

THIS IS A PEER-REVIEWED, ACCEPTED AUTHOR MANUSCRIPT OF THE FOLLOWING RESEARCH ARTICLE: Wood, C. I., Yu, Z., Sealy, D-A., Moss, I., Zugbuo-Wenzler, E., McFadden, C., Landi, D., & Brace, A. M. (2022). Mental health impacts of the COVID-19 pandemic on college students. *Journal of American College Health*. <https://doi.org/10.1080/07448481.2022.2040515>

Mental Health Impacts of the COVID-19 Pandemic on College Students

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Abstract

The COVID-19 pandemic is having profound effects on college students. Students with mental health conditions are more vulnerable to the impact of stress, as it can exacerbate mental health symptoms. In order to study the impact of the COVID-19 pandemic on college students' mental health, 773 students completed the survey and 489 were included in the final analysis.

Participants were mostly female, undergraduate, and aged 18-25. Approximately 81.6 % self-reported at least one negative mental health symptom. Students reported increased feelings of hopelessness (+7.8%), loneliness (+6.7%), sadness (+8.8%), depression (+2.6%), anxiety (+5.2%), and anger (+14.6%) during COVID-19 than before. LGBTQ students and Black students had significantly more mental health symptoms during the COVID-19 pandemic when compared with straight and White students. Results of this study highlight the negative impact of the COVID-19 pandemic and resultant changes on college students' mental health.

Keywords: COVID-19, mental health, health, college students, stress

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COVID-19, a disease caused by the novel SARS-COV-2 virus, has spread so rapidly and widely it has become a worldwide pandemic.^{1,2} The combination of the potentially dire consequences that can result from catching and transmitting the disease, along with the lack of information and treatment for the disease, has led to a forceful change in how humans live. The new lifestyle consists of social distancing, frequent handwashing, wearing face masks, and self-isolation. Some researchers suggest that the drastic change in lifestyle during the pandemic may have an adverse effect on mental health. More specifically, the psychological distress accompanying the lifestyle change may lead to the development or exacerbation of mental illnesses such as depression and anxiety.³ While major health organizations, such as the World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) advise implementing measures aimed at benefiting the public's physiological health, it is just as important to consider the psychological impact that has resulted from the COVID-19 pandemic.^{3,4}

College students are uniquely vulnerable to experience heightened levels of stress that may arise from factors such as academic pressure, developing and maintaining relationships, establishing autonomy, lifestyle changes, and financial challenges. The accumulation of these stressors can make college students particularly vulnerable to developing mental health disorders.⁵ Evidence also indicates that the median age of onset for some mental health disorders is during young adulthood, contributing to this finding may be the unique levels of stress that college students experience.⁶ The profound levels of stress and mental health disorders that college students undergo has led researchers to focus on college students' reactivity to stress. However, it is critical to further research efforts evaluating college students' reaction to the

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COVID-19 pandemic, as the exacerbated levels of stress can severely impact college students' mental health because of their susceptibility to mental illness.

Stress and Mental Health of College Students

Stress is an inevitable and integral part of human existence. From an evolutionary perspective, stress plays a fundamental role in human survival. Humans would rely on their physiological response to a stressor or threat in order to initiate the appropriate behavioral responses that would promote survival. More recently, stress has transformed from a biological response to now being recognized as a state of mental or emotional strain that can have negative repercussions on mental health, such as the onset of schizophrenia, anxiety disorders, and depression.⁷

Under normal circumstances, college students report experiencing a high level of perceived stress.⁸ A large part of the stress college students experience, particularly younger students, is credited to the abrupt change in their lifestyle from high school to college. In most cases, students are placed in a position where they need to live on their own, develop a routine, build social connections, perform well academically, along with being able to manage or provide for themselves financially. The abrupt change in responsibility can adversely affect stress levels and overall well-being.⁹ This increase in perceived stress can have a host of deleterious effects on students including greater depression and anxiety symptoms, lower academic performance, lower levels of physical activity, worse overall health, impulse control concerns, lower levels of self-esteem, relationships with friends, and higher internet use.^{10,11}

The current literature suggests that stress can lead to the development of a new mental health condition, or exacerbate symptoms of an existing mental health condition, as a result of engagement in maladaptive behaviors. The maladaptive behaviors associated with stress include

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lower levels of physical activity, poor sleep quality, unhealthy eating habits, poor self-esteem, and inability to maintain social relationships.^{12,13} Therefore, it is important to continue evaluating college students' mental health and well-being during the COVID-19 pandemic as they may be experiencing an unusually high level of stress.

Health Behaviors on Mental Health

The relationship between stress and mental health is due, in part, to the negative health behaviors associated with stress that can intensify experiences of psychological distress, which can play a role in the onset of a mental illness.¹⁴ Previous research evaluating the relationship between stress and health behaviors suggests that higher levels of stress are associated with lower levels of physical activity, unhealthy eating habits, and poor sleep patterns.^{12,13} The adverse impact stress has on maintaining a healthy lifestyle severely impacts well-being and increases the likelihood of developing a mental illness.³

Health behaviors such as physical activity have been shown to improve symptoms of mental health conditions. Research has supported the objective that engaging in physical activity improves mental health, specifically, alleviating depressive symptoms and anxiety.¹⁵ In their meta-analysis of the impact of physical activity on stress, Stults-Kolehmainen and Sinha¹² found that psychological stress predicts less physical activity and greater sedentary behavior.

Another health behavior shown to impact stress and mental health is healthy eating behavior. Unhealthy eating deprives the body of important nutrients such as, zinc, magnesium, and long chain omega-3 fatty acids. Lower levels of these critical nutrients are associated with increased rates of depression and anxiety disorders.¹⁶ Research has also shown a strong relationship between stress and unhealthy eating habits. Stress increases the likelihood of having a high-caloric diet along with eating greater fatty foods (i.e., sugar).¹⁷

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Finally, sleep is another health behavior shown to impact stress and mental health. Stress causes an increase in heart rate, sympathetic nervous system activity, and releases the hormone, cortisol.¹³ Cortisol inhibits the production of melatonin, which directly affects an individual's sleep habits. The impaired sleep habits then affect emotion regulation, quality of life, and psychosocial health,¹⁸ all of which contribute to an increased risk of developing depressive symptoms, anxiety, and mood disorders.¹³

These findings are important to consider when further evaluating the impact of the COVID-19 pandemic, a situation that generated a variety of different stressors, on college students' mental health. Prior research suggests that increased levels of stress significantly decrease levels of physical activity, promote poor eating habits, and alter sleep routines. We can infer from these previous findings that college students, a group already susceptible to high levels of stress, are at risk of having mental health disturbances as a result of not maintaining these health behaviors.

COVID-19 and College Students

College students abruptly transitioned from on-campus learning to remote learning during the spring of 2020. Remote learning consisted of either synchronous learning, live class conducted virtually, or asynchronous learning, pre-recorded lectures viewed independently. Along with adjusting with the new learning style, students still needed to meet the same academic standards and study habits.

Another complication that occurred as a result of the COVID-19 pandemic was the transition from on-campus living to off-campus living. Unexpectedly, students were informed that there will no longer be on-campus activities and were asked to leave their on-campus housing. This created a lot of obstacles for students that were adjusted to living independently

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and are now forced to give up their autonomy; one of the main benefits of living on a college campus. College students then had to readjust to a new environment. In the new environment students had to quickly adapt to the new situation in order to maintain their academic standards.

Along with losing their housing, college students all lost access to their friends and peers, that provided a unique source of emotional support. The COVID-19 pandemic generated new restrictions in order to follow public health safety protocols. The protocols primarily consisted of being quarantined and practicing social distancing. Confined to living at home and not being able to see peers and friends, took away one of the main sources of coping with stress. As a result, college students are extremely vulnerable to psychological distress by not being able to effectively cope with the unusually intense levels of stress.

Methods and Measures

Participants

Students enrolled in a college of health professions received an invitation to complete a survey about their experiences during the early part of the COVID-19 pandemic (approximately March 2020-June 2020). Of the 773 students who completed the electronic survey, 489 participants were included in the final analysis. Students not enrolled in the spring semester 2020 and students who completed less than 70% of survey were excluded in the final analysis. The study sample self-identified as mostly female (88.3%), full-time students (88.0%), undergraduate (78.4%), and between the ages of 18-25 years (88.9%) with a mean age of 20.3. All 489 participants reported their races, 61.1% identified themselves as White, 22.3% identified themselves as Black, and 16.6% identified themselves as other races. When asked about sexual orientation, 422 (86.3%) participants identified as straight, 63 (12.9%) identified as LGBTQ, and 4 participants did not disclose sexual orientation.

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Measures

Students' mental health symptoms during COVID-19 were measured by a series of eight questions asking whether they have felt 1) things were hopeless, 2) overwhelmed by all they had to do, 3) exhausted (not from physical activity), 4) very lonely, 5) very sad, 6) so depressed it was difficult to function, 7) overwhelming anxiety, and 8) overwhelming anger during the past 30 days. The number of mental health issues each student experienced during the past 30 days were calculated to measure the overall mental health problem students had during COVID-19. A recall period of 30 days was used to be safely contained within the outbreak of COVID-19 in the United States, given all surveys were administered in June 2020. Susceptibility to COVID-19 was measured by the question "How likely do you think it is that you will develop COVID-19?"

Statistical Analysis

The study sample was described by frequencies and percentages of categorical sample characteristics including age, gender, enrollment statuses, race, and fraternity/sorority involvement. Means and standard deviations of self-rated subjectivity to COVID-19 and overall stress level were calculated by sample characteristics. Frequencies and standard deviations of eight mental health issues were calculated by sample characteristics. Multiple regression was used to identify whether and how each sample characteristic associated with the overall mental health problem of college students. Statistical analysis was conducted using STATA MP 14. Percentages of students experienced each of the eight mental health issues were also calculated among all study participants and compared with percentages calculated from a sample of National College Health Assessment surveyed before the outbreak of COVID-19 during 2016-2018. The same comparison was made among Black students and LGBTQ students, which were identified as high-risk groups in the regression model.

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Results

Table 1 summarizes characteristics of the study sample. Students between 26-30 years old reported the highest perceived susceptibility to COVID-19. Female students had higher mean perceived susceptibility score than male students (1.95 vs 1.82). LGBTQ and graduate/professional students were more concerned about getting COVID-19 than straight students and undergraduate students. The overall stress level was higher among students in lower age groups, female students, full-time students, and Black students.

Insert Table 1

Prevalence of mental health issues by sample characteristics is displayed in Table 2. Around 40% college students in lower age groups (18-25) reported they felt things were hopeless in the last 30 days, the percentages were much greater than higher age groups' percentages (21.9% and 10.0%). However, compared with students who were between 26-30 years old, students in lower age groups (18-25) reported feeling less overwhelmed and exhausted. Students over 30 years old, male students, straight students, and part-time students had less percentages in all eight mental health issues including feeling hopeless, overwhelmed, exhausted, lonely, sad, depressed, anxiety, and anger.

Insert Table 2

Table 3 demonstrates the prevalence of eight mental health issues among all college students, Black students, and LGBTQ students surveyed in our study during COVID-19 and among same populations surveyed before COVID-19 during 2016-2018. Differences in percentages during COVID-19 with percentages before COVID-19 are displayed in parentheses. Among all college students surveyed, there were increased percentages of students who felt hopeless (+7.8%), lonely (+6.7%), sad (+8.8%), depressed (+2.6%), anxious (5.2%), and angry

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(+14.6%) during COVID-19 than before. However, percentages of students feeling overwhelmed (-9.8%) and exhausted (-4.9%) were smaller during COVID-19. Multiple regression predicting overall mental health shows LGBTQ students ($p = .003$) and Black students ($p = .005$) had significantly more negative mental health symptoms during the COVID-19 pandemic when compared with straight students and students who identified themselves as White. Black students exhibited increased prevalence in seven of the eight mental health issues during COVID-19 versus before, except for feeling overwhelmed by all they had to do (-9.8%). As opposed to the general study sample, LGBTQ students had a slightly decreased percentage of anxiety (-0.1%) during COVID-19 versus before. A horizontal comparison shows both Black students and LGBTQ students surveyed during COVID-19 had higher prevalence of all eight mental health symptoms than the general study sample surveyed during the same period. Black students and LGBTQ students had a greater increase in percentages of students feeling overwhelming anger (+21.6% and +22.8%) than the increase in percentage of that among general study sample (+14.6%).

Insert table 3

Discussion

College students are considered at risk for mental health concerns at a time when they are usually away from home and people that may be closely familiar with them. Mental health disorders can affect their ability to achieve academic success and ultimately their career and job prospects. A few studies have found that the pandemic has had an effect on anxiety and depression among college students.^{19,20} The findings of this study revealed that the pandemic and the subsequent transition to online/virtual learning had a negative effect on the mental health of students. These findings are in line with a qualitative study conducted by Son and colleagues²⁰

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that had similar findings which showed that the majority of students found that their stress and anxiety had increased during the pandemic. While this was found, only 5% of the students accessed mental health counseling.

In the all students* category the major increases in stress were seen in the areas of hopelessness, sadness, loneliness, depression, anger and anxiety during COVID-19. Son and colleagues²⁰ found that financial difficulties, changes in the living arrangement, increased social isolation and concerns about academic performance affected the student's mental health during the pandemic. The findings of this study revealed that the pandemic and the subsequent transition to online/virtual learning had a negative effect on lifestyles habits such as exercise and socializing with friends which can act as protective factors against mental health concerns.

Moving home was also a significant source of stress for the students. Moving home may in the long run have provided more support for the students. However, because students were isolated from friends and concerned about the health of the older relatives and parents that they were now living with, this seemed to be a great source of anxiety. Moving home may have also prevented them from accessing the mental health services available on the campus of the university.

Students who identified as Black and LGBTQ experienced significantly more stress in this study. The study was conducted during a time of great racial tension in the USA due to the killing of several unarmed Black men by police and the resultant protests in several major cities. Black students' mental health and anxiety levels may have been affected by these events and internalized racism. COVID-19 mortality rates have also been found to disproportionately affect minority groups such as Blacks. Sexual minorities have been known to have poorer mental health than heterosexual individuals. This mental health effect may be due to stigma and

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discrimination including sexual harassment.²¹ The Minority Stress Theory provides some lens that may explain higher depressive symptoms among LGBTQ.²² This theory explains that stigmatized individuals such as those identifying as a sexual minority experience chronic stress that is thought to lead to a greater risk of poor mental health and physical health. The chronic stress may occur as the result of sexual orientation concealment and internalized homophobia.²³ Black and LGBTQ students experienced more overwhelming anger during the study period.

Social support has been shown to reduce psychological pressure during outbreaks but the sudden isolation from friends due to the physical and social distancing requirements may have significantly jeopardized peer social support. Students in these situations may find themselves engaging in risky behaviors or using drugs and alcohol as coping mechanisms.

The findings of this study can be used to develop interventions for college students who may be experiencing distress. Many students who obtained counseling on campus may not have had a counselor that could have been accessed easily when they moved off campus as a result of school closures. The absence of the peer networks may have had a significant impact on their mental health. Social support is important during public health emergencies. While college students were not in the high-risk categories for dying from COVID 19, their emotional needs may have been overlooked by the health messages provided. It is essential that interventions that can be delivered via the Internet or telehealth interventions be made available to students to alleviate the prolonged impact of the pandemic on their mental health.

Limitations of the study included recruiting from one department of the university so this is not a representative sample for the university and the findings cannot be generalized to all college students in the USA. They may have generally practiced more health seeking behaviors. However, given the fact that most universities transitioned to virtual/online learning during the

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pandemic we can expect that the findings may be able to be generalized. Future research should incorporate a longitudinal design to understand if the impact of COVID-19 is long lasting and may exist beyond the peak of COVID-19 as schools have mainly transitioned to months of synchronous and asynchronous classes.

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Table 1. Sample Characteristics

	Frequency (%) or Mean (Standard Deviation)		
	Sample Composition	Self-rated Susceptibility to COVID-19 (1-4, 4=very likely)	Stress Level (1-5, 1=no stress)
Age			
18-21	58.2% (273)	1.86 (0.73)	3.79 (0.81)
22-25	30.7% (144)	2.02 (0.84)	3.99 (0.74)
26-30	6.8% (32)	2.28 (0.68)	3.66 (0.83)
>30	4.3% (20)	1.90 (0.85)	3.65 (0.59)
Gender			
Male	11.7% (57)	1.82 (0.83)	3.40 (0.90)
Female	88.3% (430)	1.95 (0.77)	3.89 (0.76)
Sexual Orientation			
Straight	87.0% (422)	1.90 (0.76)	3.80 (0.78)
LGBTQ	13.0% (63)	2.13 (0.83)	4.08 (0.83)
Undergraduate			
No	21.7% (105)	1.99 (0.73)	3.94 (0.66)
Yes	78.4% (380)	1.92 (0.78)	3.81 (0.82)
Full-time Student			
No	12.0% (58)	2.09 (0.92)	3.72 (0.79)
Yes	88.0% (427)	1.92 (0.75)	3.85 (0.80)
Race			
White	61.2% (299)	1.94 (0.74)	3.81 (0.78)
Black	22.3% (109)	1.81 (0.83)	3.94 (0.83)
Other	16.6% (81)	2.10 (0.83)	3.81 (0.79)
Fraternity or Sorority			
Yes	10.0% (49)	1.92 (0.70)	3.86 (0.58)
No	90.0% (439)	1.94 (0.78)	3.83 (0.82)

Table 2. Mental Health Issues by Sample Characteristics

	In the last 30 days, students ever felt:							
	hopeless	overwhelmed	exhausted	very lonely	very sad	depressed	anxiety	anger
Age								
18-21	39.9% (109)	58.1% (158)	60.5% (164)	47.8% (130)	49.6% (135)	22.4% (61)	43.9% (119)	35.9% (98)
22-25	41.7% (60)	61.1% (88)	67.4% (97)	49.3% (71)	60.4% (87)	29.9% (43)	50.7% (73)	38.2% (55)
26-30	21.9% (7)	71.9% (23)	78.1% (25)	46.9% (15)	56.3% (18)	28.1% (9)	50.0% (16)	35.5% (11)
>30	10.0% (2)	40.0% (8)	50.0% (10)	20.0% (4)	20.0% (4)	5.0% (1)	15.0% (3)	10.0% (2)
Gender								
Male	15.8% (9)	44.6% (25)	52.6% (30)	41.1% (23)	40.4% (23)	19.6% (11)	26.8% (15)	26.3% (15)
Female	40.2% (173)	60.7% (261)	63.8% (273)	47.4% (204)	53.4% (229)	25.1% (108)	47.3% (203)	36.8% (158)
Sexual Orientation								
Straight	35.5% (150)	58.5% (247)	61.0% (256)	44.8% (189)	49.9% (210)	22.0% (93)	43.7% (184)	32.8% (138)
LGBTQ	50.8% (32)	60.3% (38)	71.4% (45)	58.7% (37)	65.1% (41)	39.7% (25)	52.4% (33)	52.4% (33)
Undergraduate								
No	30.5% (32)	65.7% (69)	70.5% (74)	46.7% (49)	59.0% (62)	23.8% (25)	45.7% (48)	29.8% (31)
Yes	39.2% (149)	56.8% (216)	60.1% (227)	46.6% (177)	49.9% (189)	24.5% (93)	44.6% (169)	36.8% (140)
Full-time Student								
No	20.7% (12)	52.6% (30)	60.3% (35)	40.4% (23)	46.6% (27)	19.3% (11)	31.6% (18)	34.5% (20)
Yes	39.6% (169)	59.5% (254)	62.6% (266)	47.5% (203)	52.3% (223)	25.3% (108)	46.7% (199)	35.7% (152)
Race								
White	35.1% (105)	59.1% (176)	61.7% (184)	46.3% (138)	50.8% (152)	19.8% (59)	43.1% (128)	31.2% (93)
Black	45.9% (50)	63.3% (69)	73.1% (79)	51.4% (56)	58.7% (64)	37.6% (41)	54.1% (59)	46.8% (51)
Other	35.0% (28)	52.5% (42)	51.3% (41)	42.5% (34)	46.8% (37)	24.1% (19)	40.0% (32)	36.7% (29)

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Fraternity/Sorority

Yes	38.8% (19)	63.3% (31)	63.3% (31)	51.0% (25)	52.1% (25)	26.5% (13)	40.8% (20)	40.8% (20)
No	37.4% (164)	58.4% (256)	62.5% (273)	46.3% (203)	51.9% (228)	24.3% (106)	45.5% (199)	35.0% (153)

Table 3. Comparison of mental health issues during and before COVID-19

		(Increased) Percentages among:					
		all students before COVID-19	all students during COVID- 19	black students before COVID-19	black students during COVID- 19	LGBTQ students before COVID-19	LGBTQ students during COVID-19
In the last 30 days, students ever felt:	hopeless	30.1%	37.5% (+7.4%)	32.9%	45.9% (+13.0%)	42.4%	50.8% (+8.4%)
	overwhelmed	68.7%	58.9% (-9.8%)	64.6%	63.3% (-1.3%)	74.5%	60.3% (-14.2%)
	exhausted	67.5%	62.6% (-4.9%)	63.5%	73.1% (+9.6%)	74.3%	71.4% (-2.9%)
	lonely	40.1%	46.8% (+6.7%)	40.9%	51.4% (+10.5%)	52.6%	58.7% (+6.1%)
	sad	43.2%	52.0% (+8.8%)	44.0%	58.7% (+14.7%)	55.9%	65.1% (+9.2%)
	depressed	21.9%	24.5% (+2.6%)	23.3%	37.6% (+14.3%)	35.6%	39.7% (+4.1%)
	anxiety	39.9%	45.1% (+5.2%)	38.0%	54.1% (+16.1%)	52.5%	52.4% (-0.1%)
	anger	22.0%	36.6% (+14.6%)	25.2%	46.8% (+21.6%)	29.6%	52.4% (+22.8%)