The Impact of COVID-19 on the Mental Health of College Aged Students

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Background and Significance

Problem

Students all around the world have experienced significant changes to their mental health as a result of the coronavirus pandemic. Coronavirus, also known as COVID-19, is a respiratory disease caused by the SARS-CoV-2 virus, that can cause a range of effects from mild respiratory symptoms to life threatening illness (World Health Organization [WHO], 2022). This virus emerged in Wuhan, China, in 2019 and spread rapidly around the globe starting in 2020 (Centers for Disease Control and Prevention [CDC], 2021). This disease spread quickly and because of its novelty to the world, people had little immunity to fight against it, causing millions of people to die as a result. Many countries around the globe responded by enforcing stay-at-home mandates, quarantine procedures, social distancing measures, and vaccine efforts. The United States saw different trends in response to different infection rates across the different states. New York saw a significant peak in cases in April 2020, whereas California saw a steady, logarithmic increase in cases over the past year (CDC, 2022). Because of the changes caused by COVID-19 to various aspects of life, many developed various mental health disorders, such as anxiety, depression, substance abuse, and suicidal ideations (Panchal et al., 2021).

College aged students are already at a higher risk for these negative changes to their mental health, so the effects of the coronavirus pandemic only increased the risk of developing these negative effects (Browning et al., 2021). Various studies showed that many college-aged students did indeed develop various mental health issues, ranging from disruption to sleep or eating patterns to depressive thoughts or suicidal thoughts (Son et al., 2020). From this study

done at a large university in Texas, it was found that 71% of students reported an increase in their stress and anxiety levels over the course of one month (Son et al., 2020).

At a small, liberal arts university in Southern California, the National College Health Assessment (NCHA) report from the American College Health Association (ACHA) in 2017 showed that 14.7% of students were diagnosed with depression and 17.7% of students were diagnosed with anxiety within the past 12 months (ACHA, 2017). Additionally, 61.8% of students reported feeling overwhelming anxiety within the past 12 months, and 90.3% of students felt "overwhelmed by all they had to do anytime within the past 12 months" (ACHA, 2017). These numbers likely were impacted as a result of the COVID-19 pandemic.

Purpose and Rationale

This paper will explore the current status of mental health issues within the college student population, the effects of the COVID-19 pandemic on the mental health of college age students, and evaluate the current mental health trends of students following the coronavirus pandemic at a small, liberal arts university in Southern California. Students were sent home at the beginning of the pandemic in March of 2020 and were not allowed to return to campus until March of 2021, with few exceptions and exemptions to the new policies. Some students were brought back to the United States in the middle of study abroad experiences, some had unstable living situations at home, and others found housing options available in San Diego with housing unaffiliated with the university. Students experienced significant changes to their academic status and schedule, financial situations, housing arrangements, food availability, and employment status. All of these factors could contribute to mental health changes following the pandemic. Additionally, students faced social isolation, changes to their family dynamics, and health status, which could also impact their mental health status.

Review of Literature

Depression

Depression is considered a mood disorder and can be categorized by the presence of depressive symptoms for at least two weeks (U.S. Department of Health and Human Services [US HHS], 2018). Some of these symptoms include "persistent sad, anxious, or 'empty' mood, feelings of hopelessness, or pessimism, irritability, feelings of guilt, worthlessness, or helplessness, loss of interest in hobbies or pleasures, decreased energy or fatigue, moving or talking slowly, feeling restless, difficulty concentrating, difficulty sleeping or early-morning awakening, appetite and/or weight changes, thoughts of suicide or death, suicide attempts, and other medical issues that do not have a clear physical cause" (US HHS, 2018b). People may not experience all of these symptoms, and they may experience changes to the patterns of symptoms as well. Many people who are diagnosed with depression and anxiety develop these conditions as young adults. Mayo Clinic Health System (2021) reports that, "up to 44% of college students reported having symptoms of depression and anxiety" and "of those who have been diagnosed with a mental health disorder, 75% have their first episode by 24". Depression can cause changes to many aspects of life, depending on the range of symptomology and the severity of the illness. According to Mayo Clinic Health System, "Up to 44% of college students reported having symptoms of depression and anxiety" (Mayo Clinic Health System Staff, 2021). One study showed that college students from seven large universities in the United States experienced an increase in depressive symptoms during April of 2020 compared to anytime prior (Browning et al., 2021). Data revealed that, overall, students at these big, American universities experienced "increased lack of motivation, anxiety, stress, and isolation" most frequently (Browning et al., 2021). Additionally, this article referenced that many college students experienced challenges to

different extents based on various risk factors, such as age, race, social class, time spent outdoors, time spent on a screen, general health, or knowing someone infected by COVID-19 (Browning et al., 2021). This data was also significant as it showed trends of increased reports of depressive students within the student bodies across multiple different universities in various regions across the United States, including Arizona State University, Clemson University, North Carolina State University, Oregon State University, Pennsylvania State University, University of Montana and the University of Utah.

Similarly, a research study performed at City College of New York and the City University of New York showed results that a severe increase, almost 90% of students surveyed, demonstrated depression symptoms within the past two weeks, measured using the Patient Health Questionnaire (Lopez-Castro et al, 2021). This was a significant increase of students at urban universities experiencing depressive symptoms that can be correlated to the COVID-19 pandemic. Symptoms significant of depression certainly increased as a result of the COVID-19 pandemic for students at many universities, as did anxiety-related symptoms.

Anxiety

Anxious thoughts and feelings are a normal response to challenges experienced in everyday life. However, anxiety, as defined by the National Institute of Mental Health, is a group of mental health disorders in which a person experiences increased anxiety and worry regarding everyday activities that can last for weeks, months, or years (US HHS, 2018a). Anxiety disorders can be split up into various types of disorders, including generalized anxiety disorder, panic disorder, and phobias. An interview study showed that 71% of students participating in the research project reported an increase in anxiety due to the COVID-19 pandemic (Son et al., 2020). A similar research study done at a university in New Jersey found that students other than

freshmen were more likely to experience increased anxiety as a result of the pandemic. This could be likely due to the fear of how the pandemic would affect their post-graduation plans (Kecojevic et al, 2020). Many of the research studies done have used the Generalized Anxiety Disorder Scale (GAD-7), the Perceived Stress Scale (PSS), or the Brief Symptom Inventory (BSI-18) to measure the extent of anxiety measured for each person. While there is no documented correlation between the pandemic and outcomes from these scales, students in many settings have reported that many of these symptoms of anxiety were due to changes in their environmental factors and their university's response to COVID-19.

Current University Mental Health Trends Following COVID-19

Universities across the globe responded to the coronavirus pandemic in a variety of ways to address academic needs, environmental stressors, and new health challenges. When COVID-19 was officially declared as a pandemic, schools with students of all ages had to shift to remote learning immediately in order to avoid close contact within social situations. Additionally, colleges faced an added challenge as their student life had to shut down, forcing students out of dormitories and other housing options. A research study done with science, technology, engineering and mathematics (STEM) students from a variety of U.S. colleges and universities provided data showing that students faced immense distress over their university's response to COVID. Students placed in 16 focus groups reported that some of the most common positive outcomes of the 'university response' to the pandemic included flexibility with administrative decisions, such as pass/fail options for classes, offering more free and remote services, such as tutoring or counseling services, effective communication techniques, such as town hall meetings, and financial assistance and relief (Pagoto et al., 2021). One of the identified challenges that students faced was a lack of a specific protocol for faculty to follow which would

outline requirements for teaching policies and consistency for remote learning (Pagoto et al., 2021). One additional part of this survey that makes it unique is that the survey separated focus groups of students based on their gender, race, ethnicity, and socioeconomic status (Pagoto et al., 2021). Authors stated that this was important because students reacted in different capacities because of various external factors, such as their gender, race/ethnicity or socioeconomic status. These factors could have impacted their perception of their university's response to COVID-19 as there may be different stressors causing depression, anxiety or other mental health issues in response to the pandemic.

Another study in Canada evaluated the willingness of students to receive the COVID vaccine, and it showed that there were differences in the willingness of students to receive the vaccine that were separated by their gender and socioeconomic status (Mant et al, 2021). This article also mentioned how some students felt stressed about getting the vaccine, as they were not sure if they could trust the science behind the new drug yet. This could bring about feelings of anxiety for students, especially if schools were to impose new mandates and rules regarding vaccination status.

At the specified small, liberal arts university in Southern California, students were forced to return home in spring of 2020 when the pandemic began, with few exceptions of students who remained living on campus. Teaching was done completely remotely, and students were expected to adapt to this new modality of online teaching and participating in an online classroom. Faculty offered various methods to engage students in learning, such as Zoom lectures, discussion boards, case studies, and team based activities. As the pandemic continued, financial support was provided to students to assist with relief from some stress, and exceptions were made for students who experienced home situations that were negative or had poor effects on their health as a

whole. Additionally, large gatherings and celebrations, such as homecoming and graduation, were all virtual. During the academic school year of 2020-2021, students with certain majors or concentrations, such as nursing or classes with hands-on lab experiences, were allowed to move back on campus, but in a smaller and more spread out capacity. Students were offered individualized rooms to minimize the spread of the disease. Additionally, safety measures, such as biweekly COVID testing, contact tracing, quarantine measures, and vaccination clinics were all made available to aid in the fight against the pandemic. Many students at the university experienced significant changes in their health, due to changes to their living situations, financial status, social norms, or physical health challenges, over the course of the past two years. A recent cross-sectional survey at this university showed that specifically nursing students suffered from extreme levels of stress, anxiety and depression as a result of the pandemic (Kim et al., 2021). In particular, higher levels of family functioning, resilience and spiritual support were correlated to lower levels of anxiety and depression experienced by nursing students (Kim et al., 2021). COVID has placed a major strain on the lives of these students, which has caused people to have to adapt and use resilience in the face of this adversity.

Methods

This research study will seek to answer the following question: How has the mental health of college-aged students at a small, liberal arts university in Southern California been impacted by the COVID-19 pandemic? Based on the information seen in the literature that highlights the increase in depression and anxiety that college students face, research was conducted at a small, liberal arts university in Southern California to evaluate these health trends.

Design

The research study was a descriptive study utilizing a quantitative survey. This tool is copyrighted to the American College Health Association (ACHA), a national health organization that monitors health trends among college campuses. The validated, nationally recognized survey tool is titled the 'National College Health Assessment' and includes 735 items. The survey covered topics regarding health history, challenges to their physical health, mental health, social health, and sexual health as well as sleep patterns, overall nutritional status, and safety. Additionally, the survey asked questions regarding risky behaviors, such as alcohol and substance use. Finally, the survey included additional questions regarding COVID-19 and the participant's response to the pandemic.

Sampling

The target population of participants was the traditional undergraduate student body of 2,800 students. All traditional undergraduate students were sent an email with an individualized link to complete the study in order to prevent individual students from taking the survey multiple times. Students were invited to participate in the survey through emails, and it was publicized through announcements in classes, extra credit offered in some courses, professor announcements, and social media posts.

Data Collection

Researchers obtained approval for the research project through the university's Institutional Review Board (IRB). An informed consent page was distributed to all participating students before starting the survey. Students who participated in the study were entered into a raffle to win one of five $100 gift cards. Over the course of three weeks, if students did not complete the survey, they were sent weekly reminder emails by ACHA. By having students take part in the survey through an outside organization, all data is protected and confidential as

ACHA sends a detailed report of overall trends without disclosing personal health information to the research team at the university.

Data Analysis

Results were compiled and analyzed by the American College Health Association and results with descriptive statistics were sent anonymously to the researchers.

Results

Demographics

All data gathered has been reported and outlined in the *Point Loma Nazarene University Executive Summary Spring 2022: American College Health Association National College Health Assessment III* (ACHA, 2022). Results were gathered from 381 respondents (*n*=381) of the total traditional undergraduate population surveyed from the university. The respondent rate was 13.6%. Of the 381 respondents, 57.5% reported being 18-20 years old, 40.4% reported being 21-24 years old, 1.6% reported being 25-29 years old, and 0.5% reported being 30+ years old (see Appendix A). Out of these students who responded to the survey, 86.6% describe themselves as straight or heterosexual, 0.5% describe themselves as asexual, 6.1% identify as being bisexual, and 0.3% describes themselves as gay. Additionally, 1.6% identify as lesbian, 0.8% identify as pansexual, 1.1% identify as queer and 2.9% describe themselves as questioning their sexual orientation . The majority of students describe themselves as white (77.2%), with 14.2% describing themselves as Hispanic or Latino/a/x, 13.6% as Asian or Asian American, 5.8% as biracial or multiracial, 2.9% as American Indian or Native Alaskan, 2.1% as Middle Eastern, North African or Arab Origin, 1.0% as Black or African American, and 0.8% as Native Hawaiian or Pacific Islander Native. Additionally, 1.3% of students reported that their identity was not one of the options listed above. 91.7% of the students surveyed described their overall

health as ‘good, very good or excellent’. When the same survey was done at the same college in 2017, there were 88.2% of students who described their health as ‘good, very good or excellent’.

COVID-19

Of the respondents, 186 students contracted the coronavirus disease, with 159 students experiencing mild to moderate symptoms, including flu-like symptoms, shortness of breath, cough or fever of 100.4 or higher. Of the 381 participants, 63 total respondents reported having a loved one, close family member or friend die due to COVID-19. Additionally, 137 students disclosed that they had a loved one, close family member or friend that has been dealing with long-term effects following a COVID-19 infection (see Appendix B). Of the 166 students who reported not having contracted COVID-19, 55.1% reported feeling slightly to moderately concerned about getting COVID-19 during the past 30 days. Additionally during the past 30 days, 23.7% stated that they felt very or extremely concerned about contracting the coronavirus.

Stress

When evaluating the stress levels of students following the pandemic, 27.9% of students reported a significantly increased level of stress due to COVID, as well as an additional 56.3% of students who reported that the pandemic somewhat increased their stress level (see Appendix C). In relation to their financial situation as a result of COVID-19, 13.7% of respondents stated that their financial situation is “a lot more stressful” and 42.7% of respondents reported their financial situation being “somewhat more stressful”; 39.3% of respondents reported that there was no significant change to their financial situation due to COVID-19 related changes. Additionally, in the past 12 months, 50% of students reported academics causing moderate distress and 39.7% reported academics causing high levels of distress (see Appendix D). Similarly, 37.1% of respondents reported minimal distress, 41.2% experienced moderate distress

and 18.7% experienced high distress as a result of procrastination over the past 12 months. Students also reported other sources of distress within the past 12 months, including their career, faculty, family, intimate relationships, roommates or housemates, peers, bullying, sexual harassment, and discrimination. In addition to these stressors, students reported feeling distressed by the health of someone close to them, as well as the death of a family member, friend, or someone else close to them. 36.6% of respondents reported minimal distress, 37.7% reported moderate distress and 22.3% reported high distress due to fear of the health of someone close to them within the past 12 months. Similarly, 20.5% of students reported minimal distress, 32.1% reported moderate distress, and 39.3% reported high distress related to the death of a family member, friend, or someone close to them within the past 12 months (see Appendix D).

Psychological Services

Finally, of the 381 total respondents, 41.4% reported receiving psychological or mental health services in the past 12 months. Of those 156 respondents, 38.7% reported somewhat more difficult or limited access to mental health care and 15.5% reported much more difficult or limited access to psychological care and resources. Additionally, of the students who received mental health or psychological services in the past 12 months, 35.1% of respondents received care from the on campus counseling services.

Psychiatric Disorders

In the survey, students were able to self-identify chronic medical conditions that they have been diagnosed with or treated for in the past 12 months. Of the students who responded to the survey, 34.1% self-identified being diagnosed with anxiety, 23.6% self-identified being diagnosed with depression, and 1.3% self-identified as being diagnosed with bipolar disorder (see Appendix E). Additionally, 0.5% of students identified as having a personality disorder and

6.9% of students reported having an eating disorder. 8.5% of the respondents reported having obsessive-compulsive disorder or a related condition, such as body dysmorphia, hoarding disorder, or trichotillomania. Of the students who completed the survey, 4.8% of the students self-identified having a diagnosis of PTSD, acute stress disorder, adjustment disorder, or another trauma/stressor-related condition. Finally, 0.3% of the participants reported having a diagnosis of schizophrenia, schizoaffective disorder, schizophreniform disorder or delusional disorder.

Limitations

There are a few limitations associated with this specific survey related to student health at the small, liberal arts university in Southern California. One of the limitations of this research study was the relatively small sample size due to the low respondent rate. Of the traditional undergraduate student population of 2,800 students who were invited to participate in the study, only 381 students completed the survey. This limits the ability of the results to be generalized to describe the entire population of traditional undergraduate students. Additionally, more students may have started the survey but due to the length of the survey, students may have grown tired and failed to submit the survey. Another limitation of this study is the fear that some students might have held in answering truthfully despite the survey being anonymous. This university is a Christian school which upholds specific beliefs and policies regarding alcohol and substance use, as well as in regards to sex before marriage. Students may have felt pressured to select specific answers based on the university's community living policies regarding these lifestyle choices. Students were informed that the survey was completely anonymous and analyzed by an outside organization before being sent to the university; however, some students might have been fearful that their data may go against the community living agreement that students are expected to uphold while attending the university. Finally, there may be selection bias due to the fact that

certain students may be more likely to complete the survey if they have certain data that they want to share, which may allow for more polarized responses.

Discussion

The mental health challenges that have affected young adults have increased exponentially, reported by many due to the COVID-19 pandemic (Panchal et al., 2021). This pandemic not only affected the physical health of many who contracted the disease, but led to many psychological distressors, such as social isolation, fear of the unknown, increase in substance use, and difficulty eating and/or sleeping (Panchal et al., 2021). For the college student population, this statistic was especially true due to the changes that were abruptly made to so many aspects of life. According to the research survey done at this small, liberal arts university in Southern California, students had an overall increase in the occurrence of stress that they experienced over the last 30 days compared to the results of the same questions asked of students in 2017. In 2017, 34.3% of students reported feeling average stress (ACHA, 2017), and in 2022, 50.1% of participants reported feeling moderate stress within the last 30 days (ACHA, 2022). This was also seen in research done at other similar universities, in which they found that stress levels increased as a result of classes moving to online modalities, students felt worried and unsure about contracting COVID-19, and being confined due to lockdown orders or stay-at-home state mandates (Kecojevic et al., 2020; Lopez-Castro et al., 2021). In addition, our data from 2022 showed that 52.6% of students reported moderate psychological distress and 19.4% of students experienced serious psychological distress (ACHA, 2022). However, our university data from 2017 showed that in the past 12 months, 50.4% of students reported that they “felt things were hopeless” and 90.3% of students stated that they “felt overwhelmed by all they had to do” (ACHA, 2017). This is significant because it shows an overall increase in trends

of diminishing mental health of students at the university. The data is congruent with data from other similar universities, all having to shut down for at least a period of time as a result of the pandemic (Browning et al., 2021; Coakley et al., 2021; Kecojevic et al., 2020; Kim et al., 2021; Lopez-Castro et al., 2021; Pagoto et al., 2021; Son et al., 2020).

Another reason for the increase in distress and depression may be linked to feelings of loneliness and isolation. In our study, 49.7% of respondents tested positive for loneliness according to the Recoded UCLA Loneliness Scale (ACHA, 2022). In 2017, when the same survey was administered to this university, only 30.1% of students reported feeling very lonely in the last two weeks, 16.6% within the last 30 days, and 23.1% anytime within the last 12 months (ACHA, 2017). Other colleges who had students complete surveys regarding mental health following the pandemic had similar findings (Kecojevic et al., 2020, Lai et al., 2021). The feelings of loneliness and isolation can be linked to the social distancing that has been implemented in many settings as a result of COVID-19, as well as the need for isolation due to a positive COVID-19 result or exposure to someone who has tested positive for COVID-19 (McAlpine, 2021).

Moving forward, it is essential for our university to provide resources to meet these mental health needs of the students on campus. Currently, the mental health resources available include two licensed therapists who can provide up to eight sessions of free counseling for first year students, and six free sessions of counseling for all other traditional undergraduate students. While this service is beneficial to those who utilize it, there is simply not a large enough counseling center available for the extent of services needed by the student body. With this in mind, it has been recently established that two masters students from the university's graduate campus seeking their Masters of Arts in Clinical Counseling will be able to obtain some of their

clinical hours working with undergraduate students as clients. These masters students will work under the supervision of a licensed clinical counselor at the university to provide valuable and effective care to students, providing an expansion of the Counseling Center at the main campus for traditional undergraduate students.

Additionally, another resource that can be offered to students is called TimelyCare. TimelyCare provides immediate, 24/7 virtual medical and mental health services. This service is completely free to students and is a new service that is being implemented in order to address the complex needs that have arisen recently from the student body. This service will help provide virtual medical care, which is on the rise following the pandemic, as well as both scheduled and immediate, crisis care for mental health needs. The mental health professionals are available at all times and provide both a safe person available to listen to concerns of any degree, as well as licensed and professional mental health help. This service will help to provide the scheduled care for students who are unable to schedule mental health counseling from the on campus counselors, and will potentially reach a greater extent of the student population by providing confidential and accessible care. In addition to the physical and mental health virtual professional visits, TimelyCare provides additional resources that can provide relief for students in a variety of ways. Resources such as free yoga sessions, meditations, and communication techniques available to assist with conflict management are available for unlimited use by students to aid in relieving stress and preventing further mental health crises.

Finally, it is essential that colleges continue to monitor the trends regarding their students' mental health as a whole. The mental health patterns are continuing to change for students due to many changing circumstances following the COVID-19 pandemic. Universities must be able to routinely assess their students' mental health and tailor their care to provide

resources and training that will address these needs. Providing resilience building techniques will allow students to prepare themselves for future stressors and challenges that may arise in the future (Kim et al., 2021). Building resilience will help one to manage stress and grow in the face of adversity, as well teach one to recognize when they need to ask for help and support (Cornell University, 2022). Working to build resilience in the student body as a whole, and providing immediate help for students facing current mental health challenges will allow universities to address student needs for psychological care as a whole.

Conclusion

This research project has uncovered the mental health challenges that college aged students have faced, particularly following the COVID-19 pandemic, beginning in 2020. It is essential to recognize that the mental health of college aged students, particularly related to stress, depression and anxiety, has been especially impacted by the effects of the pandemic. During the pandemic, students faced abrupt and large-scale changes in regards to their academics, housing situations, food availability, and employment status. These precipitating factors all could have impacted the development of new mental health challenges. When surveyed, students at a private, Christian university in Southern California reported an increase in stress and fear related to the COVID-19 pandemic, as well as facing new challenges to receiving mental health services as a result of the pandemic. With this knowledge of the stressors that are causing mental health challenges for students at this university, the student health center on campus should expand their mental health services by offering more counseling services through the use of masters' students completing their clinical hours. In addition to the use of new counselors, students will have access to new, immediate mental health resources through TimelyCare, a 24/7, free service available to students which allows for access to mental health

representatives, as well as medical care via telehealth appointments. In conclusion, it is essential that colleges and universities utilize similar resources to provide more expansive mental health resources for students facing mental health crises following the COVID-19 pandemic.

References

American College Health Association (2017). *Point Loma Nazarene University Executive Summary Fall 2017: American College Health Association National College Health Assessment II*.

American College Health Association (2022). *Point Loma Nazarene University Executive Summary Spring 2022: American College Health Association National College Health Assessment III*.

Browning, M. H. E. M., Larson, L. R., Sharaievska, I., Rigolon, A., McAnirlin, O., Mullenbach, L., Cloutier, S., Vu, T. M., Thomsen, J., Reigner, N., Metcalf, E. C., D'Antonio, A., Helbich, M., Bratman, G. N., & Alvarez, H. O. (2021, January 7). Psychological impacts from COVID-19 among university students: Risk factors across seven states in the United States. *PLOS ONE, 16*(1)*,* e0245327. https://doi.org/10.1371/journal.pone.0245327

Centers for Disease Control and Prevention. (2021, November 4.). Basics of COVID-19. https://www.cdc.gov/coronavirus/2019-ncov/your-health/about-covid-19/basics-covid-19.html

Centers for Disease Control and Prevention. (2022, March 25.). CDC Covid Data Tracker. https://covid.cdc.gov/covid-data-tracker/#compare-trends

Coakley, K.E., Le, H., Silva, S.R. et al. (2021, May 13). Anxiety is associated with appetitive traits in university students during the COVID-19 pandemic. *Nutrition Journal, 20*(45), p#. https://doi.org/10.1186/s12937-021-00701-9

Cornell University. (2022, March 28). Building Resilience. https://health.cornell.edu/resources/health-topics/building-resilience

Kecojevic, A., Basch, C. H., Sullivan, M., & Davi, N. K. (2020, September 30). The impact of the COVID-19 epidemic on mental health of undergraduate students in New Jersey, cross-sectional study. *PLOS ONE, 15*(9): e0239696. https://doi.org/10.1371/journal.pone.0239696

Kim, S.C., Sloan, C., Montejano, A., Quiban, C. (2021, January 12). Impacts of coping mechanisms on nursing students' mental health during COVID-19 lockdown: A cross-sectional survey. *Nursing Reports*, *11*(1), 36–44. https://doi.org/10.3390/nursrep11010004

Lai, J., Rahmani, A., Yunusova, A., Rivera, A. P., Labbaf, S., Hu, S., Dutt, N., Jain, R., & Borelli, J. L. (2021, May 11). Using multimodal assessments to capture personalized contexts of college student well-being in 2020: Case study. *Journal of Medical Internet Research, 5*(5), e26186. https://formative.jmir.org/2021/5/e26186

López-Castro, T., Brandt, L., Anthonipillai, N. J., Espinosa, A., & Melara, R. (2021, April 7). Experiences, impacts and mental health functioning during a COVID-19 outbreak and lockdown: Data from a diverse New York City sample of college students. *PLOS ONE*, *16*(4): e0249768. https://doi.org/10.1371/journal.pone.0249768

Mant, M., Aslemand, A., Prine, A., & Holland, A. J. (2021). University students' perspectives, planned uptake, and hesitancy regarding the COVID-19 vaccine: A multi-methods study. *PLOS ONE, 16*(8), e0255447. https://doi.org/10.1371/journal.pone.0255447

Mayo Clinic Health System Staff (Ed.). (2021, September 7). *College students and depression*. Mayo Clinic Health System.

https://www.mayoclinichealthsystem.org/hometown-health/speaking-of-health/college-students-and-depression

McAlpine, K. J. (2021, February 17). *Depression, anxiety, loneliness are peaking in college students*. The Brink. https://www.bu.edu/articles/2021/depression-anxiety-loneliness-are-peaking-in-college-students/

Panchal, N., Kamal, R., Cox, C., & Garfield, R. (2021, February 10). The implications of COVID-19 for mental health and substance use. https://www.kff.org/coronavirus-covid-19/issue-brief/the-implications-of-covid-19-for-mental-health-and-substance-use/

Pagoto, S., Lewis, K. A., Groshon, L., Palmer, L., Waring, M. E., Workman, D., . . . Brown, N. P. (2021). STEM undergraduates' perspectives of instructor and university responses to the COVID-19 pandemic in spring 2020. *PLOS ONE, 16*(8), e0256213. https://doi.org/10.1371/journal.pone.0256213

Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of Medical Internet Research*, *22*(9), e21279. https://doi.org/10.2196/21279

World Health Organization. (2022). *Coronavirus Disease*. World Health Organization. https://www.who.int/health-topics/coronavirus#tab=tab_1

U.S. Department of Health and Human Services. (2018a, July). *Anxiety disorders*. National Institute of Mental Health. https://www.nimh.nih.gov/health/topics/anxiety-disorders

U.S. Department of Health and Human Services. (2018b, February). *Depression*. National Institute of Mental Health. https://www.nimh.nih.gov/health/topics/depression

Appendix A

- **Age**

18 - 20 years:		57.5 %
21 - 24 years:		40.4 %
25 - 29 years:		1.6 %
30+ years:		0.5 %
Mean age:	20.3 years	
Median age:	20.0 years	

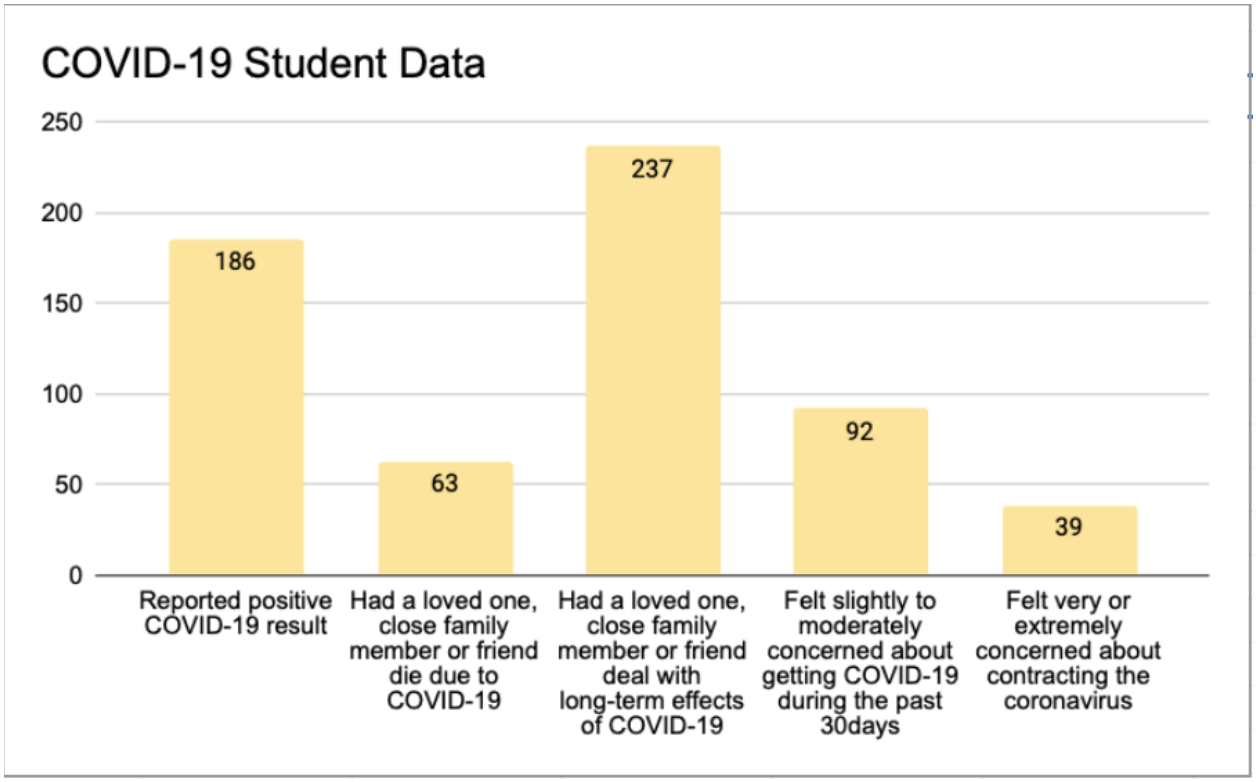
- **Students describe themselves as**

Straight/Heterosexual:	86.6 %
Asexual:	0.5 %
Bisexual:	6.1 %
Gay:	0.3 %
Lesbian:	1.6 %
Pansexual:	0.8 %
Queer:	1.1 %
Questioning:	2.9 %
Identity not listed above:	0.0 %

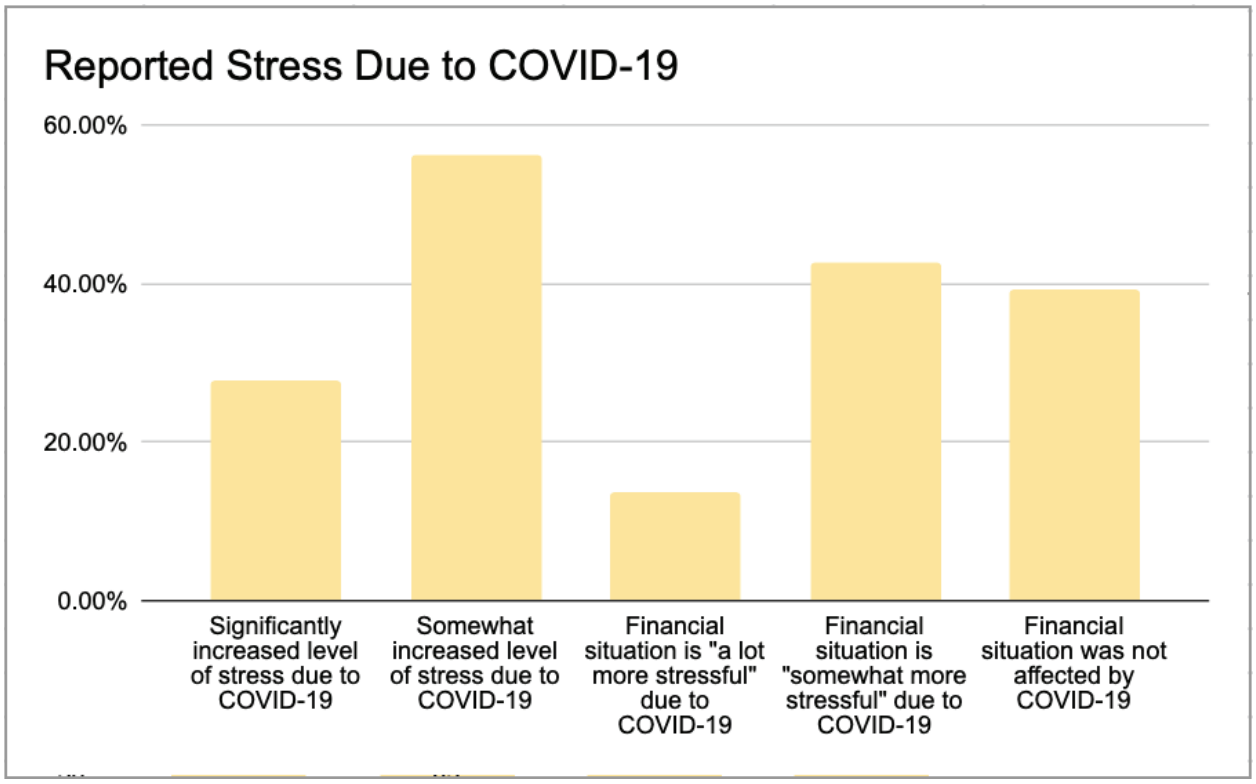
- **Students describe themselves as**

American Indian or Native Alaskan	2.9 %
Asian or Asian American	13.6 %
Black or African American	1.0 %
Hispanic or Latino/a/x	14.2 %
Middle Eastern/North African (MENA) or Arab Origin:	2.1 %
Native Hawaiian or Other Pacific Islander Native:	0.8 %
White:	77.2 %
Biracial or Multiracial:	5.8 %
Identity not listed above:	1.3 %

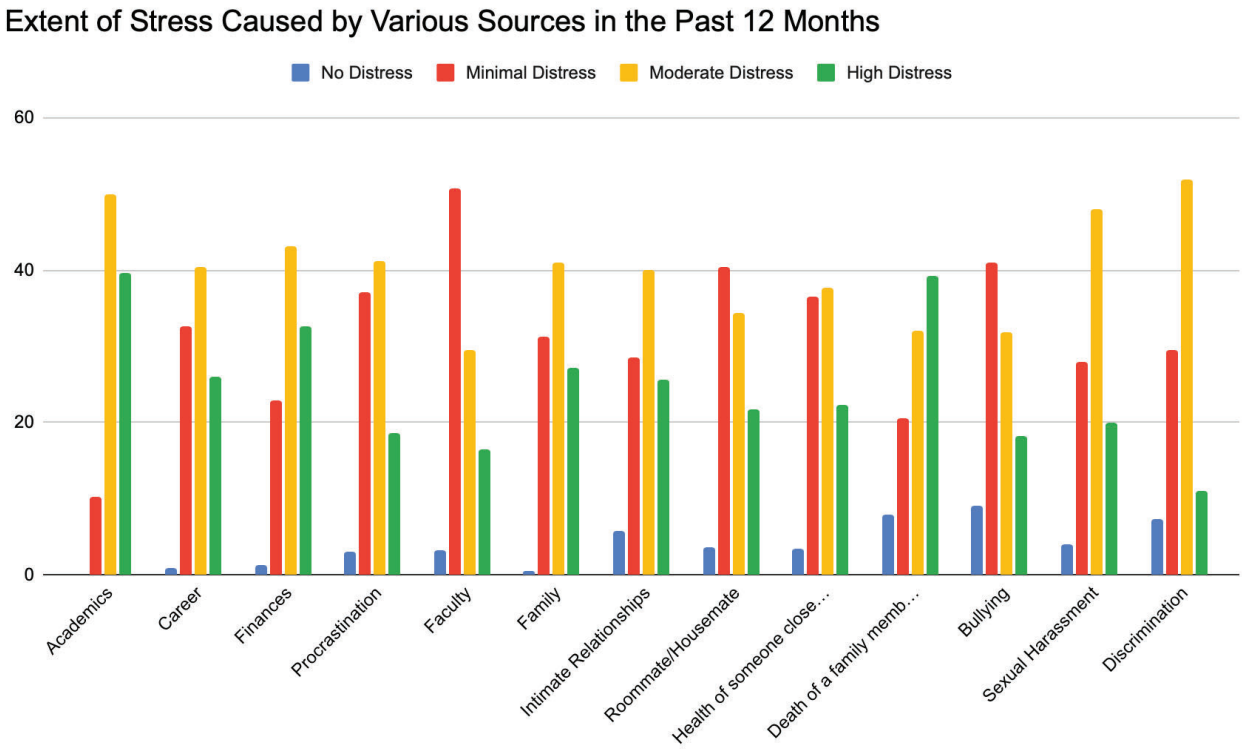
Appendix B


COVID-19 Student Data
250
200
150
100
50
0
186
63
237
92
39
Reported positive COVID-19 result
Had a loved one, close family member or friend die due to COVID-19
Had a loved one, close family member or friend deal with long-term effects of COVID-19
Felt slightly to moderately concerned about getting COVID-19 during the past 30days
Felt very or extremely concerned about contracting the coronavirus

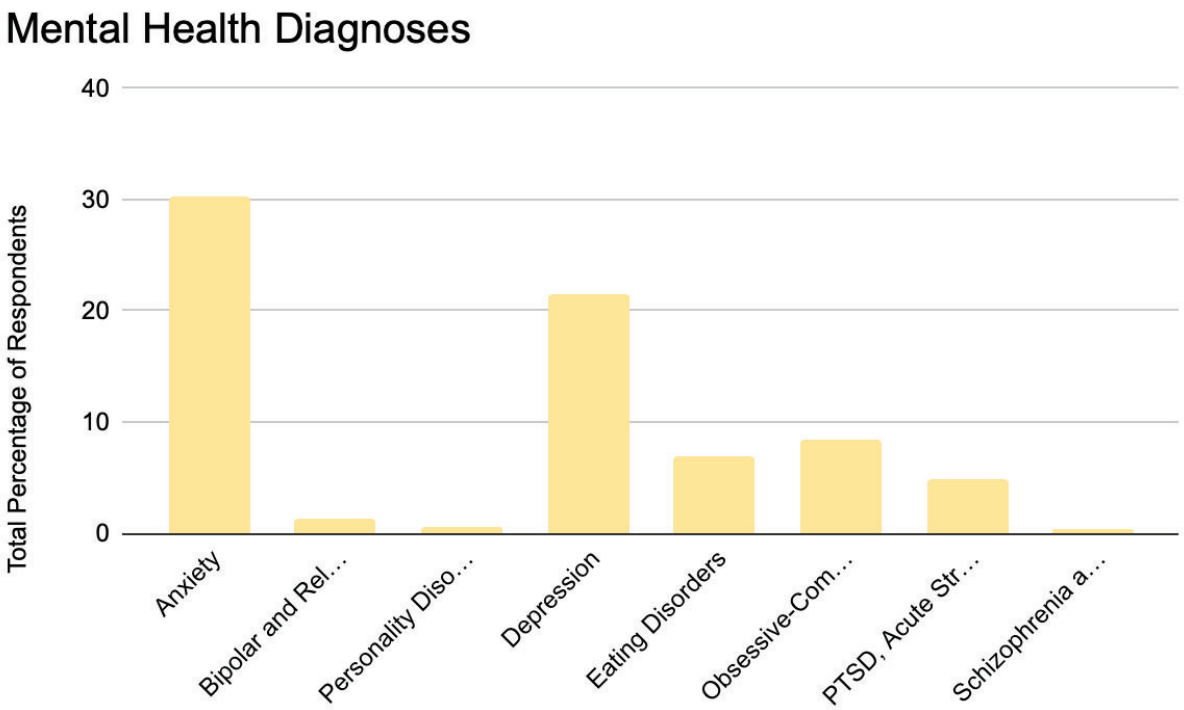
Appendix C


Reported Stress Due to COVID-19
60.00%
40.00%
20.00%
0.00%
Significantly increased level of stress due to COVID-19
Somewhat increased level of stress due to COVID-19
Financial situation is "a lot more stressful" due to COVID-19
Financial situation is "somewhat more stressful" due to COVID-19
Financial situation was not affected by COVID-19

Appendix D


Extent of Stress Caused by Various Sources in the Past 12 Months
No Distress
Minimal Distress
Moderate Distress
High Distress
60
40
20
0
Academics
Career
Finances
Procrastination
Faculty
Family
Intimate Relationships
Roommate/Housemate
Health of someone close…
Death of a family memb…
Bullying
Sexual Harassment
Discrimination

Appendix E


Mental Health Diagnoses
Total Percentage of Respondents
40
30
20
10
0
Anxiety
Bipolar and Rel…
Personality Diso…
Depression
Eating Disorders
Obsessive-Com…
PTSD, Acute Str…
Schizophrenia a…