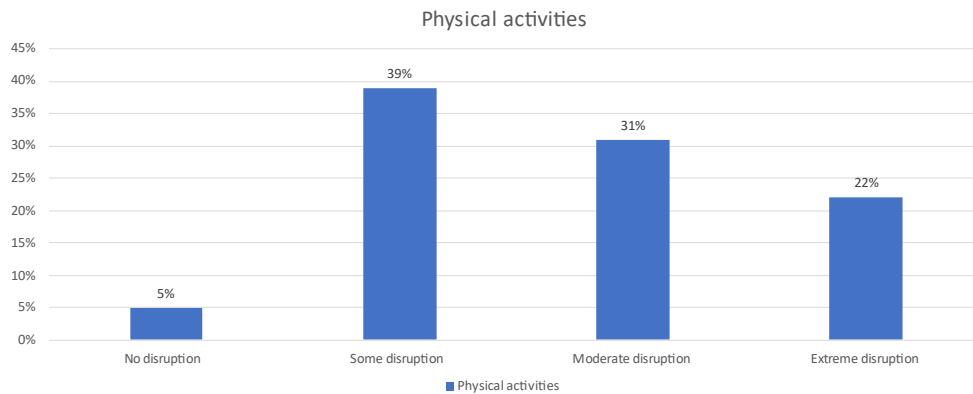


Figure 10: Physical activity disruption

Figure 11 summarizes the impact of the COVID-19 pandemic on participants' sleep hygiene. Two-thirds of participants reported that their sleep hygiene either "*worsened significantly*" (n=11) or "*worsened moderately*" (n=23). One-third of the participants reported "*no change*" in their routine sleep schedule.

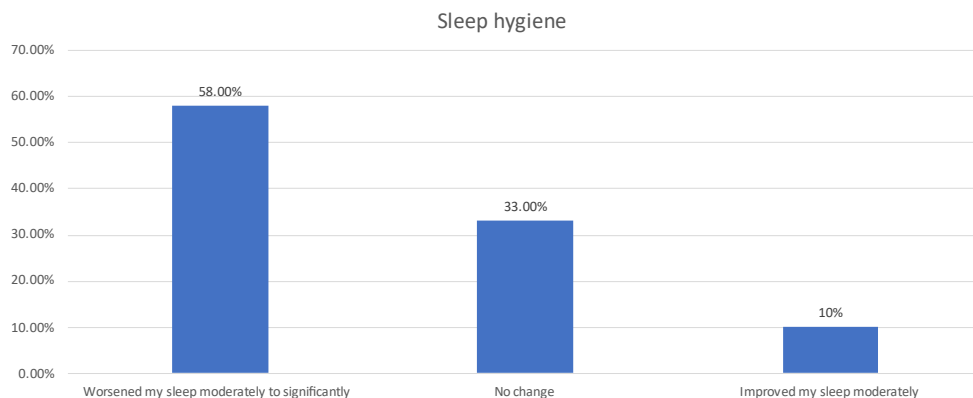


Figure 11: Sleep Hygiene disruption

Figure 12 illustrates the impact of the pandemic on participants' energy levels. Over three-quarters of the participants reported that the COVID-19 pandemic *"worsened my energy moderately to significantly."* Of these participants, 27 % (n=16) reported that their energy levels *"worsened significantly,"* and 49% (n=29) of the participants reported their energy levels *"worsened moderately."*

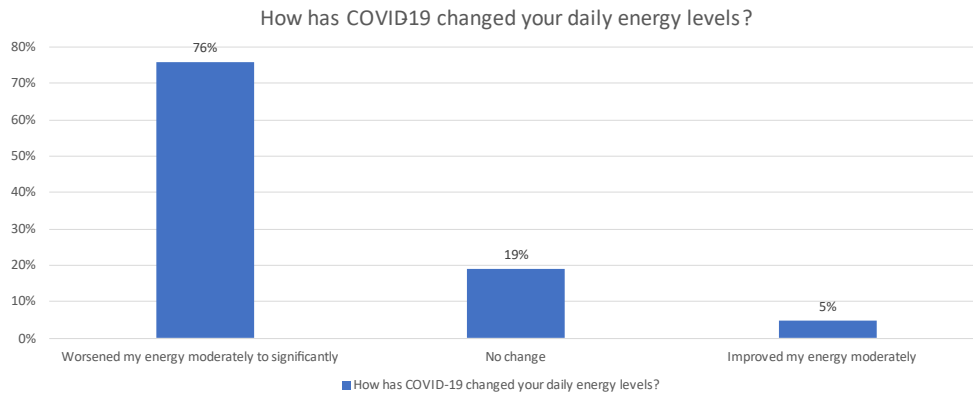


Figure 12: Energy levels during the COVID-19 pandemic

Table 8 summarizes participants' self-reported coping mechanisms. The sample participants were able to select all that applied in regards to their coping mechanisms. The least reported coping activity reported is *"smoking cigarettes,"* while the highest reported coping mechanism is *"talking with friends"* (Table 8). Coping mechanisms reported at or above 50% included: *"Getting a good night's sleep," "talking with friends,"* and *"exercise."*

Table 8: Coping mechanisms

What are you doing or did you do to cope with the COVID-19-related stress you encounter?	Frequency n (%)
Talking with friends	49 (83 %)
Exercise	38 (64%)
Getting a good night's sleep	37 (63 %)
Helping others	28 (48 %)
Eating candy and chips	27 (46 %)
Meditation	19 (32 %)
Drinking alcohol	12 (20 %)
Talking to my health providers more frequently	10 (17 %)
Smoking cigarettes	0 (0%)

Resiliency

The questions “*I am able to adapt to change*” and “*I tend to bounce back after illness or hardship*” were scored from 1. Rarely true, 2. Sometimes true, 3. Often true, or 4. True nearly all of the time. The participants reported an average of 2.88 for resilience question #1 and reported an average of 2.98 for resilience question #2 (Figure 13). Essentially, the majority of the participants reported their resilience levels as a three on both questions, on a scale of 0-4, with a standard deviation of 0.73 for resilience question #1 and 0.81 for resilience question #2 (Figure 13).

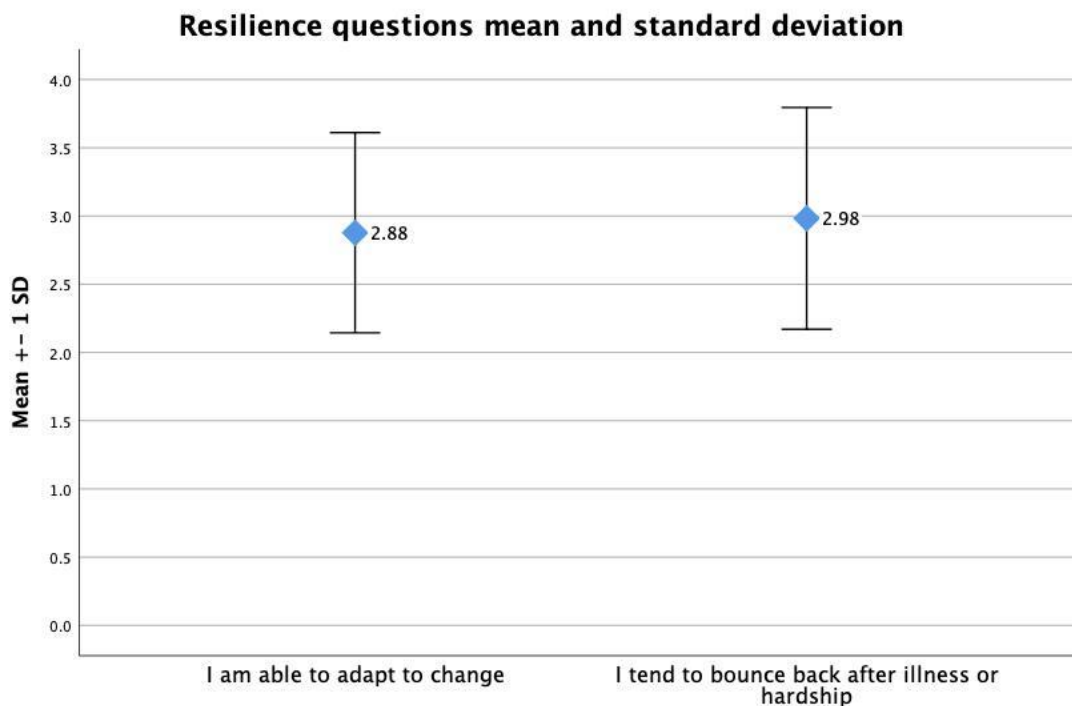


Figure 13: Whisker plots of the Connor-Davidson Resilience Scale (CD-RISC) 2 quick question score.

Correlations Between Depressive Symptoms, Anxiety, Post-Traumatic Stress, and Resiliency

Pearson correlation coefficients were used to identify correlations between resilience questions 1 and 2 and scores for the PHQ-9, GAD-7, and PTSS-10 (Table 9).

Table 9: Pearson Correlation Coefficients Between Measures of Resiliency, Depression, Anxiety, and Post-traumatic Stress

<i>Correlations</i>		PHQ (Depression)	GAD	PTSS
1. I am able to adapt to change	Pearson Correlation	-0.248	-.293*	-.315*
	Sig. (2-tailed)	0.063	0.027	0.017
2. I tend to bounce back after illness or hardship	Pearson Correlation	-.492**	-.446**	-.423**
	Sig. (2-tailed)	0.000	0.001	0.001
*. Correlation is significant at the 0.05 level (2-tailed).				
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 9 reveals the inverse relationship between both resilience levels vs. depression (PHQ-9), anxiety (GAD-7), post-traumatic symptom scale 10 (PTSS). Additionally, to be as rigorous as possible, Spearman rho and Kendal tau non-parametric correlations were used to confirm the inverse relationship between resilience questions 1 and 2 and the three measures of anxiety, depression, and PTSS/PTSD—the results concluded that Pearson correlation is significant (Table 10). Essentially Table 9 and 10 report that greater self-reported resiliency levels were correlated with less depressive symptoms, less anxiety, and reduced post-traumatic stress symptoms.

Table 10: Non-parametric Correlation Coefficients Between Measures of Resiliency, Depression, Anxiety, and Post-traumatic Stress

<i>Correlations</i>			phq_sum	gad_sum	ptss_sum
Kendall's tau_b	resil1	Correlation Coefficient	-0.183	-.216*	-.269*
		Sig. (2-tailed)	0.088	0.042	0.011
		N	57	57	57
	resil2	Correlation Coefficient	-.307**	-.337**	-.319**
		Sig. (2-tailed)	0.004	0.002	0.002
		N	57	57	57
Spearman's rho	resil1	Correlation Coefficient	-0.227	-.264*	-.335*
		Sig. (2-tailed)	0.089	0.047	0.011
		N	57	57	57
	resil2	Correlation Coefficient	-.377**	-.426**	-.396**
		Sig. (2-tailed)	0.004	0.001	0.002
		N	57	57	57
*. Correlation is significant at the 0.05 level (2-tailed).					
**. Correlation is significant at the 0.01 level (2-tailed).					

Current Distress

On a scale of 1 through 10, *1 being no distress and 10 being extreme distress*, the participants were asked to report the level of distress they were experiencing regarding disruptions to their own social support due to the COVID-19 pandemic. The sample participants indicated that their average levels of distress were 5.68 (SD=2.19; median 6; range 1-10), suggesting moderate levels of distress (Table 11).

Table 11: Social Support:	Mean	SD	Median	Range
<i>In general, what is the level of distress you have experienced with disruptions to your social support due to COVID-19 on a 1 to 10 scale, with 1 being no distress and 10 being extreme distress?</i>	5.68	2.19	6.00	1-10

Table 12 presents the top three sources of stress: school concerns (41%), financial concerns (17%), and general well-being due to social distancing and/or quarantine (10%) of the sample participants (Table 12).

Table 12: Top three sources of stress

	Frequency n (%)
What is the single greatest source of stress right now?	
<i>School concerns</i>	24 (41 %)
<i>Financial concerns</i>	10 (17 %)
<i>General well-being due to social distancing and/or quarantine</i>	6 (10 %)

DISCUSSION

The intent of this Honors thesis was to analyze the levels of anxiety, depression, pre-clinical PTSD, and resilience levels of prelicensure nursing students during the 2020 summer semester and the beginning of the 2020 fall semester. It's crucial to analyze the relationship between resilience levels and mental health (anxiety, depression, and PTSD) in nursing students due to the current state of the nation's mental health and the mental health of US bedside nurses in general (CDC 2021; Cui et al., 2020). The mental health of nursing students and bedside

nurses throughout the US has reached an all-time low during this pandemic (Cui et al., 2020). Nurses have been leaving bedside nursing in record numbers (Lockhart 2020). Nearly 1 in 5 newly-graduated nurses will change jobs or even leave the profession of nursing entirely within the first year after graduation (Lockhart 2020). An additional one-third of nurses *contemplate* leaving the profession of nursing after two years (Cui et al., 2020). The results of this thesis are self-evident, and the fact of the matter is that nursing is and will always be stressful. It is imperative that nursing schools understand the importance of resilience and mental health in the admissions process, in nursing school, and the importance mental health and resiliency levels have on nursing students and future registered nurses already in practice.

Anxiety, depression, and PTSD symptoms have been prevalent in many US adults during the COVID-19 Pandemic (CDC 2021). Over 40% of US adults reported struggling with their mental health during the global Pandemic (Czeisler et al., 2020). An additional study revealed that 30.9% of US adults reported symptoms of anxiety disorder or depressive disorder attributed to quarantine and pandemic lockdowns (CDC, 2021). Much of the peer-reviewed literature surrounding the COVID-19 pandemic has been associated with many types of negative and strong emotions. In essence, our study results are similar to current literature regarding mental health and resilience levels in prelicensure nursing students throughout the world (CDC, 2021; Czeisler et al., 2020; Li et al, 2020; Stephens, 2013).

Results of this study provide insight into the prevalence of mental health and resilience levels among prelicensure nursing students during the early months of the COVID-19 pandemic. All of the sample participants were prelicensure nursing students in various cohorts of the prelicensure program. Although my research questions do not require identifying the possible relationship between mental health and coping mechanism, it's interesting to present parts of the data that may inspire other nursing graduates to pursue further questions regarding coping

mechanisms in the profession of nursing and the importance of advocating for mental health interventions in our workplace. On a scale of 1 to 10, our participants' self-reported mean score for level of distress was 5.68, indicating moderate distress. The top three sources of stress were school concerns, financial concerns, and general well-being due to social distancing and/or quarantine (Table 11). Two similar studies exploring coping mechanisms, anxiety, and depression levels concluded that a major reason for nursing students' significant mental health decline during the COVID-19 pandemic was due to the actual fear of being infected by the virus (Majrashi et al., 2021) Challenges with distance learning, heavy workloads, and insecurity regarding their clinical site rotation schedule were also major concerns (Masha'al et al., 2020).

Most of our sample participant's coping mechanisms were via phone calls, electronic communication, video-call, or in person. The majority of the social support was from family and friends. The majority of the study participants, 76% (n=45), reported that the satisfaction with current levels of support was somewhat satisfied or extremely satisfied. Other coping mechanisms included: meditation, talking with friends, exercising, and helping others in need. One of the concerning coping mechanisms found in our sample participants includes the use of drinking alcohol. Exactly 1/5th or 20% (n=12) of our 59 students reported resorting to drinking alcohol in unknown amounts. This coping mechanism is troubling because evidence has shown that an estimated 10% of nurses will misuse drugs or alcohol at some time during their career (Kaliszewski, 2019). Although nurses appear to drink less than the overall population of the world, one study reported more binge drinking among nurses compared to the general population aged 35 and older (Kaliszewski, 2019). This evidence suggests further importance of acknowledging healthy vs. unhealthy coping mechanisms present in nursing students.

One of the other most prevalent emotions among US adults and nursing students during the COVID-19 pandemic has been anxiety (CDC 2021; Czeisler et al., 2020). Anxiety has

seeped into many of our homes throughout the world and at varying levels. Many US adults most likely know a loved one or are personally impacted by anxiety due to the COVID-19 Pandemic (Czeisler et al., 2020). Some of our sample participants have also shared these moderate to high levels of anxiety. Forty-seven members of our sample participants actually suspected themselves of having COVID-19 symptoms, while 43 members of the study reported being in contact with someone who was confirmed to have COVID-19. This essentially caused these self-suspected asymptomatic prelicensure nursing students to be COVID-19 tested. Out of the participants that responded "Yes" to being COVID-19 tested, which was 41% of the participants, only 8% had a positive COVID-19 result (table 2).

Anxiety levels of our sample participants were rated at 8.26 with a standard deviation of 5.39, and 16% of participants had clinically significant anxiety. A similar analysis of "Nursing Students Anxiety Levels and Coping Strategies during the COVID-19" pandemic in the Department of Surgical Nursing at Artvin Çoruh University in Turkey revealed that 40.5% had moderate anxiety. The sample size of this study was 316 nursing students. The Generalized Anxiety Disorder-7 Scale was also used to assess anxiety levels (Zeynep, 2020). Anxiety continues to impact prelicensure nursing students throughout the globe, including our own sample participants.

There is this common misconception that PTSD only exists in theatres of war, but over time evidence has shown how common and underreported PTSD symptoms are in the Nursing or Medical field. Bridgland et al. (2021) had a sample size of 1,040 online participants (Nursing Students) in five western countries. Bridgland et al. (2021) study revealed that 13.2% of the sample had post-traumatic stress symptoms, despite types of COVID-19 "exposure" (e.g., lockdown), not fitting DSM-5 criteria. Bridgland et al. (2021) also measured the general emotional reactions such as (e.g., angry, anxiety, helplessness), well-being, psychosocial

functioning, depression, anxiety, and stress symptoms related to the COVID-19 pandemic. The results of this study concluded that over 60% of the nursing students had PTSD-like symptoms for events that had not happened, such as when participants had not been directly (e.g., contact with the COVID-19 virus) or indirectly exposed to COVID-19 (e.g., via media). Bridgland et al. (2021) summarized that the emotional impact these prelicensure nursing students experienced or anticipated best predicted PTSD-like symptoms in the future. The mean score of our sample participants regarding the PTSS-10 scale was 18.43, with nearly one-third of participants' scores suggesting pre-clinical PTSD. Bridgland et al. (2021) also concluded that the COVID-19 experiences reported by the prelicensure nursing students could be understood as a traumatic stressor event, capable of eliciting PTSD-like responses, anxiety symptoms, depression symptoms; and can also exacerbate other related mental health problems such as anxiety, depression, and pre-clinical post-traumatic stress symptoms. In summary, the perceived levels of anxiety, depression, and pre-clinical PTSD symptoms support and align with research regarding prelicensure nursing students' mental health during the COVID-19 Pandemic (Labrague et al., 2021).

Our sample participant's cohort findings revealed that 14% of our sample participants had moderately severe to severe symptoms of depression. Over 1/3 of our sample participants reported at least one clinically important symptom of depression, anxiety, and/or post-traumatic stress symptoms.

Research question #2 allowed us to explore the correlation between resilience levels and mental health. Participants with lower self-reported resilience scores experienced higher levels of anxiety, depression, and pre-clinical PTSD. This inverse correlation has existed in multiple studies; specifically, in the Philippines, where over 300 nursing students were surveyed. Labrague et al. (2021) concluded that Filipino nursing students experienced high levels of stress

associated with the pandemic; however, their self-reported resilience levels were directly correlated with the effects of pandemic-associated stress on life satisfaction and psychological well-being of prelicensure nursing students.

Study Limitations

A limitation of this project was an overall low response rate. Several reminders were sent out to the eligible students to participate in this study, but at this turbulent time period, it's not surprising there was a low response rate (27%). The COVID-19 pandemic was affecting the sample participant's lives in many ways: loss of employment, working more hours, death of family members due to COVID-19, fear of getting COVID-19, etc. We had a potential 216 students for this study, and only 59 nursing students voluntarily participated in this study.

Although the sample size of 59 prelicensure nursing students provided insightful information regarding anxiety, depression, post-traumatic stress symptoms, and the relationship to levels of resilience in nursing students, the sample size is still relatively small compared to many of the larger studies and journals articles cited in the thesis. This cross-sectional study was conducted during the early months of the pandemic. It's important to point out, however, that the findings of this thesis are consistent with other reports in the literature with larger studies. Additionally, all of the sample participants were from a single institution—the University of Utah. We also do not know the sample participant's baseline level of emotion or resilience levels. Nevertheless, this honors thesis contributes to the overall knowledge of the prevalence of COVID-19-related stressors occurring among nursing students throughout the globe.

Implications for Future Research and Practice

This study highlights the importance of understanding prelicensure nursing students' mental health and resilience levels in a nursing school during a global pandemic. Future research regarding mental health is needed to improve our understanding of the relationship between three

or more interrelated variables such as mental health, resilience levels, social disruption, academics, coping mechanisms, and the nursing school curriculum. It is imperative to understand that the mental health of prelicensure nursing students during nursing school is directly correlated with the mental health and resilience needed for a long-term (5+ years) success in the profession of nursing, whether that be a new graduate in an intensive care unit, emergency department, medical/surgical unit, outpatient nursing, community nursing, graduate school, and many other types of specialties in nursing (Amsrud et al. 2019). One may ask, “How can a faculty member support and embrace a culture of resilience in their own nursing school?” Although this is a multifaceted discussion, Amsrud et al. (2019) best summarize this by saying that “An educational learning culture of trustworthiness promotes the development of resilience in nursing schools.” Amsrud et al. (2019) also highlight that nurse educators may support the development of their students' resilience by listening to their student's needs and supporting them through their endeavors and obstacles they face inside nursing school and outside of nursing school (relationships, children, tragedies, day-to-day obstacles, illness, etc.). Therefore, fostering a culture of resiliency in nursing schools is much needed because of how consistent evidence has shown the actual effect mental health and resiliency have on nursing school and life in general. In addition, the profession of nursing is a strenuous one, and mental endurance and mental resilience are needed so that, in turn, we may be able to confront the challenges of our current healthcare system and other potential pandemic-type outbreaks. Interventions that embrace and aid in promoting nursing students' resiliency levels are needed in all nursing curriculums throughout the country and perhaps the world so that nursing students will proceed on beginning their journey as registered nurses in a healthy mental state. If this isn't discussed more in the nursing curriculum throughout the country, nurses will continue to graduate prelicensure

programs in a state of despair, burnout present, and mentally drained new graduates, which in turn, will continue to deviate new graduate nurses from leaving the profession entirely.

Conclusion

The perceived levels of anxiety, depression, and pre-clinical post-traumatic stress were present in our sample participants at various levels. The highest reported coping mechanism in the sample study was *"talking with friends."* Frequently reported coping mechanisms included "Getting a good night's sleep," "talking with friends," and "exercise." The perceived levels of resilience of these prelicensure nursing students share an inverse correlation with PTSS, anxiety, and depression. In summary, the need to understand the importance of resiliency levels in nursing students is crucial to the profession of nursing because of the consistent inverse relationship resiliency levels in nursing students have with the success of graduating from nursing school and the success as a future registered nurse (Amsrud et al. 2019). In addition, high resiliency levels that begin or are maintained in nursing school are also indicative of a decreased turnover rate as a new graduate (Amsrud et al., 2019). Resilience levels should be more of an emphasis in nursing schools due to the fact that nursing has been, continues to be, and will always be stressful.

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