

Understanding the Impact of COVID-19 on Students in Institutions of Higher Education

Tracy E. K. Davis, PhD¹, Amanda E. Sokan, PhD² & Afsara Mannan³

¹ Associate Professor, Rutgers University, School of Health Professions, Interdisciplinary Studies, 200 College Drive, Jefferson Hall, Blackwood, New Jersey 08012, USA

² Assistant Professor, The University of Arizona, Mel & Enid Zuckerman College of Public Health, 550 E. Van Buren St., Building 1, Rm. 1364, Phoenix, Arizona 85004, USA

³ Undergraduate Research Assistant, Rutgers University, School of Arts and Sciences/Bloustein, Public Health, 42 Seminary Drive, Mahwah, New Jersey 07430, USA

Correspondence: Tracy E. K. Davis, Rutgers University, School of Health Professions, Interdisciplinary Studies, 200 College Drive, Jefferson Hall, Blackwood, New Jersey 08012, USA. Tel: 856-566-2765. E-mail: ted58@shp.rutgers.edu

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Abstract

United States institutions of higher education (IHEs) transitioned to online learning in response to the COVID-19 pandemic, and guidelines to reduce risk of spreading or contracting the disease. This large scale, impromptu transition to online learning had implications for students, and IHEs. This study used a survey design to explore the impact of the COVID-19 pandemic on students in IHEs, including the impact of the move to online learning on students learning and well-being. Recruitment focused on college students in IHEs, with a sample drawn from 17 IHEs across America (n = 501). We developed a 91-question survey, to collect information regarding impact of COVID-19, and pandemic-related transition to online learning on participants, as well as participants' well-being. We measured student well-being using the following measures: the Generalized Anxiety Disorder Assessment (GAD-7), the patient Health Questionnaire (PHQ-9), Perceived Social Support scale (PSS), and Multidimensional Scale of Perceived Support (MSPSS). Students with disruptions to online learning were likely to be more stressed, and more anxious. About 88% of students reported facing disruptions to online learning from family members, friends, or pets. Overall, students reported moderate to high levels of stress, anxiety, and depression. And, relatively low levels of perceived social support. The impact of COVID-19 on college students and student learning are multifactorial and represent a combination of benefits and burdens. It is imperative that we take lessons learned for this pandemic and apply it to future learning.

Keywords: COVID-19, institutions of higher education, perceived health

1. Introduction

Beginning in March 2020 the United States (US) saw a surge in the number of COVID-19 cases. In December 2020, the first COVID-19 vaccine became available and thus we experienced a decline in the number of COVID-19 cases. Despite the availability of several vaccines, recently we have seen increases in the number of COVID due to individual's decisions not to vaccinate and the increase in variants. One of the key concerns during the pandemic is the mental health of vulnerable populations, including college students. The 2019 Annual Report of the Center for Collegiate Mental Health reported that anxiety continues to be the most common concern among students who completed the psychological counseling center assessment at Harvard (Center for Collegiate Mental Health 2019 Annual Report, 2019). According to Oswalt, et al., (2020), the mental health conditions among college students significantly increased between 2009 and 2015. This is concurrent with the national trend, for example, Texas A&M University has seen an increase in students seeking services for anxiety disorders (Son et al., 2020). It is well known that the prevalence of a pandemic intensifies or creates new stressors including fear and worry for oneself or loved ones, constraints on physical movement and social activities due to quarantine and sudden and radical lifestyle changes (Son et al., 2020). Research on pandemics have mainly focused on health workers, patients, children, and the general population, furthermore, most of the current literature on the psychological impacts of COVID-19 has emerged from the earlier hot spots in China,

while others have written opinion pieces about the pandemics impact on mental health. For instance, Prefferbaum and North (2020) reviewed mental health among healthcare workers who are already stretched and the implications of the pandemic on mental and physical health, as well as on social functioning. However, not many studies have focused specifically on the mental health of college students during the pandemic in the US.

The impact of the COVID-19 pandemic has reshaped learning and caused long-lasting transformations to higher education. For college students, the transition to online learning has had an impact on social and mental health, as well as academic achievement. For example, Lemay, Bezelais, and Doleck (2021) found that the transition to online learning and school closures lead to increased anxiety among university students in Northeastern North America. Student populations in universities and colleges nationwide have been required to rapidly adapt to sudden lifestyle changes in their academic, occupational, housing, and social situations. The use of virtual platforms for distance learning has significantly influenced the overall quality of the college experience. Many currently enrolled students indicated that COVID-19 will likely negatively influence their ability to complete their degree or credential (Burns, Dagnall, Holt, 2020), thus increasing anxiety. Additionally, adjustments to daily routines due to COVID-19 must also be considered, since changes in sleeping habits, limited outdoor activity, and increased cohabitation from quarantine are correlated with anxiety levels, as well.

Overall, these factors may lead to reduced motivation and feelings of hopelessness, loneliness, and lack of control. Most students have not experienced a pandemic causing them to stay at home and avoid human contact. Therefore, we aimed to explore the pandemic's impact on college/university students in the US to be prepared to intervene in the event of another pandemic or a need to quarantine and social distance due to a resurgence of COVID-19 and understand how to make the current virtual environment work better for students. Specifically, this study aimed to explore a diverse sample of student's psychological and behavioral responses to COVID-19, explore student's changes in educational experiences due to COVID-19, and evaluate student's well-being during the COVID-19 pandemic.

2. Methods

This study uses a cross-sectional survey design to explore the impact of the COVID-19 pandemic on students in higher education. We used non-probability sampling strategies including a combination of purposive, convenience, and snowball sampling, to recruit participants from various places of higher education between January 2021 and March 2021. We created the study survey using Qualtrics and shared the electronic link to the survey via E-mail with 248 faculty members at various institutions in the US. In the e-mail, we asked faculty members to share the link to the survey with their current students and other faculty they thought might be interested in participating themselves or sharing with their students. We initially targeted Institutions of Higher Education (IHE) in New Jersey, Pennsylvania, and Arizona, however because faculty and students shared the survey with other we recruited students from a total of 17 states.

A total of 618 students participated in the study. However, our final sample was 501, as we had to delete 117 surveys due to a substantial amount of missing data. The survey contained 91 questions. The questions were a combination of closed-ended questions, as well as open-ended questions in relation to the study aims. We did not provide an incentive to participants. The survey contained four parts: demographic information (including household composition), COVID-19 (e.g., social distancing, diagnosis of COVID), and education information (e.g., year in school, academic major), and general well-being (e.g., mental health and social support).

For the fourth portion of the survey, we used four separate measures to assess mental health and social support:

- The GAD-7 is an easy-to-use self-administered patient questionnaire used as a screening tool and severity measure for GAD (Spitzer et al, 2006). To calculate GAD-7, scores of 0, 1, 2, and 3 are assigned to the response categories of 'not at all', 'several days', 'more than half the days,' and 'nearly every day,' respectively, then added together for the seven questions. Cut off scores are as follows: mild anxiety (5), moderate anxiety (10), and severe (15) (Spitzer, et al, 2006).
- The PHQ-9, an easy-to-use self-administered patient questionnaire, is used as a screening tool and severity measure for depression. The measure consists of nine questions. The PHQ-9 is calculated by assigning scores of 0, 1, 2, or 3 to the response categories of 'not at all', 'several days', 'more than half the days,' and 'nearly every day,' respectively, and adding together the scores for the seven questions (Kroenke, Spitzer, & Williams, 2001). Cut off scores are as follows: minimal depression (1-4), mild depression (5-9), moderate depression (10-14), moderately severe depression (15-19), and severe depression (20-27).
- The PSS is the most widely used psychological instrument for measuring the perception of stress. It is a

measure of the degree to which situations in one's life are appraised as stressful. The measure consists of 14 questions. The PSS is calculated by assigning scores of 0, 1, 2, 3, or 4 to the response categories of 'never', 'almost never', 'sometimes', 'fairly often', and 'very often', respectively. Positive items are reverse scored and then all items are summed (Cohen, Kamarck, & Mermelstein, 1983). Cut off scores are as follows: very low health concern (0-7), low health concern (8-11), average health concern (12-15), high health concern (16-20), and very high health concern (21+).

- The MSPSS is a 12-item questionnaire to identify an individual's perceived level of social support with family, friends, and significant others. The MSPSS is calculated by assigning scores 1, 2, 3, 4, 5, 6, or 7 to the response categories of 'very strongly disagree', 'strongly disagree', 'mildly disagree', 'neutral', 'mildly agree', 'strongly agree', and 'very strongly agree'. Scores on the measure are summed across all 12 items and then divided by 12 (Zimet, Dahlem, Zimet, & Farley, 1988). Cut off scores are as follows: low support (1-2.9), moderate support (3-5), high support (5.1-7).

All data was analyzed using IBM SPSS 27. Frequencies and percentages were obtained for categorical variables. Continuous variables were summarized with either mean and standard deviation (SD) or median and range, as appropriate. Correlations were used to assess the relationship between specific variables and well-being variables. For all statistical tests, two-tailed P-values <0.05 were considered statistically significant. All study procedures were approved by Rutgers University Institutional Review Board (Protocol #2021000038).

3. Results

Five hundred and one students participated in the current study. The average age of the sample was 25.2(SD=8.9). The majority of the participants were female (81.3%) and white (55%). Most of the participants reported being single (56.5%). Participants most often reported being employed part time (41.8%) or being employed (35.7%). The majority of the participants were undergraduate students (65.7%). Students represented a wide variety of majors/areas of study. For example, social work, engineering, cognitive science, medicine, and environmental science. Most of the students did not experience a change in work status due to COVID-19 (53.6%). Participants reported living with approximately 3.74(SD=1.57) people in a three-bedroom home (M=3.10; SD=1.23). Many students reported owning their home or living in a home owned by their family (61.1%). Participants resided in the following states: New Jersey 69%, Pennsylvania (5.3%), New York (5.2%), Maryland (1%), Arizona (6%), Ohio (4.5%), Virginia (2%), Kentucky (.07%), Massachusetts (.01%), Indiana (.01%)—the remainder of the states had one participant each—Tennessee, Colorado, Florida, Connecticut, California, Rhode Island, Texas, South Carolina, New Hampshire, and Alabama.

Most of the students indicated that they have been social distancing for more than two months (86.3%) and most are still practicing social distancing (90.6%). Approximately, 38.6% reported that someone in their home had symptoms of COVID-19 and 23.3% reported a positive COVID-19 test. Most participants (80.1%) reported that no one in their family passed away from COVID-19 or related complications. Approximately 58.4% of individuals indicated that either he or she or someone living in their home worked in a job that is high risk for contracting COVID-19.

Students were surveyed regarding how the pandemic impacted their education. Most students reported no change in the number of courses they registered for because of the pandemic. Most students reported having their own laptop or desktop and not having to share with a family member and the majority reported being satisfied with their internet connection. About 88% of students reported facing disruptions to online learning from family members, friends, or pets. Approximately, 40% of participants indicated that they experienced technological challenges when using virtual platforms, yet most students reported feeling comfortable engaging with peers via virtual platforms, such as Zoom (52%). Sixty-eight percent of students responded that they faced difficulties in understanding concepts through online learning and that the move to online learning impacted their interactions with classmates (81%) and their instructors (78%). Students felt that the university provided sufficient support and services for students during the pandemic (40%), while others disagreed or were unsure. Over 50% of the sample agreed that the university/college handled its response to the pandemic well.

General well-being was measured by using the GAD, PHQ-9, PSS, and MSPSS. Scores on the GAD-7 indicated that students had moderate to severe levels of anxiety 13.9 (SD=8.6). Scores on the PHQ-9 indicated that students were moderately distressed 14.1(9.5). Scores on the PSS indicated very high levels of stress among students 37.7(SD=9.3). While scores on the MSPSS indicated moderate levels of support 3.7(SD=2.6).

Participants were asked eight open-ended questions. The questions aimed to better understand the impact of COVID-19 on their learning experience, by providing participants the opportunity to respond in their own words, and to capture individual's perspectives. As can be seen from the sample responses below (Table. 1), answers

to the open-ended questions are not only in line with survey responses detailed above, but they also help to illustrate and illuminate participant's perspectives.

Table 1. Qualitative Responses

Question	Sample Responses
1. What impact did being at home have on learning/learning experiences?	<ul style="list-style-type: none"> ● I had a better experience with online learning. It is safe and more easily accessible. ● Cannot focus, no privacy in my home. ● Felt like I did not actually learn, and classes were very hard to manage. ● I cannot focus and it is hard to be motivated when I am socially isolated. I also do not feel like I have not been learning as thoroughly. ● Not socializing has caused depression and lack of motivation. ● Unable to stare at a screen for that long and learn. ● It made it easier for me. Going on campus was burdensome at times - looking for parking, getting parking tickets, commuting, etc.
2. What impact did being at home have on keeping up with your classes or course requirements?	<ul style="list-style-type: none"> ● It is easier to keep track of classes during online learning from home for me. ● Not having to commute to campus improved the amount of time I could dedicate to coursework. ● I had to withdraw from Organic Chemistry because I could not learn something that difficult online. This has put me back a little. ● The synchronous classes are fine, but the asynchronous classes are a huge problem. I find a lack of course structure affects my motivation. ● Made it easier to take more classes.
3. How did (has, will) being at home while learning online impact/potentially impact your grades (positive, negative, etc.)	<ul style="list-style-type: none"> ● More time for coursework improved my productivity. ● Positive because the coursework is manageable, and I enjoy not having to be on campus. ● Positive impact because some exams were open notes. ● I think it will have a negative effect this semester. ● It has had no effect on my grades. ● Negatively impacted my grades. I used to be an A/B student, and now I mostly get Cs.
4. For students who typically take in-person courses, but had to move to online teaching/instruction due to the pandemic, what was the impact of COVID-19 on your learning experiences?	<ul style="list-style-type: none"> ● I had a positive experience. ● I feel like I am behind and like I am not retaining the information that I am learning. ● It made the learning experience very difficult. ● Hate it, usually given a PowerPoints that is read off in class or professors not being able to teach well or just teaching the complete wrong things and brushing it off as tech issues. ● It is kind of awful. All my favorite parts of school are gone, and I have not truly learned much. I miss interacting with the professor in class and that is hard online. ● I like online learning better. There is less pressure, and I can do most of my work at my own pace.
5. What challenges did COVID-19 and campus closure pose for you? (e.g., financial, social connectedness, housing, etc.)	<ul style="list-style-type: none"> ● Social connections and access to the library. ● Loss of my on-campus job. ● Losing touch with interactions that are not from work or family, not learning the way I have been used to for years, strain on eyes and back. ● It is hard to get in contact with Rutgers financial aid department, but most of my friends do not go to Rutgers and live near me so I do not feel a lack of social connectedness. ● I felt incredibly lonely and socially disconnected.
6. How has COVID-19 impacted your concentration on course work?	<ul style="list-style-type: none"> ● None, I have more time to get my work done than when I commuted to campus. ● I struggle to concentrate. ● Made me more determined to complete my master's degree. ● I have much less motivation to do my coursework and am more stressed.

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| 7. From your perspective, what are the advantages of online learning. | <ul style="list-style-type: none"> ● COVID-19 has caused some concerns financially that has me concerned about paying tuition. ● I have a hard time paying attention to class unless I am on another site and listening. ● Staying at home all day hurts my mental health and as a result hurts my concentration as well. |
| 8. What would you like us to know about the impact of Covid-19? | <ul style="list-style-type: none"> ● It is easier for me to follow and read what is given to me rather than sitting in a class trying to follow along. ● More time to focus on my schoolwork, better time management skills, more structure. ● You do not have to go out in the cold, and you save on gas. ● Online learning lets me learn at a rate that I am more comfortable with. ● Not needing to take the bus to get to class, can have classes during bad weather conditions (but that is assuming people's internet is unaffected). ● Not having to waste time traveling to and from campus to home every day. Social distancing. Easy communication with professors. ● It has made working towards my BASW very difficult and has made me question whether I want to go for my MSW or not. I don't know if I will be able to afford it. ● You are all awesome. ● Wear a mask and get the vaccine so that we can return to campus ASAP. ● That there are people who are struggling mentally because of Covid-19. ● It has caused me increased stress and I do not think the colleges have efficient stress counseling. ● As everyone else expresses, it is hard to learn certain subjects online and certain majors are not conducive to learning these things online as many of our classes require hands on skills needed to graduate. |
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4. Discussion

The COVID-19 pandemic caught both college students as well as their institutions unawares, and thus unprepared. Despite the initial perception of reduced or absent risk to young adults, there was still an awareness of a need to respond to the health risk presented to the broader college community, which includes persons of all ages and health statuses. Many institutions found themselves needing to pivot to learning modalities that allowed the continuation of teaching, learning and other academic pursuits, whilst reducing risk and in compliance with Centers for Disease Control and Prevention (CDC) safety guidelines, especially with relation to social distancing. The result was the physical closure of many IHE, and the move to virtual/online modes of asynchronous and synchronous instruction. Online learning is not new, however prior to the pandemic, generally students and instructors had a choice as to whether to enroll in or offer courses in this format. Thus, the mandatory change to virtual/online learning constituted a new experience for many. Together the two phenomena, the COVID-19 pandemic and online learning exposed students to two forces whose interaction had the potential to affect their learning experience. It is helpful to consider these separately - namely, impact of COVID-19 on students and the impact of transitioning to online learning.

4.1 Impact of the COVID-19 Pandemic on Student Learning

Participants responses illustrate that the pandemic impacted them in a number of ways, for instance by increasing stress related to the pandemic itself (e.g., risk of infection or COVID-related illness) as well as stress related to disruptions caused by or resulting from responses to the pandemic (e.g., reduced interactions, move to online learning, or loss/changes to employment). For students who contracted COVID-19, that was a stressful experience, as students reported being sick for weeks, fearing for their lives, and falling behind in class. Almost one-quarter of students reported a positive COVID-19 test. Students in our study reported having trouble participating in Zoom sessions because of constant coughing and lingering fatigue. According to Dorn et al. (2020) students of all ages, with or without COVID-19 have fallen behind in their education; however, it is more common for minority students to fall behind.

The stay-at-home orders and practices to comply with social distancing guidelines also had a negative impact on

many students who found themselves engaging in learning activities while at home, mostly by being distractive. Eighty-eight percent of our students reported distractions while trying to participate in school from home. For instance, responses about the impact of being at home on learning included not having a quiet place to study and having many distractions. Distractions took many forms, such as the presence of family and familial expectations or responsibilities. For example, one student reported having a difficult time focusing because they were trying to help their siblings learn. Many students reported that due to distractions and increased responsibility at home they struggled to stay motivated with schoolwork. Students reported doing less studying and that the lack of motivation caused their grades to suffer. Students also reported not learning as much as they typically would because of distraction and lack of motivation. Similarly, a previous study found that both college students and professors lacked motivation after the transition to online learning (Nambiar, 2020). While students who have always learned online did not experience any issues with continuing online, they did report distractions with children being home and others working from home.

Many students reported changes to their mental health. Some students reported not having time to focus on their mental health between school and other responsibilities. Other students reported struggling with retention of course material and changes to their memory. In addition, to distractions caused by family, responsibilities and the absence of privacy, social distancing and being quarantining at home also added to challenges endured, further imperiling mental health. Strategies should be developed to help students move around in their home and neighborhood and changing their home environment so that things do not become so monotonous.

The pandemic also resulted in job loss or changes in employment status for students, with the attendant loss of income, independence, or financial well-being further exacerbating stress and mental health concerns. Being employed and attending college and the loss of employment can lead to stress and anxiety. These concerns and their impact on students' well-being are important considerations and school counselors should inquire about employment status and its impact on student well-being.

Ultimately, the prevailing sense among many participants was that being at home was difficult. However, it must be noted that not all participants felt this way, with some reporting positive aspects to being at home, such as benefits to time management for example students reported having more time to get work done because they did not have to travel to class, while others indicated that it became easier for them to keep track of their classes while learning from home. Nambiar (2020) found that teachers agreed that the convenience of being able to teach from home, teaching from the comfort of their home, and saving travel time, however they expressed that online teaching was not as effective when compared to the classroom method. We can learn from both teachers and students who reported experiences that are more positive from online learning.

This study supports the notion that the COVID-19 pandemic and the response to it contributed to increased stress and anxiety among many students, and thus negatively affected their mental health and well-being. However, study findings also indicate that 50% of students did not feel that their institutions were prepared or equipped to provide the needed support. Understanding these triggers for stress and their ultimate impact on students' mental health is helpful to IHEs as they determine how to support student health and well-being during a pandemic.

4.2 Impact of the Transition to Online Learning

Here study results indicate a dichotomy in impact on participants' regarding the switch to online learning which can generally be divided into two categories – positive versus negative. Students who had prior experience with online education, positive experience with online learning, or positive attitudes to virtual/online learning and /or were originally enrolled in online courses prior to the pandemic were more likely to report positive impact, and/or no impact regarding the transition. Also, there were some students who though new to online learning, reported satisfaction, as several students reported that they felt less pressure with online learning and that they enjoyed being able to work at their own pace. Other, students took advantage of the opportunity to enroll in online courses due to the pandemic. Being online helped some students better handle the pressures of transitioning back to school after years of not being in school.

Negative or subpar impact of transitioning to online learning identified by participants include the following: challenges relating to technology, the environment of learning, role and response of instructors/professors; role /response of IHEs, as well as factors personal to the students themselves. The biggest challenge was technology related, including primarily, issues of access, infrastructure, and know-how. Online learning dependent as they are on technology (e.g., software, hardware, power supply, internet, internet speed) was a key source of concern or determinant in students' ability to effectively transition and optimize online learning. Similar to what Smalley (2020) found, for many, barriers included access to Wi-Fi, high-speed internet with necessary bandwidth, availability of computers, laptops, and other appropriate devices for use when needed.

Another key area of impact related to the environment of learning, which includes social interaction with faculty/instructor and peers, location of learning in a classroom, and other trappings of the learning environment usually associated with being on campus. Some students struggled with this difference, especially the social interactions, which were missing in the online environment. Some college freshman never stepped foot on the college campus and reported feeling very disconnected from their classmates and professors. The transition to college can be challenging in and of itself, but not to have prom, high school graduation, and then not to be able to come to campus was extremely challenging, mentally. Clearly, the distinction between environments that support learning versus not, was important to students, and their well-being.

The attitude and behavior of instructors/professors was also reported. Participants' perception of the transition to online learning as well as their satisfaction was influenced by factors such as professor attitude to, or competence with online teaching, attitude to course work/load, as well as empathy regarding the challenges faced by their students. According to Cranfield, D. J., Tick, A., Venter, I. M., Blignaut, R. J., & Renaud, K. (2021) many students found that navigating the home learning environment, engagement participation preferences, and the impact of learning were significant factors due to COVID. Likewise, over 50% felt that it was difficult to engage students in class when learning online (Lemay, Bazelais, Doleck, 2021). In addition, over 70% of teachers agreed that they found it difficult to control group interactions during online classes due to a lack of structure and 90% of teachers agreed that technical issues effected the flow and pace of online classes (Nambiar, 2020). Some of the students in the current study may have been noticing some of the frustrations and issues that the teachers in Nambiar's study (2020).

Students' perception of their institution's role, response, or handling of the transition to online learning was also salient. For instance, students questioned some of the decisions made by their institutions, because of the impact on their learning experience. Several students indicated they were pulled from their clinical rotations which caused them to miss three to four months of their rotation, thus delaying program completion/graduation. Other students expressed concerns about the suitability of the online format as an effective modality for instruction. For example, students in Science, Technology, Engineering, and Math (STEM) related courses were harder to take online and that those courses need to be taught in person. Other students expressed concern because like the clinical rotations, laboratory experiences were cut-short. Students were concerned that the limited laboratory experience would hinder their potential as a scientist. Dorn et al.(2020) suggest that learning losses due to the pandemic may cause long-lasting harm for k-12 students and society; this may prove the same for college aged students. For example, many students in this study indicated that the transition to online learning had adversely affected their grades. Students in the current study reported that they had to drop classes, taken passes rather than C's all of which impacts their grade point average. Students had concerns about their ability to get into graduate school.

What appears obvious from the study results is the complex and multifactorial nature of the drivers of the impact of transition to online learning on students. Consequently, a variety of factors, some of which have been discussed above, shape students experience and outcomes differently. The other conclusion supported by this study relates to the fact that for many students, COVID-19 pandemic closure of IHEs, causing return to home or other environments not usual places of learning, as well as the transition to resulted in increased stress, and anxiety. As a result, adverse effects to mental health and well-being were reported. Finally, the transition to online learning also constituted both benefits and burdens.

4.3 Final Comments

This study is not without limitations. The relatively small sample size may not be representative of all students at IHE in the US. Additionally, the study could have more diverse in terms of gender and race. Future studies should aim to include a more diverse sample. However, we can take away many lessons from this study, as well as studies that have examined teachers' experiences with transitioning to online learning during a pandemic. No one was prepared for the impact of COVID-19 on academia. It is imperative that we learn from our experiences so that we are prepared for future pandemics or times of quarantine. Additionally, some of the lessons that we learned we may need to maintain even when we return to campus to make learning more efficient. It is imperative to have counseling and support available to students not only during a pandemic, but always as students tend experience stress, anxiety and depression. As we have learned, a pandemic only exacerbates stress, anxiety, and depression. From previous research, we know that students may be reluctant to seek counseling (Oswalt, et al., 2020)—making students aware of counseling services and benefit of those services is essential. It is also to help students build a sense of community when learning online to reduce feelings of isolations, which can help with general well-being. Understanding the interplay and impact on students may help us build on benefits, while seeking to mitigate or eliminate the burdens, to the benefit of students. This way, we can make

the best of a sub optimal situation, and move lessons learned forward.

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