

**Unveiling the Unseen Impact: COVID-19's Toll on Mental Health Among Undergraduate
Students in the United States**

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Abstract

The COVID-19 pandemic has had a multifaceted impact on the mental health of college students in the United States. The purpose of this study was to examine the relationship between having a loved one affected by COVID-19 and depression severity among college students. This was a secondary data analysis of the Pioneer Study Health and Wellbeing Survey. The data included 258 undergraduate and graduate students enrolled in the College of Health Professions at Sacred Heart University. Descriptive and inferential analyses were conducted. The results of the Chi-square analysis revealed a marginally significant relationship between having a loved one affected by COVID-19 and experiencing greater severity of depression. These findings suggest a potential surge in mental health challenges among college students during this period. Future research is warranted to evaluate the necessity for mental health counseling, wellness programs, and campus resources aimed at helping students in coping with stressors related to COVID-19.

Introduction

The COVID-19 pandemic has undeniably and profoundly impacted the mental health landscape, particularly among the undergraduate population, as evident by numerous scholarly investigations. Defined as a global outbreak caused by the coronavirus, COVID-19 has precipitated a multitude of challenges, extending beyond physical health concerns to significantly impact mental well-being of undergraduate college students. The mental health outcomes of interest in this context encompass various dimensions, prominently including depression, anxiety, stress, and related psychological distress indicators (Racine et al., 2020; Mariani et al., 2020; Woon et al., 2021).

Statistical data from the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) reveal the widespread implications of this mental health crisis. Recent studies of undergraduate students in the United States underscore a staggering surge in mental health challenges during the pandemic. For instance, studies revealed a notable increase in depressive symptoms among university students, with proportions reaching as high as 28% during the pandemic, compared to 11% pre-pandemic (Nano et al., 2022). Similarly, anxiety symptoms surged from 15% to 20% during the same period, signifying a substantial psychological toll on this demographic (Nano et al., 2022). The consequential impact of these mental health challenges extends beyond mere statistics, encapsulating substantial societal and economic costs. The ramifications of untreated mental health issues encompass compromised academic performance, reduced productivity, increased healthcare utilization, and a burden on societal resources (Nano et al., 2022; Mack et al., 2021).

Understanding the risk factors associated with this surge in mental health issues among undergraduates provides crucial insights into tackling this growing crisis. Known risk factors for the mental health outcomes of interest encompass multifaceted dimensions. Social isolation induced by pandemic-related restrictions emerges as a significant risk factor, contributing to increased depressive symptoms (Woon et al., 2021; Mehus et al., 2021). Additionally, exposure to high-stress environments, financial uncertainties, and disruptions in daily routines significantly contribute to heightened anxiety levels among students (Mack et al., 2021; Kibbey et al., 2021). Notably, the shift to remote learning, a key exposure variable in this scenario, has emerged as a prominent contributor to exacerbated mental health challenges, amplifying stress and anxiety among students (Nano et al., 2022).

The importance of exploring the mental health impacts of the COVID-19 pandemic on undergraduate students cannot be overstated. This demographic represents the future workforce, leaders, and contributors to society, making their well-being a pivotal concern. The prevalence and consequences of mental health challenges, coupled with the identification of pertinent risk factors, emphasize the urgent need for targeted interventions and support strategies tailored to the unique circumstances and vulnerabilities of undergraduate students amidst the ongoing pandemic crisis. Targeted interventions are imperative to address the unique vulnerabilities of undergraduate students. Tele-counseling services, online support groups, and peer mentoring sessions are recommended to mitigate the mental health crisis. Urgent attention is warranted to safeguard the well-being of this crucial demographic amidst the ongoing challenges posed by the COVID-19 pandemic. With this background knowledge, the aim of our study was to examine the association of having a loved one affected by COVID-19 and depression severity among college students.

Our paper is organized into four main sections. In the first section, we provide a comprehensive review of the existing literature on the topic. The review is structured around five major themes: an overview of studies, pandemic-related stress and mental health, COVID-19 link to depression, identifying risk factors, and mental health support in higher educational institutions. In the second section, study methods and participant demographics are discussed. The third section of the paper presents the key findings of the study. Finally, the fourth section discusses the study's strengths and limitations.

Literature review

The impact of the COVID-19 pandemic on the mental health of undergraduate students has been explored through various scholarly lenses. We utilized Sacred Heart's library database to search for scientific journal articles published within the past five years using the following keywords: "COVID-19," "undergraduate," "depression," and "America" or "United States,"

Overview of Studies

Racine et al. (2020) conducted a rapid review focusing on child and adolescent mental illness during the pandemic, highlighting a prevalent increase in depressive symptoms among individuals younger than 18, emphasizing significant associations between COVID-19 and heightened depressive and anxiety symptoms. Similarly, Mariani et al. (2020) studied coping strategies and perceived family support among participants aged 18-70, revealing a post-lockdown surge in anxiety and depressive symptoms, advocating for online interventions and policy considerations for psychological well-being. Leeb et al. (2020) analyzed mental health-related emergency department visits among children under 18 in the United States, illustrating a

notable increase during the pandemic, suggesting a significant impact on children's mental health.

Costa et al. (2020) delved into COVID-19 concerns among individuals with mental illness, emphasizing amplified behavioral health problems and fears exacerbated by pandemic uncertainties, urging support strategies for ongoing recovery. Woon et al. (2021) conducted a study on depressive and stress symptoms among university students, linking pandemic-induced isolation to increased depressive symptoms, underscoring the necessity of safeguarding mental health in this demographic.

Parra (2020) highlighted heightened rates of depression among college students from Peru and Venezuela during the pandemic, associating these disparities with economic and social factors. Pandya and Lodha (2022) conducted a scoping review examining the mental health consequences among college students, emphasizing the significance of interventions like tele-counseling services and online support groups to address these challenges.

Hughes et al. (2022) assessed psychological distress levels among undergraduate students at Kent State University during the initial pandemic phases, revealing considerable percentages reporting moderate to severe distress, emphasizing the need for targeted surveillance and mental health support. Mehus et al. (2021) identified extreme isolation as a significant predictor of mental health decline among first-year college students, emphasizing the necessity of mental health services during social isolation.

Browning et al. (2021) explored the psychological impacts of COVID-19 across seven states among university students, finding diverse psychological effects among different demographics and health conditions, stressing the need for targeted support. Hu et al. (2022)

assessed the fear of COVID-19 and its lasting impact on college students in Northern Michigan, indicating high levels of mental health problems, including moderate to severe mood disorders, even after two years of the pandemic's onset.

Kibbey et al. (2021) studied the pandemic's mental health impact on undergraduate students in severely affected regions, highlighting elevated psychological distress, particularly in health anxiety, depression, and general anxiety. Their findings identified female students and those facing COVID-19 related stressors as having higher odds of clinically elevated distress.

Peifer and Taasobshirazi (2022) explored changes in cognitive empathy, anxiety, and depression among college students before and during the pandemic, revealing reduced cognitive empathy and heightened anxiety and depression during the latter period. Nano, Ghaly, and Fan (2022) investigated the concerns and experiences of US undergraduate students during the outbreak, indicating substantial increases in stress, anxiety, and depression among students, often associated with the shift to remote learning.

Mack et al. (2021) conducted a longitudinal study using mobile smartphone data, unveiling sustained changes in behaviors such as reduced mobility, altered sleep patterns, and increased depression and anxiety levels throughout the pandemic among female undergraduate students. Additionally, Fedorenko et al. (2021) examined psychosocial predictors of virus and social distancing fears among undergraduate students in a COVID-19 hotspot, highlighting the role of cognitive-affective vulnerabilities and sex-specific factors in predicting these fears.

Pandemic-Related Distress and Mental Health

At Kent State University, a cross-sectional study delves into pandemic-related distress among undergraduates. Findings revealed a significant impact on mental well-being, with a

considerable proportion experiencing moderate to severe distress levels. 44.3% of the participants reported a moderate level of psychological distress, while 23.8% surpassed the cutoff for severe distress (Hughes et al., 2022).

Investigating the mental health impact of the COVID-19 pandemic, Fedorenko et al. (2021), specifically examined the mental health disorders of undergraduate students, exploring various biopsychosocial factors. Key findings revealed on average, participants reported elevated fears of viral contamination and social distancing during the specified period of significant COVID-19 cases and deaths (Fedorenko et al., 2021). Females were identified more susceptible to these fears, potentially linked to higher rates of internalizing psychopathology among females (Fedorenko et al., 2021). Relating to the overarching theme, this study underscores the intricate interplay of psychological factors in shaping fears during a pandemic.

Kibbey et al. (2021) adopted a comprehensive approach that delves into the theme with findings that revealed a substantial impact on student's psychological well-being, with almost half exhibiting elevated distress levels, particularly in health anxiety (Kibbey et al., 2021). Risk factors contributed to heightened distress, include females, having someone test positive for COVID-19, and experiencing medical vulnerabilities (Kibbey et al., 2021). Additionally, Browning et al., (2021) identified various manifestations of distress, providing crucial insights towards the theme. Shedding light on the prevalence of negative emotion states, preoccupations, stress, worry, and time demands among students affecting their overall mental health (Browning et al., 2021).

Aligning with the theme of psychological distress and mental health, Leeb et al. (2020) examined the surge of mental health-related emergency room visits during the pandemic, comparing data from 2019 to 2020. The observed increase in ER visits underscores the psychological distress experienced, highlighting the pandemic's substantial influence on mental health (Leeb et al., 2020).

COVID-19 Link to Depression

Mehus et al. (2021) delved into the theme of the COVID-19 link to depression, focusing on first-year college students during the pandemic. Findings revealed extreme isolation emerges as the most consistent predictor of mental health decline during the pandemic, strongly associated with higher levels of depression symptoms (Mehus et al., 2021). The level of worry and experience of extreme isolation significantly increased odds of developing new moderate to severe depression disorders (Mehus et al., 2021).

In this cross-sectional study, Woon et al. (2021) investigated the depressive and stress symptoms among university students during the pandemic. Findings highlight the statistical significance of participants experiencing mild, moderate, and severe depression due to isolation during the pandemic (Woon et al., 2021). This research contributes to understanding the specific challenges faced by students induced by isolation and emphasizes the importance of targeted mental health interventions to address depressive symptoms during and after the pandemic.

Racine et al. (2020) contributed to the theme of the COVID-19 link to depression by providing statistical insights into association between mental illness and the pandemic. Findings highlight rates of depressive symptoms linked to the fear of death, sleep disorders, appetite changes, nightmares, and agitation caused from COVID-19 (Racine et al., 2020).

Identifying Risk Factors Declining Mental Health

Mariani et al. (2020) conducted a research study combining the impact of the global pandemic on physical and mental health, aligning with the overarching theme of identifying risk factors affecting mental well-being. The greater usage of social media during the pandemic, coupled with increased social interventions for both individuals and groups, adds a layer of complexity to the understanding of the participants experiences, playing crucial roles in shaping mental health outcomes. This study underscores the challenges posed by the pandemic, where both the virtual and real-world had effects on the mental health of students on a global scale.

A study, drawing from the Student Life dataset at Dartmouth College, delved into identifying risk factors associated with the impact of the COVID-19 pandemic on the behaviors and mental health of undergraduate students. Findings revealed potential risk factors such as reduced mobility, increased phone use, heightened sedentary time, and altered sleep patterns affecting the mental health of undergraduate students (Mack et al., 2021). In relation to the theme, this study contributes to understanding behaviors that may signal heightened vulnerability to mental health challenges during the ongoing pandemic.

Nano et al. (2022), investigated the impact of COVID-19 pandemic on the mental health of undergraduate students, focusing on identifying risk factors. Findings found substantial increases in stress, anxiety, and depression levels during the pandemic. Factors included family members testing positive for COVID-19, frequency of leaving home, and specific sleep durations significantly associated with heightened stress and depression (Nano et al., 2022). Findings also discussed remote learning negatively impacted academic performances, contributing to increase mental health challenges. Specific sleep durations are significantly associated with heightened stress and depression (Nano et al., 2022).

Shedding lights on identifying risk factors associated with the mental health consequences of the COVID-19 pandemic, Hu et al. (2022) examined the fear levels among college students in Northern Michigan. The research highlights the interconnectedness of fear and happiness, noting that decreased happiness is associated with increased fear during the pandemic (Hu et al., 2022). The prevalence of moderate to severe mood disorders and learning difficulties two years after the pandemic further indicates potential risk factors influencing mental health outcomes (Hu et al., 2022).

Exploring the impact of the pandemic on individuals with pre-existing mental health conditions, Costa et al. (2020), delved into identifying risk factors. Findings revealed a positive correlation of heightened concerns for mental health and challenges faced including fear of

potential setbacks in recovery, isolation, treatment affordability, and ability to care for loved ones (Costa et al., 2020).

Mental Health Support in Higher Educational Institutions

For global understanding of the implications of the pandemic on mental well-being, Parra et al. (2020) highlighted the need for mental health support in higher educational institutions. The findings suggest mental health challenges faced by college students during the pandemic are not confined to a specific region (Parra et al., 2020). This research illuminates the global nature of the pandemic and the need for proactive support measures and tailored strategies in higher educational institutions.

Aiming to explore the impact of the COVID-19 and racial justice pandemics on college students' mental health, (Peifer & Taasobshirazi, 2022), focused the study on individual and interpersonal aspects. The findings suggest that institutions should consider implementing support systems and interventions to mitigate the negative impact on cognitive empathy and mental well-being (Peifer & Taasobshirazi, 2022). This study highlights the need for proactive measures to address the mental health challenges faced by college students, especially during and after times of crisis.

Through a scoping review, Pandya et al. (2022) sheds light on strategies employed by universities and academic institutions to mitigate pandemic related challenges. Key intervention strategies used include tele-counseling services, online support groups, and peer mentoring sessions, aimed to bolster students confronting mental health challenges (Pandya et al., 2022). The research recognizes the need for further imperative comprehensive research and intervention strategies to address diverse challenges faced by students in both high- and low-income communities (Pandya et al., 2022).

Gaps in Literature

Research on mental health implications of the COVID-19 pandemic reveals several noteworthy gaps and areas of further investigation. Focus on specific populations, with diverse samples encompassing various demographics are essential to ensure comprehensive understanding of the impact. Additionally, there remains a need for more extended follow-up periods to elucidate enduring effects of the pandemic on mental health. The absence of pre-pandemic related baseline data in many studies hinders a robust assessment of the true impact. Further investigation on the efficacy of interventions and support systems implemented by institutions is crucial for guiding future mental health strategies. Addressing these gaps would contribute to a more efficient understanding of the pandemic's mental health implications and inform targeted interventions and support systems. Our research aimed to fill the gaps in the literature by investigating whether having a loved one affected by COVID-19 was associated with experiences of depression. Understanding these potential associations can aid in identifying demographic differences and allowing for tailored interventions to those most affected. With continued research in the results of various intervention strategies adopted by higher educational institutions for improving mental health, will help close the gap and find which strategies are creating a difference in the mental health and depressive symptoms experienced among college students.

Methods

The research employed a cross-sectional design, utilizing data from the Pioneer Student Health and Well-being Survey. This survey was conducted to examine the health and well-being of students at Sacred Heart University. All enrolled College of Health Professions students (undergraduate & graduate) 18 years or older, voluntarily agreed to participate, and confirming they read the information on the consent form were allowed to participate. The survey was conducted anonymously to ensure students answered the questions as honestly as possible. Participants were asked “Do you have a loved one, close family, or friend that has been dealing with long-term effects (or a long recovery) following a COVID-19 illness?” with an answer

choice of “Yes” and “No”. The Patient Health Questionnaire (PHQ-9) was used to assess various symptoms of depression over the past two weeks. The PHQ-9 scores were then categorized into five depression severity categories: none-minimal, mild, moderate, moderately-sever, and sever.

Participant demographics were comprehensive, covering factors such as ethnicity, enrollment status, gender, age (18-54), and year in school. A descriptive analysis was conducted to describe the demographic characteristics of our analytical sample. Mean and standard deviation were reported for continuous variables, and frequency and percentage were reported for categorical variables.

To analyze the research aim, Chi-square analysis was employed, examining the statistically significant correlation between exposure to the COVID-19 pandemic (having a loved one affected by COVID-19) and the reported level of depression symptoms (none-minimal, mild, moderate, moderately severe, and severe) among college students. This method will provide insights on the statistical significance of the relationship between pandemic exposure and negative mental health outcomes within the specified population.

Results

258 participants completed the Pioneer Student Health and Well-being Survey and provided complete data on exposure and outcome variables. Participant characteristics are presented in Table 1. Of these participants, 206 women, 47 men, 3 transgender, and 2 non-binary people were involved. Most of the participants were 20 years old with 54 people making up that result. From the results, it is evident that more women were involved with the study and were affected. Approximately 95 participants (39%) stated they had a family member or loved one dealing with long term effects following COVID-19. Depression severity varied. The largest 32.6% reported none-minimal symptoms. Moderate and moderately severe symptoms were

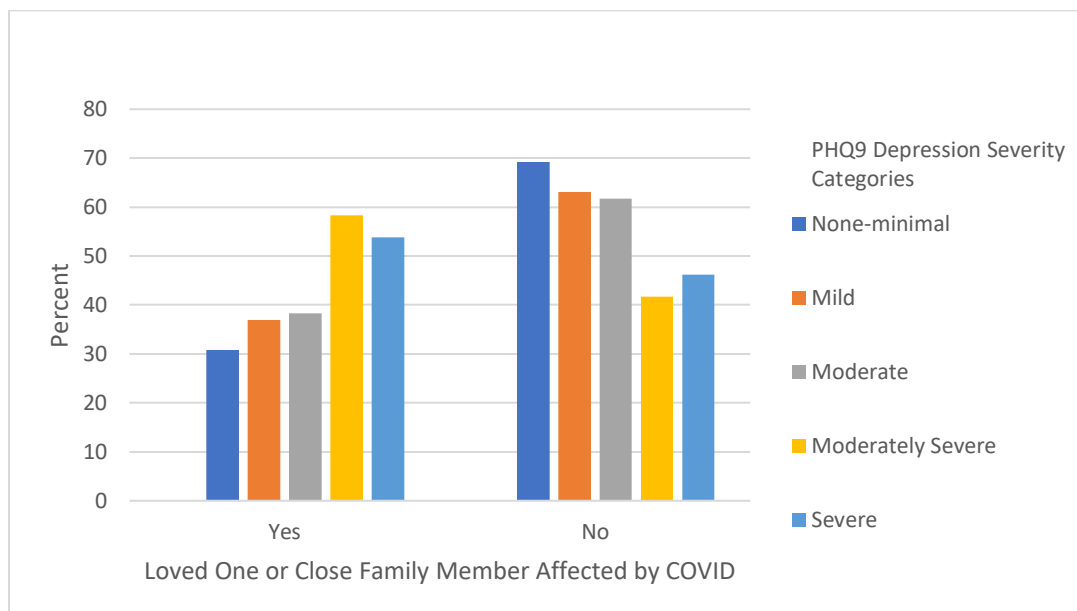
reported by 13.2% and 14.0% of the students, respectively. Roughly 5% of the students reported severe depressive symptoms.

Table 1. Descriptive Statistics of Pioneer Student Health and Well-being Survey (N= 258)

| Participant Characteristics | Percentage |
|------------------------------------|-------------------|
| Age (<i>Mean, SD</i>) | 22.64 (4.909) |
| Gender | |
| Female | 79.8 |
| Male | 18.2 |
| Transgender | 1.2 |
| Non-binary/ non-conforming | 0.8 |
| Race/Ethnicity | |
| Two or more races | 3.1 |
| White | 79.5 |
| Hispanic Latino | 5.8 |
| Asian | 3.9 |
| Black African American | 3.5 |
| American Indian/ Alaska Native | 2.3 |
| Native Hawaiian | 1.9 |
| Enrollment Status | |
| Full-time (12+ credits) | 83.7 |
| Part-time (1-11 credits) | 14.7 |
| EXPOSURE: Loved one having covid | |
| Yes | 38.8 |
| No | 61.2 |
| OUTCOME: Depression Severity | |
| Mild | 32.6 |
| Moderate | 13.2 |
| Moderately Severe | 14.0 |
| Severe | 5.0 |

Results of the crosstabulation between the COVID-19 and depression variables are presented in Figure 1. According to the data presented, among those reported having a loved one or close family member affected by COVID, nearly 60% experienced a depression severity of moderately-severe. More than 50% experienced severe depression. Among students who answered “No” to having loved ones affected by COVID, close to 70% reported none-minimal depression. The Chi-square analysis showed having a loved one with COVID was borderline significantly associated with depression severity ($p=0.047$).

Figure 1. PHQ9 Depression Severity Category Scores and Loved Ones Affected by COVID-19



Discussion

The current study revealed a positive relationship between college students experiencing a loved one affected by COVID-19 illness and increased depression severity. Conversely, students without affected family members or loved ones did not exhibit or mention signs or

symptoms of depression. The relationship between levels of depression severity and having loved ones affected by COVID was borderline statistically significant.

Previous research has shown increased depression rates among collegiate youth during the COVID pandemic. The evaluation of the relationship between the fear of COVID, the experience of COVID, social isolation and lack of connection with depression rates was direct (Woon, 2021). Other studies have evaluated risk factors such as psychological distress, anxiety, and depression among a specific or general demographic. In concurrence to pre-COVID data and post-COVID data, there are gaps in literature due to limited research until after the pandemic.

The Pioneer Student Health and Well-being Survey was a cross-sectional, observational study. There were strengths and limitations to the research. In the Pioneer Survey study, survey was distributed via electronic email, it was not conducted via social media platforms, and data was collected through a more professional survey, that provided confidentiality. There are few studies on collegiate mental health pre-COVID to be used to compare, limiting the generalizability of findings as it only captures students who have access to internet and not the general population. Further, our sample was White, limiting the generalizability of the results. Also, since the survey was delivered online, students with limited access to the internet or electronic devices could not participate. Further research is needed with larger and more ethnically diverse samples.

Conclusion

Overall, the results of the current study showed a marginally significant relationship between having a loved one affected by COVID-19 and experiencing greater severity of depression. In the context of the multifaceted research studies there is an imperative need for targeted support and interventions to address the diverse risk factors influencing the mental well-

being of university students, particularly in the wake of the COVID-19 pandemic. Recognizing these challenges is crucial for higher educational institutions as they navigate the enduring impacts on students' mental health. Research on pandemic-related distress, depression, and risk factors may enable the development of tailored preventive and intervention strategies to meet the unique needs of university students. The COVID-19 pandemic has undeniably exacerbated mental health disorders across various demographics. This study underscores the ramifications of unaddressed mental health issues during one of the most unprecedented periods of this generation's collegiate youth.

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