Nursing Students' Emotional and Physical Well-Being During the Adaptation of an Online Learning Platform due to the COVID-19 Pandemic

by

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Purpose: Colleges were forced to create online learning platforms to provide high-quality education during the COVID-19 pandemic which compounded high stress levels in students. Resilience has shown promise in buffering negative emotional and physical response to stress. This study examined the impact of resilience on undergraduate nursing students' emotional and physical well-being at both the height and stabilization of the pandemic.

Framework: The Pittsburgh Mind Body Center Model was used to examine how students' resilience influenced their emotional and physical response to stress.

Methods: A cross-sectional, descriptive study collected data at two time points (height of the pandemic, n=112, and stabilization of the pandemic, n=225) to determine the impact of resilience on nursing students' anxiety, depressive symptoms, attentional fatigue, eye strain, headache, and overall physical health. Undergraduate students enrolled in an urban School of Nursing completed an online survey assessing outcomes of interest and gender, year in program, financial hardship, grade point average, campus living, and prior mental health diagnosis. Multivariable linear regression models were used at each timepoint in SPSS v. 28. Independent sample t-tests compared outcome variables between timepoints.

Results: Controlling for covariates, higher levels of resilience were significantly ($p<0.01$ for all associations) associated with lower levels of anxiety, depressive symptoms, attentional fatigue, eye strain, headache, and higher levels of overall physical health at both timepoints ($R2$: 0.09 to 0.41). There was a significant ($p<0.01$) decrease in anxiety and depressive symptoms and improvement in attentional fatigue and overall physical health as the pandemic stabilized. When standard cutoff scores were applied, the percentage of students at risk for moderate to severe anxiety dropped from 44% during the pandemic height to 9% as the pandemic stabilized. Students identified as at risk for moderate to severe depression dropped slightly from 59% to 46%. Mean resilience scores were relatively stable across time (m=18.67, SD=4.65 versus m=19.03, SD=4.81).

Conclusions and Implications: Findings demonstrate poor emotional and physical well-being during the pandemic with resilience as the most consistent predictor. These data underscore the role of resilience in nursing students' well-being and highlight that poor emotional and physical well-being may continue as the pandemic stabilizes.

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Preface

1.0 Introduction

In March 2020, colleges and universities across the nation made the difficult decision to shut down face to face learning environments and send students home midway through the Spring 2020 semester. Institutions were then tasked to quickly create an online learning environment that provided the same quality education as an in-person classroom experience. Although learning through an online format is a viable option for many students, drastically changing learning environments has a high potential to create a stressful environment, the stress of which was compounded by the COVID-19 pandemic. Increased levels of emotional stress has the ability to impact the physical well-being of students. Conversely, resilience has shown promise in buffering poor emotional and physical response to stress. This study examined the impact of resilience on undergraduate nursing students' emotional and physical well-being at both the height and stabilization of the pandemic.

2.0 Background

When the COVID-19 pandemic first began, the switch from face-to-face classes to an online learning environment that provided the same quality education was extremely difficult for both students and faculty. Many of these classes had not previously been taught online and educators had to determine how they could teach remotely using different computer platforms and programs. Previous research studies have reported that although online learning formats can be a good supplement to face-to-face instruction, they may not a viable replacement for all in-person courses. Factors favoring face-to-face interaction included the opportunity to directly ask the lecturer questions and obtain an immediate answer and the ability to exchange topics with fellow students during face-to-face classes (Keis, Grab, Schneider, & Öchsner, 2017). Switching to a completely online learning platform was challenging for nursing students who had to quickly learn how to deal with the loss of face-to-face interactions as a requisite to their education (particularly clinical rotations in a hospital setting one to three times a week as well as academic science and skills labs that were essential to the completion of their degree).

Many of the online learning programs that existed prior to the onset of the COVID-19 pandemic were originally developed to be delivered in an online environment and for students who chose the option of online learning. The impact of changing from in person to online learning on nursing students who did not select this format of learning is currently unknown. In the Fall of 2020, 6 months after the onset of the pandemic, some universities allowed students to return to campus, but many classes remained entirely online or were delivered in a hybrid format. Classes started to mostly return to in-person during the Fall of 2021 at most colleges and universities with some restrictions.

Stress, particularly the high degree of stress brought on by the changes in learning environments and the COVID pandemic, can have detrimental effects on emotional well-being leading to poor outcomes such as increased depressive and anxious symptoms. The Pittsburgh Mind Body Center Model can be used to illustrate how emotional and environmental stressors affect outcomes of emotional and physical well-being (Sherwood et al., 2008). When an acute stressful event occurs, in this case, and COVID-19 pandemic and all the fall out that ensued including changing to online learning, the body activates the sympathomedullary and hypothalamic pituitary axes, which results in increased release of glucocorticoids and catecholamines. The release of the glucocorticoids and catecholamines prepare the body for a stressful situation by increasing blood pressure, heart rate, respiratory rate, and blood glucose levels. When there is overactivation or sustained activation of these axes due to consistent high levels of stress, overall immune function can be affected, placing individuals at risk for poor physical well-being affect outcomes leading to eventual fatigue and exhaustion (Tonhajzerova & Mestanik, 2017).

One variable that has been shown to consistently affect outcomes following a stressful situation is resilience. Resilience is defined as the capability of an individual to overcome stress and successfully adapt to changes, resist the negative influence of stressors, and avoid the appearance of significant dysfunctions (Babic et al., 2020). It is used to describe a person's ability to recover quickly from setbacks that occur during his or her life (Zautra, Hall, & Murray, 2010). Resilience impacts the way a person either positively or negatively copes with stressful situations in their life. It can also play a role in motivating people to stay mentally and emotionally healthy and practice behaviors to help them cope with mental illnesses (Yoo, 2006). Research studies have shown that higher levels of resilience are associated with preventing the onset of illness, enabling good health, and facilitating and accelerating healing with a quality life and sense of well-being

(Babic et al., 2020). Resilience is not constant nor is it completely innate, but it can be strengthened and can contribute to the advancement of health and relief of disease. Since resilience can affect how people cope with stressful situations, it was posited that the higher the levels of resilience, the lower the person's vulnerability, and the lower risk of poor emotional and physical well-being.

The importance of understanding the influence of resilience on well-being other than to be used to identify those at risk is the fact that resilience is amenable to intervention. Research has shown that interventions can increase a person's level of resilience. Yuan and colleagues (2022) reported improved resilience in college students who participated in a Mindful-Based Emotion Management Program. The authors reported a significant improvement in fatigue, depressive symptoms, and panic at the end of the four-week intervention (Yuan, 2022). Another research study investigated the effect of an intervention focused on affecting compassion, awareness, resilience, and empowerment (CARE) on nurses' levels of burnout. Safaeian et al. emphasized particularly high levels of burnout during the COVID-19 pandemic due to exposure to multiple stressors and reported decreases in burnout following the intervention (Safaeian, Tavakolifard, & Roohi, 2022).

Resilience has also been shown to improve in response to an intervention in medical students. Nutting and colleges (2022) created a brief, 8-week mindfulness program for persons undergoing a family medicine residency program during the COVID-19 pandemic (Nutting, Ofei-Dodoo, Rose-Borcherding, & Strella, 2022). Resilience, as well as anxiety, stress, and compassion, were benefited after the 8-week intervention. This study demonstrates the importance of measuring levels of resilience in high-risk populations as a predictor of emotional and physical well-being during drastic changes in learning environments. Given the high degree of stress during the COVID-19 pandemic including general fear as well as adaptation to a new learning platform, this

study was undertaken to examine the impact of resilience on undergraduate nursing students' emotional and physical well-being while adjusting to adapted education due to COVID-19 at the height of the pandemic and a year later, when the pandemic started to stabilize.

2.1 Purpose

The purpose of this cross-sectional, descriptive study was to examine the impact of resilience on undergraduate nursing students' emotional and physical well-being while adjusting to adapted education and the COVID-19 pandemic both at the height of the pandemic and a year later, when the pandemic started to stabilize.

2.2 Specific Aims

The specific aims of this study were to:

1. Describe predictors of nursing students' emotional (anxiety, depressive symptoms) and physical (attentional fatigue, eye strain, headache, physical fatigue) well-being during a drastic change in learning and social environment (February, 2021) and as the learning and social environment begins to stabilize (when more constant, alternate learning environments are effectively put in place, February, 2022);

2. Examine differences between depressive symptoms, anxiety, physical well-being, and mental fatigue between the height of the pandemic and as the pandemic began to stabilize.

3.0 Methods

3.1 Design

A cross-sectional, descriptive study was implemented twice to determine the impact of resilience and sociodemographic characteristics on the emotional and physical well-being of nursing students.

3.2 Sample

Undergraduate students (freshman, sophomore, junior and senior classes) enrolled in the University of Pittsburgh School of Nursing were the sampling pool for this study. The School of Nursing provided an optimal setting to ensure feasible recruitment and consistency as there is a large nursing class size and the nursing program is continuously highly rated. Inclusion criteria were current enrollment in the undergraduate school of nursing program and 18 years of age or older. Participants enrolled in the Accelerated Second-Degree Bachelor of Science in Nursing program were not eligible to participate, as they represent significant differences in sociodemographic variables. Inclusion and exclusion criteria were the same at each of the two timepoints, at the height of the pandemic and when the pandemic began to stabilize.

3.3 Recruitment

Participants were recruited through email sent by the Office of Student Affairs & Alumni Relations (SAAR) which provides services for students, prospective students, alumni, donors, faculty, and staff of the University of Pittsburgh School of Nursing. The Associate Dean for Student Affairs and Alumni Relations was responsible for distribution of the invitation to participate in the research and provided a letter of support for the study. An email was sent using a pre-existing list which served to all potential participants inviting them to participate in the study by clicking a link to a Qualtrix™ survey. Consent was indicated by completion of the electronic survey. After the initial email was sent to students, two reminder emails, each sent one week apart, were sent to all potential participants from Student Services to remind them to complete the survey. Student Services also sent a flyer to all undergraduate students to encourage participation in the study. An identical web based Qualtrix™ survey was used at both time points to obtain the following outcomes from nursing students: anxiety, depressive symptoms, attentional fatigue, eye strain, headache, and overall physical health as well as potential predictors including: resilience, gender, year in program, income, financial hardship, grade point average, campus living, and previous mental health diagnosis. The duration of the subject's active participation in the survey was approximately seven minutes. The survey link was sent to approximately 676 students at each timepoint. In timepoint one (February, 2021, during the height of the pandemic), a total of 112 participants responded to the survey. At timepoint two (February, 2022, during a stabilization of the pandemic), a total of 225 participants responded to the survey. Because the Student Services Department and the investigators were blinded to any participant identification, the linkage of participants to first and second surveys was not possible.

Due to a lower response rate in the first survey, participants were given the option of receiving a $10.00 gift card when the second survey was distributed. If interested, the student completed an additional page in the survey which automatically linked to a screen to provide information for reimbursement.

3.4 Protection of Human Subjects

The study was approved by University of Pittsburgh Institutional Review Board and resources for the project were housed within the University of Pittsburgh School of Nursing. The investigators did not have access to identifiable information linking individuals to their data and Student Services did not have access to student responses or which students completed the survey. Participants were assigned a study ID number upon completion of the survey. There was no list linking study ID number and any identifiable information for those participants who requested reimbursement. The website used a server certificate for authentication and all communications between clients and the webserver were encrypted using https. The URL of the research website was only given to authorized users (Participants). Permissions were set on all directories and/or specific pages to prevent access from unauthorized users within the research study (e.g., participants could not access administrative pages.) The online Qualtrix^TM survey was housed on a university server and data was downloaded and stored to a secure OneDrive^TM, which regulates which individuals have access to the data. Reimbursement information was also stored on a secure OneDrive^TM and was only shared with specific individuals that needed access to give participants reimbursement.

4.0 Methods

4.1 Data Collection

At both timepoints, data were collected via web-based questionaries at the time of consent. Data were downloaded from the secure Qualtrix™ database into SPSS version 28. The data from the research survey were housed on a on a university server and was saved and stored on a secure OneDrive™, which regulates which individuals have access to the data.

5.0 Measures

Sociodemographic characteristics were obtained using an investigator developed questionnaire and queried participants regarding gender, GPA from Fall 2019, grade level, financial hardship, on campus or off campus living, and previous diagnosis of an emotional health problem (e.g., depression or anxiety).

Anxiety was measured using the Beck Anxiety Inventory Scale (BAI) to indicate the level of anxious symptoms participants were feeling. Participants rated how often they were feeling specific symptoms using a four-point Likert type scale. Higher scores indicated higher levels of anxiety. Validity and reliability for the BAI has been well established (Fydrich, Dowdall, & Chambless, 1992).

Depressive symptoms were measured using the Beck Depression Inventory Scale (BDI) in which participants rated the intensity of symptoms of depression within the prior two weeks using a four-point Likert type scale. Higher scores indicated higher levels of depression. Validity and reliability for the BDI has been well established (Fydrich et al., 1992).

Attentional fatigue alters concentration and engaging in purposeful activities when a person faces multiple competing demands and was measured using the Modified Mental Fatigue Scale (MMF) (Merriman et al., 2011). Participants rated how intense their symptoms were using a four-point Likert type scale. Higher scores indicated higher levels of attentional fatigue. Validity and reliability for the MMF has been well established (Chalder et al., 1993).

Overall physical health was measured using the General Health subscale of the Medical Outcomes Study 36-Item Short Form Survey (SF-36). Participants rated their responses to questions regarding their overall general health on a five-point Likert-type scale. After reverse

coding specific items, responses were calculated according to population normative manual protocols; higher scores indicating higher levels of perceived health (Ware & Sherbourne, 1992). Validity and reliability of the SF-36 are well established (Ware & Sherbourne, 1992) (Hays & Shapiro, 1992) (Stewart & Ware, 1992).

Visual analogue scales were used to measure how frequently participants experienced eye strain and experienced headache using a 10-point scale; higher scores indicated higher frequency of experiencing eye strain and experiencing headache. Validity and reliability for the visual analogue scale has been well established (Rabea Begum & Hossain, 2019).

Resilience was measured using the Brief Resilience Scale. Participants rated their level of agreement with statements regarding resilience using a 5-point Likert type scale. After reverse coding specific items, responses were summed; higher scores indicated higher levels of resilience. Validity and reliability for the brief resilience scale has been established (Sánchez, Estrada-Hernández, Booth, & Pan, 2021).

6.0 Analysis

All analyses were completed using SPSS version 28. Descriptive statistics were used to describe the sample. To examine the role of resilience in emotional and physical outcomes, multivariable linear regression models were used at each timepoint controlling for gender, grade level, financial hardship, grade point average, living on or off campus, and history of mental health disorder diagnosis. All potential interactions were explored. Due to the inability to determine the number and identity of those who completed the survey at both timepoints, independent sample t-tests were considered exploratory and were used to compare emotional and physical well-being outcomes between timepoints.

7.0 Results

A total of 676 participants provided data for this analysis (n=112 at Timepoint 1 and n=225 at Timepoint 2). Sample characteristics are listed in Table 1. The majority of participants from both data collection timepoints were female (n=284, 88.8%), juniors (n=108, 33.8%), lived off-campus (n=174, 54.4%), had an average GPA of 3.8 (SD=0.31), and reported no difficulty paying basic needs (n=223, 69.7%).

At Timepoint 1 (during the height of the pandemic) controlling for potential covariates, resilience was a statistically significant predictor of all emotional and physical well-being outcomes and the models accounted for small to moderate amounts of variance (see Table 2). Students who reported lower levels of resilience (p<0.01) reported higher levels of anxiety (R^2=0.29; ß=-2.41, SE=9.25). In addition, there was an interaction effect of resilience and gender on anxiety. Men with higher levels of resilience were more likely than females with higher levels of resilience to report lower levels of anxiety (p<0.04). Students with higher levels of resilience (p=0.03) also reported fewer depressive symptoms (R^2=0.11; ß=-0.55, SE=9.34).

Regarding physical health, students with higher levels of resilience reported lower levels of attentional fatigue (R^2=0.13; ß=-0.48, SE=6.01). There was a significant (p<0.01 for both) relationship between resilience and frequency of eye strain (R^2=0.09; ß=-0.05, SE=2.71) and frequency of headaches (R^2=0.16; ß=-0.16, SE=2.63); people with higher levels of resilience reported a lower frequency of both eye strain and headaches. Overall physical health was also significantly (p<0.01) positively related to resilience (R^2=0.17; ß=1.45, SE=15.76); students with higher levels of resilience reported higher levels of overall physical health.

At Timepoint 2, when the pandemic started to stabilize, resilience continued to consistently predict emotional and physical well-being after controlling for potential covariates (see Table 2). In addition to students who reported higher levels of financial hardship ($p<0.01$) and those with lower resilience reported lower levels of anxiety ($R^2=0.28$; $ß=-0.49$, SE=4.41). Furthermore, students with higher levels of financial hardship ($p<0.01$) and those with lower levels of resilience ($p<0.01$) ($R^2=0.40$; $ß=-0.94$, SE=6.71) reported higher levels of depressive symptoms.

Regarding physical well-being outcomes at Timepoint 2, higher levels of attentional fatigue ($R^2=0.41$) were reported in those with lower resilience ($ß=-0.67$, SE=4.83), higher financial hardship ($ß=4.17$, SE=0.85), and in those who lived on campus ($ß=-2.46$, SE=1.13). Lower resilience was also associated with a higher frequency of eye strain ($R^2=0.10$; $ß=-0.15$, SE=2.49) and headaches ($R^2=0.09$; $ß=-0.13$, SE=2.68). Finally, there was a significant ($p<0.01$) relationship between resilience and overall physical health ($R^2=0.19$; $ß=2.31$, SE=16.43); people with higher levels of resilience reported better overall physical health. The interaction between resilience and financial hardship was also a significant ($p=0.04$) predictor of overall health. Students who reported greater financial hardship and higher resilience were more likely to report lower levels of physical health compared to those with less financial hardship and higher resilience ($ß=-0.87$, SE=0.80).

Independent sample t-tests were performed to compare anxiety, depressive symptoms, attentional fatigue, eye strain, headaches, and overall physical health between the height of the pandemic and when the pandemic began to stabilize. Regarding emotional health, there was a significant decrease in anxiety ($p<0.01$; m=14.81, SD=10.48 versus m=4.98, SD=6.17). When standard cutoff scores for being at risk for moderate to severe anxiety were applied, the percentage of students identified as at risk for moderate anxiety dropped from 44% to 9%. There was a slight

but statistically significant improvement in depressive symptoms ($p<0.04$; m=13.72 SD=9.31 versus m=11.69, SD=9.66). When standard cutoff scores were applied, students identified as at risk for moderate to severe depression dropped slightly from 59% to 46%.

Regarding physical health, there was also a significant ($p<0.01$) decrease in students who reported an increased frequency of headaches (m= 4.58, SD=2.68 versus m=3.56, SD=2.77) and a significant ($p<0.01$) decrease in students who reported an increased frequency eye strain (m=5.11, SD=2.65 versus m=3.55, SD=2.70). There were no statistically significant differences in attentional fatigue or overall physical health between the height of the pandemic and as the pandemic began to stabilize. Finally, mean resilience scores stayed relatively unchanged (m=18.67, SD=4.65 versus m=19.03, SD=4.81).

8.0 Discussion

The aim of this study was to examine the role of resilience in undergraduate nursing students' emotional and physical well-being and compare student well-being between the height of the pandemic and when the pandemic began to stabilize. Resilience played a role in almost every emotional and physical well-being outcome. Data suggest that students with higher levels of resilience were able to better cope with the stress of online learning and the pandemic at both timepoints. Students with higher levels of resilience reported lower levels of depressive symptoms and attentional fatigue which parallels Yoo et al. and Baba et al.'s findings. There were also significant interactions between gender and resilience and between financial hardship and resilience. Students who had lower levels of resilience were more likely to have an effect of financial hardship on physical health or vice versa. Financial hardship can play a role in a person's ability to cope with stressful situations (indicating lower levels of resilience). If a student has lower levels of resilience and has an added stressor in their life, physical health may decline because of the lack of resources for self-care. In addition, there was an interaction effect of resilience and gender on anxiety. Men with higher levels of resilience were more likely than females with higher levels of resilience to report lower levels of anxiety. Male nursing students who had higher levels of resilience may have been able to cope with the stress of an online learning environment and the COVID-19 pandemic and they reported lower levels of anxiety.

Some measures of emotional and physical well-being such as anxiety changed significantly between the two time points. Anxiety symptoms commonly change over time and as the pandemic began to stabilize, there was a decrease in anxiety symptoms which parallels the stabilization of the pandemic. On the other hand, there were measures of emotional and physical well-being such

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as depressive symptoms, general physical health, and attentional fatigue, that did not demonstrate large changes between timepoints. This may be due to the fact that the stress from the pandemic has not been completely alleviated or that these measures tend not to change easily over time. In addition, there was not a large change in resilience across timepoints, suggesting that it is a relatively stable characteristic without intervention to improve it.

8.1 Implications

Data support findings that resilience can be used to determine who is at risk for poor outcomes. Once individuals at risk are identified, interventions adapted from the literature may help students during stressful situations. Interventions are available to be personalized to those at risk. Safaeian et al. (2022) examined how burnout and emotional exhaustion cause stress and inability to perform tasks in nurses and an intervention with staff nurses was proven to be effective in improving resilience. This study demonstrated high levels of poor physical and emotional well-being in nursing students due to the stress of the COVID-19 pandemic and the change to learning online. As stressful events occur in the future, exercises such as meditation, mindfulness journaling, and educational trainings may help nursing students cope with increased levels stress levels by increasing their levels of resilience (Safaeian et al., 2022). Nutting and colleges created a brief, 8-week mindfulness program for student physicians in a family medicine residency program during the COVID-19 pandemic. This intervention could easily be adapted to nursing students including mindfulness-meditation and deep breathing exercises shown to be effective in other members of the healthcare team (Nutting et al., 2022). Improving levels of resilience in nursing students may have decreased the impact of stress on physical and emotional well-being

and could be used to help with stressful situations in the future as well as helping to target those at risk.

Although there was a significant decrease in anxiety from Timepoint 1 to Timepoint 2, depressive symptoms did not demonstrate a large decrease and there was no significant difference in attentional fatigue or general physical health. These findings suggest that there are many nursing students that are currently at risk for poor emotional and physical well-being and are in need assistance. Informing faculty members of students' experiences could help target those at risk and implement interventions to help successfully cope with stressful situations. Nursing school is already known to be stressful and intervening prior to, or at the start of stressful events could prevent the large-scale impact on students' emotional and physical well-being from external stressors.

Students' poor emotional and physical well-being likely change as they progress and as stressors change throughout a four-year nursing program. There are different stressors that come into play at different times during the program such as starting nursing school freshman year and dealing with the transition of high school to college, starting clinicals during sophomore year or deciding what type of nursing to do and applying for jobs during senior year. Understanding how changes in stressors affect students across time is paramount to tailoring the implementation of interventions to improve emotional and physical well-being.

8.2 Limitations

This study is limited by its cross-sectional nature and nature of the sample. Caution must be used when comparing results between the two surveys. It may be assumed that a portion of the

students who completed the first survey also completed the second. However, the surveys were completed in two different years which means the seniors who completed the first survey and the freshmen who completed the second survey were not the same individuals, while the sophomores and juniors were more likely to be the same. There was a higher response rate in the second survey compared to the first, and the surveys were completed anonymously, so statistical testing (independent sample t-tests) using both datasets was exploratory in nature.

9.0 Conclusion

Data from this study underscore the role of resilience in nursing students who are at risk for poor emotional and physical well-being during stressful situations such as a drastic change in learning environments and the COVID-19 pandemic. Resilience is an important concept to consider because of the impact it has on individuals' overall well-being. Data from this study support methods for the identification of students at risk for poor health during stressful situations so that personalized support and interventions can be targeted to those at risk.

Table 1: Sociodemographic characteristics

Characteristic		N (%)* or M (SD)
Gender	Female	284 (88.8%)
	Male	26 (8.1%)
Grade level	Freshman	81 (25.3%)
	Sophomore	81 (25.3%)
	Junior	108 (33.8%)
	Senior	50 (15.6%)
Financial Hardship		1.31 (0.48)
Grade Point Average		3.61 (0.31)
Campus Living	On-Campus	146 (45.6%)
	Off-Campus	174 (54.5%)
Previous Mental Health Diagnosis	Yes	37(11.6%)
	No	124 (38.8%)

*Note: Not all frequencies add up to 100% due to missing data

Table 2: Linear regression models predicting indices of emotional and physical well-being at Timepoint 1

(during the height of the pandemic)

Outcome Variable	R^2	Predictor (all p-values <0.05)	β	SE
Anxiety	0.29	Resilience	-2.41	9.25
		Gender	-33.97	14.69
		Resilience x Gender	1.66	0.81
Depressive Symptoms	0.11	Resilience	-0.55	9.34
Attentional Fatigue	0.13	Resilience	-0.48	6.01
Eye Strain	0.09	Resilience	-0.05	2.71
Headache	0.16	Resilience	-0.16	2.63
Overall Physical Health	0.17	Resilience	1.45	15.76

Note: Only predictor variables significant at p<0.05 included in the table.

Table 3: Linear regression models predicting indices of emotional and physical well-being at Timepoint 2

(when the pandemic began to stabilize)

Outcome Variable	R^2	Predictor (all p-values <0.05)	β	SE
Anxiety	0.28	Resilience	-0.49	4.41
		Financial Hardship	2.20	0.79
Depressive Symptoms	0.40	Resilience	-0.94	6.71
		Financial Hardship	5.69	1.18
Attentional Fatigue	0.41	Resilience	-0.67	4.83
		Financial Hardship	4.17	0.85
		Campus Living	-2.46	1.13
Eye Strain	0.10	Resilience	-0.15	2.49
Headache	0.09	Resilience	-0.13	2.68
Overall Physical Health	0.19	Resilience	2.31	16.43
		Financial Hardship X Resilience	-0.87	0.80

Note: Only predictor variables significant at p<0.05 included in the table.

Table 4: Comparison of outcomes over time using an Independent Sample T-Test

Variable (t score; df)	Timepoint 1* M (SD)	Timepoint 2* M (SD)	p-value
Anxiety (BAI) * (t=10.44, df=311)	14.81 (10.48)	4.98 (6.17)	<0.01
Depressive Symptoms (BDI) * (t=1.75, df=304)	13.72 (9.31)	11.69 (9.66)	0.04
Attentional Fatigue (MMF) * (t=-0.67, df=292)	11.46 (6.53)	12.02 (6.67)	0.25
Overall Physical Health (SF-36) * (t=0.63, df=297)	64.43 (16.62)	62.98 (19.28)	0.26
Headache (Visual Analogue Scale) (t=3.02, df=298)	4.58 (2.68)	3.56 (2.77)	<0.01
Eye Strain (Visual Analogue Scale) (t=4.72, df=298)	5.11 (2.65)	3.55 (2.70)	<0.01

* Timepoint 1=Height of the Pandemic; Timepoint 2= when the pandemic began to stabilize: BAI= Beck Anxiety Inventory Scale; BDI= Beck Depression Inventory Scale; MMF= Modified Mental Fatigue Scale; SF-36= Medical Outcomes Study 36-Item Short Form Survey

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