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Mental Health Burden Among College Students During COVID-19 Pandemic: A Cross-Sectional Study

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MENTAL HEALTH BURDEN AMONG COLLEGE STUDENTS DURING
COVID-19 PANDEMIC: A CROSS-SECTIONAL STUDY

A Thesis
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Public Health

by
Jeffrey Bao Truong
May 2022

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ABSTRACT

Background: The COVID-19 pandemic is a significant public health issue and has negatively burdened the general population's health, though assessment among vulnerable groups remain limited. The present study aimed to evaluate the mental health burden of the COVID-19 pandemic among college students.

Method: This study utilized a cross-sectional approach. Courses across multiple departments were used to collect data in order to ensure a diversity of majors. All statistical analyses were conducted using SPSS version 28 with $p < .05$ denoting significance.

Results: A total of 98 study participants were included in analyses. Among study participants, 32% reported feeling their mental health worsened due to COVID-19 related isolation, 20% stated COVID-19 related reasons as to why they felt discrimination, and 47% noted their grades worsened due to the pandemic. Significant associations were found between reported low general mental health status and COVID-19 isolation worsening mental health, between such isolation and worsening grades, between ethnicity and worsening mental health due to COVID-19 isolation, as well as ethnicity and the pandemic's negative impact on grades.

Conclusion: Results highlight the importance of addressing pandemic-related mental health outcomes among college students to optimize their wellness.

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CHAPTER ONE: LITERATURE REVIEW

Overview

The 2019 coronavirus disease (COVID-19) pandemic has become one of the most devastating public health issues of the 21st century, with lasting implications not yet fully understood. One of the more immediate effects seen caused by the COVID-19 pandemic is in the prevalence and exacerbation of mental health illness (Han et al., 2020). To better elucidate the relationship between COVID-19 and its potential effects on mental health, the following literature review will characterize COVID-19 in terms of its etiology, the magnitude of population affected, with an emphasis on the most vulnerable groups.

Furthermore, independent of COVID-19, there exists a complex relationship between social determinants and the development of diseases (CDC, 2019). As such, the below literature review will further expand on the various social determinants of health relating to susceptibility to COVID-19 disease and related mental health outcomes among the more vulnerable populations.

Additionally, the existing literature also suggests that college students are one of the most vulnerable populations requiring special attention during the COVID-19 pandemic due primarily to the unique circumstances and experiences they endure (Salimi et al., 2021). As such, the increased mental health burden

and their relationship to academic performance will be reviewed in the literature review as well.

COVID-19 Pandemic

According to the Centers for Disease Control and Prevention (CDC), a pandemic is defined as any “event in which a disease spreads across several countries and affects a large number of people” (CDC, 2020). The earliest recorded pandemic dated as far back as 429-426 BC and had decimated a quarter of the entire local population of Athens, North Africa, and the Middle East (Feehan & Apostolopoulos, 2021). The most well-known and devastating pandemics thus far were those of the bubonic plague, which reduced approximately one-third of the world’s population (Feehan & Apostolopoulos, 2021). In December 2019, the first few cases of a novel pneumonia of unknown etiology were first reported in Wuhan, Hubei Providence, China. On January 7th, 2020, Chinese scientists successfully isolated and identified the causative agent as a novel coronavirus, officially called the Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2). On February 11th, 2020, the World Health Organization (WHO) announced an official name for the disease, coronavirus disease 2019 (COVID-19).

As of March 22, 2022, there have been 474.11 million reported confirmed cases globally with 6.10 million confirmed deaths (Our World in Data, 2022). As a result of vaccination programs and public health responses internationally, it is unlikely that COVID-19 will have the same impact as the worst pandemic in world

history in terms of death rate. However, due to difficulties in accessibility, vaccination hesitancy, and the rise of new variants, COVID-19 could become regionally endemic and significantly increase its impact over the coming decades (Feehan & Apostolopoulos, 2021).

Aside from COVID-19, measles and other vaccine-preventable diseases have seen outbreaks throughout the United States. This has been attributed to anti-science rhetoric in the United States, especially from the politically far right (Hotez, 2020). The height of the COVID-19 pandemic coincided with a time of great political tension and change. This has led to a heightened level of anti-science extremism in America, leading to record rates of anti-vaccination and anti-COVID-19 prevention (Hotez, 2020). Due to this, there is an increased stigma associated with those that choose to exercise COVID-19 prevention, such as mask-wearing and vaccinating, which likely stems from the political dissent and tension within the United States (Hotez, 2020). Further, this increase in stigma is likely to be compounded with other social determinants of health and may lead to increases in mental health illness prevalence and exacerbation (Mak et al., 2007).

Social Determinants

Low Socioeconomic Status (SES)

The current body of literature highlights that, in the United States, those of lower socioeconomic status (SES) are more susceptible to becoming infected by SARS-CoV-2 (Hatef et al., 2020). This is attributable to the overrepresentation of

economically challenged individuals in low-wage, essential work positions, such as grocery store stockers, fast-food employees, and medical support staff.

Despite mass business closures during the COVID-19 pandemic to help limit the spread, such essential workers continued working, which in turn increased their risk of contracting the COVID-19 infection.

Social distancing recommendations set by the Centers for Disease and Prevention (CDC) to limit the spread of COVID-19 are also difficult to accomplish among those socioeconomically challenged. This is attributable to the higher number of family members per household and closer proximity to other households in low SES communities (Hatef et al., 2020).

Those seeking to escape poverty have turned to higher education to attain higher-paying jobs. According to Pew Research Center, the dramatic increase of undergraduates enrolled in U.S colleges has comprised almost entirely of students from low SES and minority groups. Most of this is reflected in public two-year colleges and less selective four-year colleges (Fry & Cilluffo, 2019). Among such minority groups, enrollment of Hispanic undergraduates has almost tripled since 1996 (Fry & Cilluffo, 2019). The increasing percentage of minority enrollment is reflected in the growing rate of undergraduate students in poverty. For instance, the average percentage of all undergraduates in poverty in 1996 was about 20.5%, which increased to about 31% in 2016 (Fry & Cilluffo, 2019). The burden of poverty among racial and ethnic minorities is compounded with the high incidence of discrimination and marginalization they endure, which

collectively hinders their upward mobility and opportunity to escape poverty.

Studies also note that those living in more poverty-stricken areas have reported higher rates of mental health illness and suicide, which have been attributed to inequalities in access to health-related resources (Knifton & Inglis, 2020).

Together, the current empirical evidence highlights that those in low SES disproportionately shared a higher burden of health disparities, including mental health disparities.

Ethnic and Racial Minorities

Ethnic and racial minorities comprise the largest percentage of those most socioeconomically disadvantaged, making them the most susceptible to diseases such as COVID-19 (Williams et al., 2010). The low SES of these minority groups may be attributable to lack of generational wealth, burdens of the emigration process or in escaping from another country, and the financial costs associated with the United States citizenship or immigration process. Due to the costs and lengthy timeline related to the citizenship process in the United States, many immigrants remain uninsured for long periods, which directly affects their ability to access health care resources (Institute of Medicine (US) Committee on the Consequences of Uninsurance, 2001). In a study regarding young immigrants without documentation who qualify for the Deferred Action for Childhood Arrivals (DACA) program, it was found that participants avoided the health care system whenever possible due to mistrust of providers fueled by fear of discrimination and deportation (Raymond-Flesch et al., 2014). Additionally, previous research

has suggested that racial and ethnic minorities can suffer double the amount of stigma when burdened by mental illness, further preventing them from seeking treatment (Gary, 2009).

The impact of perceived racial discrimination has been shown to affect college students' mental health negatively as well. Hispanic or Latino students were found to be more likely accused of cheating and breaking the law, which was attributed to increased stress levels and poorer mental health status (Hwang & Goto, 2008). Additionally, mental health care was the most significant unmet health need among undocumented Latino students under the DACA program (Raymond-Flesch et al., 2014). College students have been shown to be a more vulnerable population to societal stigma and discrimination, which in turn can lead to heightened anxiety levels and depression (Lee, 2020). Together, research notes that racial and ethnic minorities often face a higher rate of discrimination, and coupled with other determinants, such factors can negatively impact their mental health. As such, during the COVID-19 pandemic, this fear can further determine their ability to access testing and vaccination against COVID-19, which in turn contributes to the spread of the disease and increased disparities.

College Students

According to the National Alliance on Mental Illness (NAMI), 75% of all lifetime mental illness begins by 24 years of age, and suicide is the second leading cause of death among people aged 10-34 years (NAMI, 2021). This data

from NAMI, combined with the known stresses associated with transitioning from high school to college, make college students an ideal population to analyze in terms of increased mental health disorders related to COVID-19 implications (Salimi et al., 2021). College is costly and can be particularly burdensome for students of racial and ethnic minorities from poverty-stricken families (Fry & Cilluffo, 2019). According to recent data, college has become so expensive that student loan debt in the United States totaled \$1.73 trillion with approximately 43.2 million student borrowers in debt by an average of \$39,351 each” (Hanson, 2021). Therefore, it is important to optimize students' academic performance during such a mental health disorder-inducing time, such as the COVID-19 pandemic, to limit the burden of college expenses and debt. Prior to the COVID-19 pandemic, it was already understood that students transitioning to college are often exposed to circumstances and expectations which place them at higher risk for developing psychiatric disorders or cause exacerbation of existing problems (Cleary et al., 2011). Such circumstances can be related to perceived barriers associated with being a first-generation college student, family pressures, and career outcome expectations (Ma & Shea, 2021).

COVID-19 and Mental Health among College Students

In times of crisis, social support and community ties have played an essential role as a coping mechanism that ultimately helps prevent and recover from mental health disorders (Saltzman et al., 2020). During the 2020 school year, at the height of the COVID-19 pandemic, most college students were made

to transition from in-person to virtual class structures. This abrupt transition, compounded with the public health mandates of social distancing and self-isolation, has contributed to increases in the development and exacerbation of stress, insomnia, fear, anger, anxiety, and depressive symptoms among college students (Salimi et al., 2021). Despite these noted increases in mental health disorders, resources for mental health services were either limited or non-functioning during the COVID-19 pandemic (Han et al., 2020). This is particularly concerning considering mental health service utilization on college campuses had doubled in the past decade before COVID-19, with most counseling centers already under-resourced, at full capacity, and with long waitlists (Lipson et al., 2019).

Transition Back to In-person Curriculum

As of Fall 2021, many colleges are transitioning back from virtual to in-person curricula. Due to the COVID-19 pandemic, most educational institutions have adopted procedural policies to help stop the transmission of the disease on campus amongst students and staff. Due to the social shame or stigmatization that might occur if a person tests positive for COVID-19 or is symptomatic, students are more likely to be dishonest and conceal their symptoms or testing status from others (O'Connor & Evans, 2020). In addition to this, the academic pressures of attending class regularly and performing well may also influence a student's decision to conceal their symptoms and attend class regardless of policy. Students who are at higher risk of succumbing to the effects of COVID-19

or those who experience heightened hypochondriasis due to the pandemic are bound to experience increased anxiety by returning to in-person curriculum due to the reasons explained above. This is compounded by the fact that COVID-19 prevention policies such as mask-wearing are difficult to enforce due to lack of staff, resources, and anti-COVID-19 prevention sentiment amongst staff and students alike (Hotez, 2020). Additionally, the number of students in a classroom tends to be prohibitive towards social distancing requirements for COVID-19 prevention, which can further increase student anxiety (Murray, 2020). Cumulatively, such aforementioned literature not only highlights college students as a vulnerable group experiencing health disparities, but the putative increased burden of mental illness among the group due to exaggerated stressors as a result of academic changes.

Summary

The 2019 coronavirus disease (COVID-19) is caused by Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2) and, as of March 22, 2022, has led to the infection of approximately 474.11 million people and 6.10 million confirmed deaths globally. Although vaccination and public health interventions will prevent COVID-19 from becoming the worst pandemic in the world's history, anti-science rhetoric in the United States will likely contribute to the lasting existence of the SARS-CoV-2 virus and subsequent death of those most vulnerable. Populations of low socioeconomic status (SES) are more susceptible to becoming infected than others due to various social determinants of health

that uniquely affect them. Ethnic and racial minorities comprised the largest percentage of those with low SES and were one of the groups most heavily impacted by COVID-19.

In attempts to escape poverty and low socioeconomic status, many have turned to higher education in hopes of attaining higher-paying jobs. Enrollment of students from low SES and minority groups has almost tripled in the last two decades. In pursuit of higher education, however, these minority groups have been victims of racial discrimination, contributing to the development and exacerbation of mental health disorders. Due to COVID-19 stay-at-home orders and mandatory isolations, mental health disorders have been on the rise due to a lack of social and community support, both of which are crucial to preventing and recovering from mental health disorders. Racial and ethnic minorities can suffer double the amount of stigma when burdened by mental illness, which can further prevent them from seeking treatment.

Additionally, students everywhere needed to quickly adapt to a virtual classroom environment, further increasing stress amongst students. During the transition back to in-person curriculum, many college students are still overcoming the effects of social isolation caused by the COVID-19 public health mandates. Students are more likely to feel the need to be dishonest about COVID-19 test results or symptoms due to potential social stigmatization, missed class time, and poor academic performance. This could cause heightened

hypochondriasis, potentially worsening the mental health of all parties involved and subsequent decreases in academic performance (Lee & Crunk, 2020).

Purpose of Study

This study aims to assess the implications of COVID-19 on the mental health and academic performance of college students during the early transition back to in-person curriculum.

Research Questions (RQ)

Research Question #1

What percent of the study population selected COVID-19 status or symptoms or vaccination status for COVID-19 as a major reason/reasons for why they were discriminated upon?

Research Question #2

What percent of the study population reported feeling their mental health status had gotten worse due to COVID-19 related isolation?

Research Question #3

What percentage of the study population reported feeling their mental health status had gotten worse due to COVID-19 symptoms/diagnosis?

Research Question #4

What percentage of the study population reported feeling their grades suffered due to the pandemic?

Research Question #5

What is the association between general mental health status and mental health status that has gotten worse due to COVID-19 related isolation?

Research Question #6

What is the association between mental health status that worsened due to COVID-related isolation and ethnicity?

Research Question #7

What is the association between mental health status that worsened due to COVID Symptoms/Diagnosis and ethnicity?

Research Question #8

What is the association between mental health status that worsened due to COVID-related isolation and grades suffering due to the pandemic?

Research Question #9

What is the association between feeling grades suffered due to the pandemic and ethnicity?

Significance to Public Health

This study is relevant to public health because the incidence of mental health disorders and suicide rates have increased in the United States compared with many other countries where it has been decreasing (Santomauro et al., 2021). Considering the significant economic and social burden associated with mental health disorders and poor academic performance, it is crucial to analyze the dynamics of the transition back to in-person curriculum and how it relates to

college students' mental health and subsequent academic performance. Results can lead to improved programs and staff training to better support students during the pandemic, thereby optimizing their academic performance and mental health status.

CHAPTER TWO: METHODS

Study Design and Collection

This study utilized a cross-sectional approach to assess the implications of the COVID-19 pandemic on the mental health outcomes of college students. A secondary assessment of interest was to evaluate the burden on experiences of discrimination and academic performance. Cross-sectional studies designs are valuable to assess the prevalence of a health burden. In this type of observational study, a sample population is recruited, and their exposures and health outcomes are assessed at one point in time (Centers for Disease Control and Prevention, 2012).

Data Collection

Data was collected from a four-year public university student population who were at least 18 years of age. Those who met such eligibility criteria were included. All participants were given an informed consent form, and those who agreed to participate were further sent a virtual survey. All participants received five points extra credit as an incentive. All data was collected and kept anonymous, and a random sample was analyzed to avoid accidental identification of participants.

Population Characterization

Our target population is college students in general. According to the university website on demographics, the sample population consisted of a diverse student population from a mid-sized four-year public institution of higher education. A majority of the students were: residents of the immediate service areas of San Bernardino and Riverside counties (87%), first-generation college students (81%), undergraduates classified as low-income students (58%), and of Hispanic ethnicity (66%).

Inclusion and Exclusion Criterion

Inclusion criteria for the study were: being currently enrolled at the institution, at least 18 years of age, and were able to read and write English. Further, participants younger than 18 years of age, not currently enrolled, and who did not complete a majority of the survey were excluded from analyses.

Measures

The following variables were of interest to this study: mental health, COVID-19 symptoms/diagnosis, COVID-19 isolation, ethnicity, experiences of discrimination, and academic performance.

Mental health was measured using the following survey questions:

“How would you describe your general mental health status?”

Mental health worsening due to COVID-19 symptoms/diagnosis was measured using the following survey questions:

“I feel my mental health status has gotten worse due to COVID-19 symptoms/diagnosis?”

Mental health worsening due to COVID-19 related isolation was measured using the following survey questions:

“I feel my mental health status has gotten worse due to COVID-19 related isolation?”

Ethnicity was measured as either Hispanic/Latino or non-Hispanic/Latino using the following survey question:

“What is your race/ethnicity?”

Due to the low sample size on the non-Hispanic racial groups, the study population was dichotomized to represent similar demographics of the institution, and thus Hispanic versus non-Hispanic was used.

Discrimination was measured using the following survey questions:

“In your daily life, how often do any of the following things happen to you?: You are treated with less respect than other people are, you receive poorer service than other people at restaurants or stores, people act as if they think you are not smart, people act as if they are afraid of you, people act as if they think you are dishonest, people act as if they’re better than you are, you are called names or insulted, you are threatened or harassed.”

“What do you think is the major reason(s) you were treated this way? Select all that apply: COVID-19 status or symptoms, vaccination status for

COVID-19, religion, race or ethnicity, skin color, gender identity, sexual orientation, immigration status, disability, appearance, other.”

Academic performance was measured using the following survey question:

“I feel my grades are suffering due to the pandemic?”

Data Analyses

To determine what percent of the study population selected COVID-19 status or symptoms, Vaccination Status for COVID-19, or both as the major reason or reasons for why they were discriminated upon, descriptive statistics were performed utilizing SPSS version 28.

To determine what percentage of the study population reported feeling their mental health status had gotten worse due to COVID-19 related isolation, descriptive statistics were performed utilizing SPSS version 28.

To determine what percentage of the study population reported feeling their mental health status had gotten worse due to COVID-19 related symptoms/diagnosis, descriptive statistics were performed utilizing SPSS version 28.

To determine what percentage of the study population reported feeling their grades are suffering due to the pandemic, descriptive statistics were performed utilizing SPSS version 28.

To determine if there was an association between general mental health status and mental health status that had gotten worse due to COVID-19 related

isolation, a Pearson Chi-Square test was performed utilizing SPSS version 28. The $p < 0.05$ was used to determine significance. The assumptions for Pearson Chi-Square were tested.

To determine if there was an association between mental health status that worsened due to COVID-related isolation and ethnicity, a Pearson Chi-Square test was performed utilizing SPSS version 28. The $p < 0.05$ was used to determine significance. The assumptions for Pearson Chi-Square were tested.

To determine if there was an association between mental health status that worsened due to COVID symptoms/diagnosis and ethnicity, a Fisher's Exact Test was performed utilizing SPSS version 28. The $p < 0.05$ was used to determine significance.

To determine if there was an association between mental health status that worsened due to COVID-related isolation and grades suffering due to the pandemic, a Pearson Chi-Square test was performed utilizing SPSS version 28. The $p < 0.05$ was used to determine significance. The assumptions for Pearson Chi-Square were tested.

To determine if there was an association between feeling grades suffered due to the pandemic and ethnicity, a Pearson Chi-Square test was performed utilizing SPSS version 28. The $p < 0.05$ was used to determine significance. The assumptions for Pearson Chi-Square were tested.

Ethics

The present study was approved by the Institutional Review Board of the university (IRB-FY2022-146). Due to the involvement of human subjects, all components of the Belmont Report were followed, including respecting all persons involved, practicing beneficence, ensuring justice, and obtaining informed consent from all parties (Protections (OHRP), 2018). To guarantee beneficence, all attempts were made to reduce the risk for harm and increase benefits. Incentives were provided as part of increasing benefits. The survey tool utilized was constructed to be anonymous to reassure the students that they cannot be identified when answering questions regarding sensitive topics. Furthermore, a random sample was used to prevent isolated cross-tabulations that may incidentally identify a participant of rare cases. Finally, only students who were currently enrolled and at least 18 years of age were allowed to participate in this study. This helped ensure justice as outlined in the Belmont report by preventing the infliction of burden on a particular group with the study while another benefited.

CHAPTER THREE:

RESULTS

What percent of the study population selected COVID-19 status or symptoms or vaccination status for COVID-19 as a major reason or reasons for why they were discriminated upon?

As illustrated in Table 1, 20.4% of participants stated COVID-19 related reasons as to why they felt they were discriminated against.

Table 1. COVID-19 Related Discrimination

	Percent
Other-Not COVID Related Discrimination	79.6%
COVID-19 Related Discrimination	20.4%

What percent of the study population reported feeling their mental health status had gotten worse due to COVID-19 related isolation?

As illustrated in Table 2, 32.0% of participants reported feeling their mental health status had gotten worse due to COVID-19 related isolation

Table 2. Mental Health Status Worsened Due to COVID-19 Related Isolation

	Percent
No	68.0%
Yes	32.0%

What percentage of the study population reported feeling their mental health status had gotten worse due to COVID-19 symptoms/diagnosis?

As illustrated in Table 3, 14.3% of participants reported feeling their mental health status had gotten worse due to COVID-19 symptoms/diagnosis.

Table 3. Mental Health Worsened Due to COVID-19 Symptoms/Diagnosis

	Percent
No	85.7%
Yes	14.3%

What percentage of the study population reported feeling their grades are suffering due to the pandemic?

As illustrated in Table 4, 46.9% of participants reported feeling their grades are suffering due to the pandemic.

Table 4. I Feel My Grades are Suffering Due to the Pandemic

	Percent
No	53.1%
Yes	46.9%

What is the association between general mental health status and mental health status that has gotten worse due to COVID-19 related isolation?

As illustrated in Table 5, there was a significant association between general mental health status and mental health status that has gotten worse due to COVID-19 related isolation ($p < .05$). Among participants that reported excellent or good general mental health status, only 12.2% reported yes to mental health worsening due to COVID-19 related isolation. In comparison, among participants that reported average, poor, or very poor general mental health status, 46.3% reported yes to mental health status worsening due to COVID-19 related isolation.

Table 5. General Mental Health Status * Mental Health Status Worsened Due to COVID-19 Related Isolation Crosstabulation

	No, Mental Health Status Did Not Worsen Due to COVID-19 Related Isolation	Yes, Mental Health Status Worsened Due to COVID-19 Related Isolation
Excellent/Good General Mental Health Status	87.8%	12.2%
Average/Poor/Very Poor General Mental Health Status	55.4%	16.7%
	53.7%	46.3%
	44.6%	83.3%

What is the association between mental health status that worsened due to COVID-related isolation and ethnicity?

As illustrated in Table 6, there was a significant association between mental health status that worsened due to COVID-related isolation and ethnicity ($p < .05$). Among Hispanics/Latinos, 39.3% reported yes, their mental health status did worsen due to COVID-19 related isolation. In comparison, among non-Hispanics/non-Latinos, 17.6% reported yes, their mental health status did worsen due to COVID-19 related isolation.

Table 6. Mental Health Status Worsened Due to COVID-19 Related Isolation *
Ethnicity Crosstabulation

	Hispanic/Latino	Non-Hispanic/Latino
No, Mental Health Status Did Not Worsen Due to COVID-19 Related Isolation	56.9%	43.1%
	60.7%	82.4%
Yes, Mental Health Status Worsened Due to COVID-19 Related Isolation	80.0%	20.0%
	39.3%	17.6%

What is the association between mental health status that worsened due to COVID Symptoms/Diagnosis and ethnicity?

As illustrated in Table 7, no significant association was found between mental health status that worsened due to COVID symptoms/diagnosis and ethnicity ($p=.051$). Among Hispanics/Latinos, 18.0% stated yes, their mental health status has worsened due to COVID-19 symptoms or diagnosis. In comparison, among non-Hispanics/non-Latinos, 2.9% stated yes, their mental health status has worsened due to COVID-19 symptoms or diagnosis.

Table 7. Mental Health Status Worsened Due to COVID-19 Symptoms/Diagnosis * Ethnicity Crosstabulation

	Hispanic/Latino	Non-Hispanic/Latino
No, Mental Health Status Did Not Worsen Due to COVID-19 Symptoms/Diagnosis	59.5%	40.5%
	82.0%	97.1%
Yes, Mental Health Status Worsened Due to COVID-19 Symptoms/Diagnosis	91.7%	8.3%
	18.0%	2.9%

What is the association between mental health status that worsened due to COVID-related isolation and grades suffering due to the pandemic?

As illustrated in Table 8, there was a significant association mental health status that worsened due to COVID-related isolation and grades suffering due to the pandemic ($p < .05$). Among participants that stated yes, they felt their grades were suffering due to the pandemic, 47.8% reported, yes, their mental health status had worsened due to COVID-19 related isolation. In comparison, among participants that stated no, they did not feel their grades suffered due to the pandemic, 17.6% reported, yes, their mental health status had worsened due to COVID-19 related isolation.

Table 8. Mental Health Status Worsened Due to COVID-19 Related Isolation * I Feel My Grades are Suffering Due to the Pandemic Crosstabulation

	No, I Do Not Feel My Grades are Suffering Due to the Pandemic	Yes, I Feel My Grades are Suffering Due to the Pandemic
No, Mental Health Status Did Not Worsen Due to COVID-19 Related Isolation	63.6%	36.4%
	82.4%	52.2%
Yes, Mental Health Status Worsened Due to COVID-19 Related Isolation	29.0%	71.0%
	17.6%	47.8%

What is the association between feeling grades suffered due to the pandemic and ethnicity?

As illustrated in Table 9, there was a significant association between feeling grades suffered due to the pandemic and ethnicity ($p < .05$). Among Hispanics/Latinos, 55.7% reported that they felt their grades are suffering due to the pandemic. In comparison, among non-Hispanics/Latinos, 34.3% felt their grades are suffering due to the pandemic.

Table 9. Ethnicity * I Feel My Grades are Suffering Due to the Pandemic

	No, I Feel My Grades are Not Suffering Due to the Pandemic	Yes, I Feel My Grades are Suffering Due to the Pandemic
Hispanic/Latino	44.3%	55.7%
	54.0%	73.9%
Non-Hispanic/Latino	65.7%	34.3%
	46.0%	26.1%

CHAPTER FOUR: DISCUSSION

This study aimed to evaluate the burden of the COVID-19 pandemic on mental health outcomes among college students, with a sub-focus on its role in experiences of discrimination and academic performance. To assess research questions, a cross-sectional study approach was utilized, and tools of statistical analyses (descriptives, bivariate) were used to extrapolate information. Results highlighted several key findings.

There was a significant association between general mental health status and COVID-19 related isolation. Worsening of mental health to any degree is not conducive to a healthy life. For college students, a slight worsening in mental health could have severe repercussions on their academics, optimal health, and social health. Whether for a short or long period, future instances of isolation should require mental health support to help mitigate the development or exacerbation of mental health illnesses (Groarke et al., 2020).

The study also found a significant association between mental health status that worsened due to COVID-19 isolation and ethnicity, with Hispanics/Latinos being disproportionately affected compared with those of other ethnicities. This indicates the prevalence of health disparities within the Hispanic/Latino communities that affect their mental health more than others. Future public health interventions should incorporate strategies to prioritize

populations disproportionately affected by health disparities (McGuire & Miranda, 2008).

Regarding worsened mental health due to COVID-19 related isolation and feelings that grades had suffered due to the pandemic, the study also found a significant association. College students with poor academic performance risk delayed graduation and increased financial burden due to associated education costs. Higher education is often a route taken to escape poverty in low socioeconomic status communities. Delayed graduation due to poor academic performance will only work to prolong poverty. Educational institutions should prioritize the availability of academic resources, such as tutoring, to better assist students who are having difficulty with their classes due to the pandemic, especially among minority students (Shankar & Park, 2016).

Finally, there was a significant association between ethnicity and feeling that grades suffered due to the COVID-19 pandemic. A higher percentage of Hispanics/Latinos reported feeling their grades were suffering due to the pandemic compared with other ethnicities. This is indicative of academic disparities that exist within the Hispanic/Latino communities. As previously mentioned, optimizing academic performance helps ensure on-time graduation and limits the financial burden of college. Colleges should prioritize educational resources, such as tutoring, to assist students who are having difficulty with their classes due to the pandemic, especially among minority students (Leung, 2015).

Limitations

There are some possible limitations of this study that should be addressed in future research. The first is the study design type. Cross-sectional studies do not take into consideration temporal time along with cause and effect. The second limitation is the possibility of self-report bias. More direct or objective means of assessing mental health should be considered to prevent this, such as biosensors to record nervous system activity or blood samples (Haberer et al., 2013). The third limitation is the possibility of social desirability bias. Due to the nature of questions being asked, there is the possibility they might influence answers from participants (Joinson, 1999). A fourth limitation is that the questions asked are not representative of all the aspects or dimensions of mental health. Furthermore, the last limitation is that a larger sample size might be required to fully test results that were not significant.

Strengths

A major strength of this study was the prevention of self-selection bias, which has been found to negatively influence participation (Hsieh & Kocielnik, 2016). This was prevented by the incentive of extra credit, broad inclusion criteria, and diversity of students from multiple departments and majors (Marinescu et al., 2021). The second strength was that the survey was administered online and was anonymous, which helps prevent social desirability bias (Joinson, 1999). The third strength of this study is that the questions utilized in the survey tool are the same questions from the California Health Interview

Survey (CHIS) and National Health Interview Survey (NHIS). This strength allows the data to be compared across various studies and populations. Further, this study focused on a major vulnerable group.

The county where the institution resides has on average 3.29 persons per household, which is higher than both the California state average of 2.95 and national average of 2.62 persons (U.S Census Bureau, 2019). Additionally, the county has one of the highest concentrations of low SES communities, with a poverty rate of 13.3%, which is also higher than both the California state average (11.8%) and the national average (12.3%) (San Bernardino County, 2020).

The population is also very diverse, with 21% of its population being foreign-born, compared with the national average of 13.6% being foreign-born (U.S Census Bureau, 2019). This number is most likely under-reported due to the hesitancy of those without legal citizenship to report their immigration status out of fear of deportation. As such, addressing the pandemic-related disparities in such a group provides insight into the most vulnerable, which may be masked in standard population-based research.

Conclusion

The COVID-19 pandemic is a significant public health issue that has negatively burdened the general population's health, including mental health. This study evaluated the burden of the COVID-19 pandemic on mental health outcomes among college students. The data has shown that there is a significant association between COVID-19 related discrimination and worsening mental

health. Additionally, the data has revealed health disparities that exist among Hispanics/Latinos that disproportionately affect their mental health more than other ethnicities. Public health interventions and academic institutions should incorporate strategies to prioritize populations disproportionately affected by health disparities to optimize their wellness and academic performance.

APPENDIX A:
INSTITUTIONAL REVIEW BOARD LETTER OF APPROVAL

February 22, 2022

CSUSB INSTITUTIONAL REVIEW BOARD

Protocol Change/Modification

IRB-FY2022-146

Status: Approved

Prof. Monideepa Becerra
CNS - Health Science
California State University, San Bernardino
5500 University Parkway
San Bernardino, California 92407

Dear Prof. Becerra:

The protocol change/modification to your application to use human subjects, titled "Student health needs assessment-Third round" has been reviewed and approved by the Chair of the Institutional Review Board (IRB). A change in your informed consent requires resubmission of your protocol as amended. Please ensure your CITI Human Subjects Training is kept up-to-date and current throughout the study. A lapse in your approval may result in your not being able to use the data collected during the lapse in your approval.

This approval notice does not replace any departmental or additional campus approvals which may be required including access to CSUSB campus facilities and affiliate campuses. Investigators should consider the changing COVID-19 circumstances based on current CDC, California Department of Public Health, and campus guidance and submit appropriate protocol modifications to the IRB as needed. CSUSB campus and affiliate health screenings should be completed for all campus human research related activities. Human research activities conducted at off-campus sites should follow CDC, California Department of Public Health, and local guidance. See CSUSB's [COVID-19 Prevention Plan](#) for more information regarding campus requirements.

You are required to notify the IRB of the following by submitting the appropriate form (modification, unanticipated/adverse event, renewal, study closure) through the online Cayuse IRB Submission System.

- 1. If you need to make any changes/modifications to your protocol submit a modification form as the IRB must review all changes before implementing them in your study to ensure the degree of risk has not changed.**
- 2. If any unanticipated adverse events are experienced by subjects during your research study or project.**
- 3. If your study has not been completed submit a renewal to the IRB.**
- 4. If you are no longer conducting the study or project submit a study closure.**

You are required to keep copies of the informed consent forms and data for at least three years.

If you have any questions regarding the IRB decision, please contact Michael Gillespie, Research Compliance Officer. Mr. Gillespie can be reached by phone at (909) 537-7588, by fax at (909) 537-7028, or by email at mgillesp@csusb.edu. Please include your application approval number IRB-FY2022-146 in all correspondence.

Best of luck with your research.

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