

COVID-19 Pandemic: Impact on College Students' Mental Health

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Abstract

Prior research has drawn attention to COVID related impacts among university students. This article describes findings of a survey, which was administered to a random sample of 359 U.S. graduate and undergraduate students in the College of Education and Human Services at a regional four-year university located in the state of Texas. The summary of findings highlights that the majority of the participants expressed concern, anxiety, and frustration towards the pandemic. More specifically, Hispanic and Black students reported concerns about their health and safety, finances, and mental wellbeing. This article concludes with recommendations for academic institutions and institutional advocates regarding ways to respond to university students, in an effort to ensure their overall success.

Keywords: COVID, college students, anxiety, depression, anger, mental health

Introduction and Literature Review

The Coronavirus disease (COVID-19) pandemic is, by far, one of the most disrupting occurrences in the American educational system. COVID is an “infectious disease caused by the SARS-CoV-2 virus” (World Health Organization, 2022, para. 1). Common symptoms of COVID are fever, cough, tiredness, and loss of taste or smell. In some cases, individuals may experience more serious symptoms, which include difficulty breathing or shortness of breath, loss of speech or mobility, confusion, and chest pain (World Health Organization, 2022). The impacts of this pandemic have shaken all aspects of the educational experiences in a diminutive span of time. Shortly after learning of the COVID outbreak, the United States (US) confirmed its first identified COVID case by January 2020, confirmed its first death by February 2020, and by early March 2020, there were multi-statewide school closures (Sirrinc et al., 2021). While the pandemic has caused challenges for all aspects of the U.S. in varying ways, including the workforce and economic outlook, COVID related challenges has definitely taken its toll on the overall progress of college students. According to Fruehwirth et al. (2021) and Lederer et al. (2020), prior to the pandemic, college students were already experiencing depression, anxiety, and additional mental challenges. More specifically, pre-pandemic, “one in five college students experienced one or more diagnosable mental disorders worldwide” (Zhai, 2020, p. 1). During and since the pandemic, these occurrences among college students' physiological, academic and financial wellbeing were further compromised (Tasso et al., 2021). In fact, the Children's Institute asserts that

the impact of COVID could last a lifetime for all age groups, with a particular focus on college students (Dorn et al., 2020).

When examining and exploring the role of COVID in the current experiences of college students, it is plausible to conclude that the pandemic has played a significant role in their shaky academic, work-life practices and mental stability (Bezerra, 2020). In research conducted during COVID, college students reported greater anxiety, greater worry about the impacts of COVID, greater number of daily life disruptions, and less resilience among college students who identified as Latinx, Black, women, and non-heterosexual students than their particular counterparts (i.e., non-Latinx, white, men, and heterosexuals) (Bezerra, 2020). In part, these experiences can be related to the closing of colleges and universities, which has caused many college students to lose the academic and support resources associated with face-to-face interactions, such as interactions among their peers and instructors. College students have also experienced the loss of campus related jobs and work study positions, which may have impacted their ability to financially provide for themselves and their families (Molock, & Parchem, 2020; Wilson et al., 2020).

Moreover, the “home away from home” sense of security was impacted and replaced with isolation and loneliness (Dubey et al., 2020; Khan et al., 2020), as well as increased screen time and sedentary time (Hagedorn et al., 2021). For students who thrive on connection, these adjustments can be detrimental to a student’s overall development (Berger, 1997; Hagedorn et al., 2021).

General difficulties in adjusting to the academic isolation associated with distanced learning and social isolation contributed to the increases in both depression and anxiety symptoms (Fruehwirth et al., 2021). While college students are experiencing increased depression and anxiety due to academic and social adjustments, many college students are now faced with the likelihood of an unpredictable job market upon graduation, which will continue to make college students feel unstable. College graduates are bound to experience the unknown of economic impacts and are likely to face the possibility of lower paying jobs due to poor labor markets (Bell & Blanchflower, 2020; Kwakye & Kibort-Crocker, 2020) and an unknown workforce (Stevenson, 2020).

As the experiences and responses of college students to COVID remain a focus on college and university campuses, the vulnerability of this population will persist. College students continue to experience, by nature of being a college student, many mental challenges. Daily, they are encouraged and often times forced to negotiate academic, social and peer influences. According to Batra and colleagues (2021), “the likelihood of suicidal ideation increased twice following one or two traumatic events” (p. 2). As a nation, we can expect to see more incidents of mental health concerns and suicide than ever before (Fruehwirth et al., 2021; Son et al., 2020). A study by Active Minds (2020) revealed that approximately 91% of college students in the US reported an increase in their stress and/or anxiety levels.

The discourse around COVID and gender related responses among college students is essential when attempting to identify support initiatives and resources. Impacts of the pandemic has disproportionately affected women in all sectors (Zamarro et al., 2020). These impacts are related to childcare, employment drops, and it is established that women experienced higher levels of distress and anxiety (Zamarro et al., 2020). Additionally, research on gender focuses on disparities in remote learning (Saw et al., 2020); who chooses to get vaccinated (Alleaume et al., 2021); dependent care and caretaking strategies (Rhubart, 2021); gender inequality in research (MacArthur et al., 2020); academic performance and learning (Krukowski et al., 2020); to name a few. However, additional research that focuses holistically on COVID related impacts on U.S. college students and mental health concerns with the purpose of identifying ways that college and university constituents can respond to the growing mental health concerns that exist on our college and university campuses is paramount

Purpose of the Study

The purpose and research inquiry of this study was to examine factors that impacted the experiences of graduate and undergraduate students in the areas of Psychology, Counseling, and Social Work, at a regional four-year university located in the state of Texas. This study sought to understand mental health related factors that college students experienced as a result of the COVID-19 pandemic. This understanding will assist university administrators, faculty and all individuals who work with students, to better serve students and ensure their overall success.

Methodology

The participants of the study are undergraduate and graduate students enrolled in the College of Education and Human Services at a regional four-year university located in the state of Texas. An online based survey was developed using Qualtrics. The research was approved by IRB at the institution and the data was collected in Spring 2022 semester. An email invitation, including the purpose of the study and information about the study, was sent to all students in Psychology, Counseling, and Social Work. All of the participants provided informed consent where data anonymity and confidentiality were strictly maintained. A total of 364 responses were collected. From 364 responses, 359 (98.6%) responses met the research criteria and five responses were dropped due to missing information. The data was imported to IBM SPSS (Statistical Package for the Social Sciences) software for preliminary analysis.

Findings

Table 1 represents the demographic profile of the participants. A total of 359 participants' responses were used for the data analysis. A total of 15% of the respondents were male, 84.1% were female and 0.8% self-identified as other. In terms of the ethnicity of the participants, 49.3% were White/European American, 28.4% were Black/African American, 13.6% were Hispanic/Latino/Latina, 5.8% were Biracial/Multiracial, 1.7% were Asian/South Pacific Islander, 0.8% were Central Asian/Indian/Pakistani, and 0.3% were Native American/American Indian. Over 60% of the participants who responded to the survey were graduate students and the remaining 40% were undergraduate students. The participants in this study represented the areas of Psychology, Counseling, and Social Work. Three participants did not disclose their program of study.

Table 1

Participants' Descriptive Profile (n=359).

Variable	Attribute	Frequency	Percentage (%)
Gender	Male	54	15.0
	Female	302	84.1
	Other	3	0.8
Ethnicity	Asian/South Pacific Islander	6	1.7
	Biracial/Multiracial	21	5.8
	Black/African American	102	28.4
	Central Asian/Indian/Pakistani	3	0.8
	Hispanic/Latino/Latina	49	13.6
	Native American/American Indian	1	0.3
	White/European American	177	49.3
Program	Counseling	129	35.9
	Psychology	132	36.8
	Social Work	92	25.6
	Other	3	0.8
Status	Freshman	8	2.2
	Sophomore	19	5.3
	Junior	53	14.8
	Senior	56	15.6
	Master's	167	46.5
	Doctoral	54	15.0

Table 2 represents the participants' responses towards the COVID-19 pandemic. The results show that overall, the majority of the participants expressed concern (75.5%), anxiety (66.9%), and frustration (61%) towards the pandemic. Over half of the female participants (65%) expressed concern about the safety and wellbeing of themselves and their family members. The nature of their concerns is expressed in the follow up questions asked of the participants in the survey. The results also indicate that over 50% of the participants were uncertain on how to react towards COVID. Half (50%) of the participants experienced boredom during the pandemic. Less than half (31.5%) felt depressed, and 10% felt guilty during the pandemic. The results of this study are not surprising given previous research (Salimi et al., 2021; Zimmermann et al., 2021), which shows that the mental health issue has risen during the pandemic.

Table 2*Participants' Responses to COVID-19 (n=359).*

Response	Frequency	Male	Female	Other
Anger	83	16	64	3
Anxiety	240	30	207	3
Boredom	178	30	147	1
Concern	271	35	233	3
Depression	111	12	97	2
Frustration	219	30	186	3
Guilty	36	5	31	
Helpless	105	9	93	3
Hopeless	45	8	36	1
Loneliness	114	17	96	1
Uncertain	213	30	182	1

Table 3 is the breakdown of the participants' responses to COVID based on ethnicity. The results indicate that White, Hispanic and Black student groups were largely impacted by COVID. Of the respondents, 36.7% of Hispanic students and 26.5% of Black students in the study experienced depression. In addition to Table 3, the participants were provided the opportunity to respond to follow up questions to further share information regarding their areas of concern and anxiety, which are explained here. Among the respondents, 73.5% of Hispanic students and 66.7% of Black students reported concerns about their mental, social, and physiological wellbeing. Over half (65.3%) of Hispanic students and 66.7% of Black students were anxious about the impacts of COVID on their finances and academic progress. Hispanic and Black students rely heavily on campus jobs to finance their education and living cost (Elliott & Fiedline, 2013). The shutdown of university campus caused severe anxiety among these populations, particularly college students who were not able to return home.

Table 3*Number of Participants' Responses to COVID-19 Based on Ethnicity (n=359).*

Response	Asian ^a	Multiracial ^b	Black ^c	C. Asia ^d	Hispanic ^e	N. American ^f	White ^g
Anger	-	4	19	1	13	-	46
Anxiety	5	15	60	3	32	1	124
Boredom	2	9	55	-	24	-	88
Concern ^h	5	15	68	3	36	1	143
Depression	3	5	27	1	18	-	57
Frustration	2	14	52	1	38	1	111
Guilty	1	2	4	-	10	-	19
Helpless	1	3	21	1	26	-	53
Hopeless	-	2	9	2	12	-	20
Loneliness	4	4	33	3	16	-	54
Uncertain	5	14	52	3	35	1	103

^a Asian/South Pacific Islander, ^b Biracial/Multiracial, ^c Black/African American, ^d Central Asian/Indian/Pakistani, ^e Hispanic/Latino/Latina, ^f Native American/American Indian, ^g White/ European American, ^h concerns of mental, social, and physiological wellbeing.

More than half (95.8%) of the participants practiced social distancing during the pandemic (Table 4). In the survey, participants were asked "If you are practicing Social Distancing, list some of the ways that you are practicing Social Distancing." The participants reported that they tried to stay at home as much as possible. Even if they had to go out for essentials, they would wear a mask, use hand sanitizer, and maintain 6 feet distance, as suggested by the CDC.

Table 4*Participants' Social Distance Responses Based on Gender (n=359).*

Practice	Male	Female	Other
Social Distance			
Yes	51	290	3
No	3	12	-

Conclusion

The COVID-19 pandemic has created drastic impacts on college students' learning experience. College students encountered different challenges and obstacles in their academic, personal, and professional life during the pandemic. This study concluded that the COVID-19 pandemic has impacted college students negatively. A majority of the students (graduate and undergraduate) experienced concern, anxiety, frustration, depression, and loneliness issues during the pandemic, which eventually affected their health, finance, and mental wellbeing. Students were also uncertain about their reaction towards the COVID-19 pandemic and life outside the virtual classroom.

On a positive note, over 95% of the college students chose to follow the CDC's guidelines to keep themselves healthy and virus risk free. The study strives to educate higher education administrators about the needs of college students during times of uncertainty so that they can be more prepared in supporting their students, particularly underrepresented students who need the additional resources and support system to be successful academically.

Discussion

The spread of the COVID-19 pandemic has caused varying stressors and disruptions to the normalcy among college students (Soria & Horgos, 2021). The combination of shifting from face-to-face classes to online classes, combined with college students having to juggle multiple responsibilities during a time of uncertainty, have added unavoidable workload and mental stress. During the pandemic, college students were forced to handle academic, personal, and professional life challenges, yet they may have received minimal resources and support from their institutions (Almossa, 2021). The responses from the open-ended question revealed three major COVID impacts among college students, which also aligned with the findings of the close-ended questions: health and safety, financial security, and mental wellbeing. This also supports with the findings of other research studies (Lederer et al., 2021; Soria & Horgos, 2021).

Related to health and safety, this study revealed that more than half (65%) of the female respondents were concerned about their health and safety, and 68.5% were anxious about their ability to juggle multiple home responsibilities within their families. The literature is clear regarding the impacts of the pandemic on female college students. According to Illanes, Law, Sarakatsannis, Sanghvi, & Mendy (2020), in addition to being an online college student, female college students were also responsible for taking care of their family, which included young children and elderly parents or grandparents. Additionally, female college students may also be responsible for homeschooling their children and monitoring older children who were also attending online classes. Furthermore, some college students even have immunocompromised family members for whom they had to care.

Previous research also reveals that most underrepresented college students, more specifically, Black and Hispanic college students, rely heavily on an on-campus and/or part-time jobs to finance their education and living expenses (Zhou & Wade, 2021). This study revealed that 59% of Black students and 65% of Hispanic students were anxious about the impacts of COVID-19 pandemic on their experiences as a college student. Among the experiences are academic and financial wellbeing, as indicated by the literature. These findings are aligned with research that indicates a large correlation among on campus employment and financial stability for race/ethnic minority college students (Soria, Horgos, Chirikov, & Jones-White, 2020). College students often times use funds generated from on-campus employment to financially support their individual families. Supporting research by Serrine, Kliner, & Gollery (2021), the closure of the university campus or workplace has drastically impacted college students' financial concern and stress level. Some college students struggled in paying their bills and putting food on the table. College students rely on campus food pantry and other community-based charity organizations to meet their basic needs. Some students also struggled in finding the money to purchase a laptop and/or subscribe to an internet data plan to attend online classes. As a result, these struggling college students were not motivated academically and possibly developed a fear of having to quit school due to financial challenge.

Mental health concerns, as a result of COVID, among college students, remains a significant concern on college campuses. According to this study, 36.7% of Hispanic students and 26.5% of Black students experienced depression. As reported in the literature, approximately 91% of college students in the U.S. has reported an increase stress and/or anxiety level during the pandemic (Active Minds, 2020). This is a serious concern among the underrepresented students, particularly the Hispanic, Black, and non-heterogeneous students who are already prone to experience mental stress issues (e.g., suicidal, depression, loneliness, unmotivated) prior to the pandemic. Research shows that these populations are less likely to seek counseling compared to the White student groups because of the lack of access, cost, and stigma (Hardy, 2021). The literature also reveals that “the likelihood of suicidal ideation increased twice following one or two traumatic events” (Sharma et al., 2021, p. 2). The closure of the university campus has limited these populations in finding the resources and support system they need to cope with their mental distress. Additionally, the CDC’s stay at home guideline has cut off the underrepresented student groups from all types of social activities and can seriously affect their mental wellbeing. These have directly affected the college students’ ability to concentrate and perform academically.

In addition to the above challenges, the findings of the follow up questions revealed that college students were anxious about how the unknown economy and unpredictable job market could have impacted their ability to secure their employment and internship. The literature also reports that graduates are faced with the possibility of getting lower paying jobs due to the poor labor markets (Bell & Blanchflower, 2020; Kwakye & Kibort-Crocker, 2020). This has added a different level of stress among college students who took out student loans to finance their education.

Despite the negative experiences that college students encountered during the pandemic, majority of the college students chose to follow the CDC’s protocols and guidelines to protect themselves and their families. This includes staying at home, wearing a mask when going out, using hand sanitizer, maintaining a six feet distance, quarantining themselves, and getting vaccinated.

Recommendations

This study shows that college students are faced with different challenges during a traumatic event. For the growth and wellbeing of college students and aligning with the findings of this study (health and safety, finance, mental wellbeing), the researchers suggest higher education administrators develop the following strategies as they continue to serve their students.

First, college students, more specifically female college students, are concerned with their health and safety. Institutional administrators and advocates can be more sensitive to the needs of their traditional and non-traditional college students and offer resources and support systems that cater to their needs so that they can be successful academically (Liu et al., 2020). Additionally, perhaps flexible course offerings can allow all students who have concerns about their health and those who are caring for family members are able to make academic progress without compromising their health and safety. Virtual meetings with college students and faculty on a regular basis to address their learning needs and gaps may also prove beneficial for students. Administrators can consider expanding their student services virtually to benefit students who are enrolled in online courses. This includes new student orientation, advising, tutoring, counseling, career, etc.

Second, college students expressed financial concerns with limited and/or the discontinuation of on-campus employment. Institutional administrators and advocates can offer virtual employment opportunities and/or opportunities to work at locations more conducive to the needs of students. While, remote/virtual locations may prove to be challenging, working with students to ensure that both the institutional and students needs are met can assist in student retention and persistence of college students (Soria et al., 2020).

Third, college students in this study reported mental health challenges as a result of the COVID pandemic. Ensuring that knowledgeable support systems are in place to assist students as they work through mental challenges is paramount. It is equally essential to assist students in recognizing when they are in a crisis and/or if they do not “feel” ok. Counselors and support services should be ready to assist college students (Soria & Horgos, 2021). Training individuals, such as academic advisors and faculty is an effective way to ensure that all individuals who interact with students are well aware of the resources available and how to respond should a mental health crisis emerges. Lastly, giving the counselors and support staff a voice, as well, and a place to engage in discourse is a great way to ensure good mental health of everyone (Schneider et al., 2021).

References

- Alleaume, C., Verger, P., Dib, F., Ward, J. K., Launay, O., Peretti-Watel, P. (2021). Intention to get vaccinated against COVID-19 among the general population in France: Associated factors and gender disparities. *Human Vaccines & Immunotherapeutics*, 17(10), 3421–3432. <https://doi.org/10.1080/21645515.2021.1893069>
- Almosa, S. Y. (2021). University students' perspectives toward learning and assessment during COVID-19. *Education and Information Technologies*, 26(6), 7163–7181. <https://doi.org/10.1007/s10639-021-10554-8>
- Batra, K., Sharma, M., Batra, R., Singh, T. P., & Schvaneveldt, N. (2021). Assessing the psychological impact of COVID-19 among college students: An evidence of 15 countries. *Healthcare*, 222. <https://doi.org/10.3390/healthcare9020222>
- Berger, J. B. (1997). Students' sense of community in residence halls, social integration, and first-year persistence. *Journal of College Student Development*, 38(5), 441-452.
- Bezerra, I. M. P. (2020). State of the art of nursing education and the challenges to use remote technologies in the time of corona virus pandemic. *Journal of Human Growth Development*, 30(1), 1–7.
- Bell, D. N., & Blanchflower, D. G. (2020). US and UK labour markets before and during the Covid-19 crash. *National Institute Economic Review*, 252, R52–R69. <https://doi.org/10.1017/nie.2020.14>
- Birmingham, W. C., Wadsworth, L. L., Lassetter, J. H., Graff, T. C., Lauren, E., & Hung, M. (2021). COVID-19 lockdown: Impact on college students' lives. *Journal of American College Health*, 1-15. <https://doi.org/10.1080/07448481.2021.1909041>
- Dorn, E., Bryan, H., Jimmy, S., & Ellen, V. (2020). *COVID-19 and student learning in the United States: The hurt could last a lifetime*. McKinsey & Company. https://www.childrensinstitute.net/sites/default/files/documents/COVID-19-and-student-learning-in-the-United-States_FINAL.pdf
- Dubey, S., Biswas, P., Ghosh, R., Chatterjee, S., Dubey, M. J., Chatterjee, S., Lahiri, D., Lavie, C. J. (2020). Psychosocial impact of COVID-19. *Diabetes Metab. Syndr*, 14(5), 779–788.
- Elliott, W., & Friedline, T. (2013). “You pay your share, we’ll pay our share”: The college cost burden and the role of race, income, and college assets. *Economics of Education Review*, 33, 134-153.
- Fruehwirth, J. C., Biswas, S., & Perreira, K. M. (2021). The Covid-19 pandemic and mental health of first year college students: Examining the effect of Covid-19 stressors using **longitudinal data**. *PLoS One*, 16(3), e0247999. <https://doi.org/10.1371/journal.pone.0247999>
- Haegedorn, R. L., Wattick, R. A., & Olfert, M. D. (2021). “My entire world stopped”: College students' psychosocial and academic frustrations during the COVID-19 pandemic. *Applied Research in Quality of Life*, 17(2), 1069-1090.
- Illanes, P., Law, J., Sarakatsannis, J., Sanghvi, S., and Mendy, A. (2020). *Coronavirus and the campus: How can US higher education organize to respond?* McKinsey Insights. <https://www.mckinsey.com/~media/McKinsey/Industries/Public%20and%20Social%20Sector/Our%20Insights/Coronavirus%20and%20the%20campus%20How%20can%20US%20higher%20education%20organize%20to%20respond/Coronavirus-and-the-campus-How-can-US-higher-education-organize-to-respond.pdf>
- Krukowski, R. A., Jagsi, R., & Cardel, M. I., (2020). Academic productivity differences by gender and child age in science, technology, engineering, mathematics, and medicine faculty during the COVID-19 pandemic. *Journal of Women's Health*, 30(3), 341-347. <https://doi.org/10.1089/jwh.2020.8710>
- Kwakye, I., & Kibort-Crocker, E. (2020). *Lessons on recovery: The value and potential of higher education in response to the COVID-19 crisis*. Washington Student Achievement Council. <https://files.eric.ed.gov/fulltext/ED613307.pdf>
- Lederer, A. M., Hoban, M. T., Lipson, S. K., Zhou, S., & Eisenberg, D. (2020). More than inconvenienced: The unique needs of US college students during the COVID-19 pandemic. *Health Education & Behavior*, 48(1), 14-19. <https://doi.org/10.1177/1090198120969372>
- MacArthur, K. R., Cox, M. J., Egan, C., & Komer, L. (2020). Pre-existing social conditions: A call to prevent the perpetuation of gender inequalities in research production during COVID-19. *International Journal of Medical Students*, 8(3), 215-217.
- Molock, S. D., & Parchem, B. (2021). The impact of COVID-19 on college students from communities of color. *Journal of American College Health*, 1–7. <https://doi.org/10.1080/07448481.2020.1865380>

- Salimi, N., Gere, B., Talley, W., & Iriogbe, B. (2021). College students' mental health challenges: Concerns and considerations in the COVID-19 pandemic. *Journal of College Student Psychotherapy*, 1-13.
- Saw, G. K., Chang, C., Lomelí, U., & Zhi, M. (2020). Gender disparities in remote learning during the COVID-19 pandemic: A national survey of STEM faculty and students. *The Network for Research and Evaluation in Education (NREED.) Data brief*, (2). <https://par.nsf.gov/servlets/purl/10221710>
- Schneider, M. B., Greif, T. R., Galsky, A. P., Gomez, D., Anderson, C., Edwards, D. S., Cherry, A. S., & Mehari, K. (2021). Giving psychology students a voice during the COVID-19 pandemic: Trainee mental health, perceived safety, and support. *Training and Education in Professional Psychology*, 15(1), 76–85. <https://doi.org/10.1037/tep0000343>
- Sirrine, E. H., Klinner, O., Gollery, T. J. (2021). College student experiences of grief and loss amid the COVID-19 global pandemic. *OMEGA-Journal of Death and Dying*, 302228211027461.
- Son, C., Hegde, S., Smith, A., Wang, X., & Sasangohar, F. (2020). Effects of COVID-19 on college students' mental health in the United States: Interview survey study. *Journal of Medical Internet Research*. 22(9), e21279. <https://doi.org/10.2196/21279>
- Soria, K., & Horgos, B., (2021). Factors associated with college students' mental health during the COVID-19 pandemic. *Journal of College Student Development*. 62(2), 236-242.
- Soria, K. M., Horgos, B., Chirikov, I., & Jones-White, D. (2020). First generation students' experiences during the COVID-19 pandemic. *SERU Consortium*, University of California – Berkeley and University of Minnesota.
- Tasso, A. F., Hisli Sahin, N., & San Roman, G. J. (2021). COVID-19 disruption on college students: Academic and socioemotional implications. *Psychological Trauma: Theory, Research, Practice, and Policy*, 13(1), 9–15.
- World Health Organization. (2022). https://www.who.int/health-topics/coronavirus#tab=tab_1
- Zamarro, G., Perez-Arce, F., & Prados, M. J. (2020). *Gender differences in the impact of COVID-19*. KTLA. https://ktla.com/wp-content/uploads/sites/4/2020/06/ZamarroGenderDiffImpactCOVID-19_061820-2.pdf
- Zhai, Y., & Du, X. (2020). Addressing collegiate mental health amid COVID-19 pandemic. *Psychiatry Research*, 288(2020), 113003. <https://doi.org/10.1016/j.psychres.2020.113003>
- Zhou, Y., & Wade, T. D. (2021). The impact of COVID-19 on body dissatisfied female university students. *International Journal of Eating Disorders*, 54(7), 1283–1288. <https://doi.org/10.1002/eat.23521>
- Zimmermann, M., Bledsoe, C., & Papa, A. (2021). Initial impact of the COVID-19 pandemic on college student mental health: A longitudinal examination of risk and protective factors. *Psychiatry Research*, 305(114254), 1-9.