

Surveying Concerns of COVID-19 and its Variants at an R2 Research University

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ABSTRACT

This study investigated the concerns and perceptions associated with COVID-19 and its variants among faculty, students, staff, and administrators at an R2 research university. Participants: $n = 189$ participants from the university community. A Qualtrics™ survey was used to draw responses from the university community. The results of this study revealed that 1) Approximately 2/3 of survey respondents are concerned about the appearance of Delta and Omicron COVID-19 variants; 2) 53.7% of respondents were inclined to get vaccinated after the new COVID-19 variants surfaced; 3) 22.2% of respondents tested positive for COVID-19 after becoming fully vaccinated; 4) 70.4% of respondents said they would get the booster shot for COVID-19; 5) 77.2% of respondents felt that there would be a new COVID variant identified this year beyond Delta and Omicron; and 6) Less than 20% of survey respondents feel safe on campus during the prevailing COVID-19 pandemic. There remains a general feeling of vulnerability while on campus two years into the COVID-19 pandemic.

Keywords: COVID-19, Delta variant, Omicron variant, vaccination, booster

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INTRODUCTION

An outbreak of the COVID-19 coronavirus was first reported in December 2019 (Borowiak et al., 2020). In January 2020, the World Health Organization (WHO) formally declared the COVID-19 outbreak a “public health emergency of international concern” (Kennedy, 2020). By March 2020, the COVID-19 coronavirus was classified as a pandemic (World Health Organization, 2020). The rapid spread of the COVID-19 virus caused an emergency shift for higher education institutions worldwide in their provision of education (Lanou et al., 2021) and student support services from an on-campus learning environment to a virtual learning environment. Understandably, this presented numerous challenges to academic institutions, including uncertainty about the future, safety and well-being, teaching and learning, the psychology of all stakeholders, and the impending impact on research activities.

COVID-19 has had a profound effect on the world at large, including colleges and universities. With new coronavirus cases ramping up over the summer months of 2020, many people questioned why colleges and universities wanted to return to campus in the Fall. Despite of the concerns, many schools took the same position that Northeastern University assumed – those students wanted to return to campus and that their parents wanted them to return to campus, too (Auon, 2020). However, the return to campus was accompanied by many inherent risks. Many faculty members across the U.S. expressed grave doubts regarding their institutions’ ability to safely bring students and staff together (Marek, 2020).

Many schools rolled back campus reopening plans due to COVID-19 outbreaks while others allowed students to move on campus, only to reverse this decision due to COVID-19 outbreaks on campus (Camera, 2020; Grayer, 2020). Outbreak countermeasures include universities asking students and faculty to self-quarantine (Diep, 2020) and moving all face-to-face lectures to fully online lectures (Ogidigben et al., 2021a; Mollenkopf & Gaskill, 2020). In another example, Boston University developed a multifaceted intervention strategy of testing, contact tracing, isolation, and quarantine, with robust management and oversight to control the transmission of COVID-19 on campus (Hamer et al., 2021).

Despite such countermeasures, there has been an increase in new coronavirus cases at institutions and around the world. New variants are materializing and vaccination against COVID-19 is gaining pace, though more so among the world’s wealthiest nations (Khan, 2020). To date, five major variants have been discovered – the Alpha variant in September 2020, the Beta variant in October 2020, the Gamma variant in late 2020, the Delta variant also in late 2020, and the Omicron variant in November 2021 (Thomas, 2022).

LITERATURE REVIEW

There is an abundance of prevailing uncertainty about whether students should return to campus during the global COVID-19 pandemic (Ogidigben et al., 2021b). As vaccination efforts accelerate in the U.S. and more states are lifting restrictions, American colleges and universities continue to attract international students and scholars. However, the lag in worldwide access to vaccination complicates matters, meaning COVID-19 variants could continue circulating and creating unknown obstacles (Tracy & Perman, 2021). In a study at a major research university, researchers report the primary concerns from survey respondents are the unknown short-term and long-term effects of any available COVID-19 vaccine (Bellamy & Keyser, 2022) and

concerns about the cleanliness and safety on a college campus (Ogidigben et al., 2021). In another cross-sectional study of faculty perceptions of safety and the impact of online classroom modalities at this same university, faculty generally felt safe on campus although they had concerns about specific areas on campus, such as dining halls. The faculty also reported changes in relationships with students, such as detachment, because of classroom modality changes (Ogidigben et al., 2022).

Brack et al. (2008) suggest that allowing students to assist in creating a healthy and safe culture helps educators to become successful role models both during and after school. A group of six residential institutions of higher education in Western North Carolina used a collaborative approach resulting in a deep impact by engaging Student Health Ambassadors in high-level roles with their Diffusions to Innovations model to help mitigate COVID-19 infection rates and promote healthy and safe campus cultures (Lanou et al., 2021).

Researchers have used models and simulations to study the initial COVID transmission and relevant risk mitigation strategies on campuses (Zhou et al., 2021; Gressman & Peck, 2020). For example, models showing the pace of spread for the Delta variant among unvaccinated people at Baylor University persuaded the university's medical experts to adopt necessary regular testing procedures (Pettit, 2021), masks and vaccination requirements at other universities (Diep, 2022), including booster shots (Morehouse et al., 2022). As the Delta variant surges, faculty groups at colleges across the country are requesting or demanding more protective measures be put in place (Khamsi, 2022). Further, in a study of nearly 60 current and former higher education professionals, some professors and staff personnel stated they no longer trust university leaders as having their best interests at heart, citing the requirement to work on-campus during the Delta variants spike as useless after remote work proved feasible (Ousey et al., 2021).

The subsequent Omicron variant's rapid spread has raised concerns about the capacity to isolate and contact-trace positive cases at Cornell, Georgetown, and Northeastern Universities (Keyser, 2019a). Morehouse et al. (2022) contend that shots work, even against emerging variants, and that shots are safe with few serious side effects; however, getting everyone vaccinated is complicated and vaccines cannot single-handedly end the pandemic. An assistant director of the clinical virology labs at the University of Washington Medical Center claims that the general public is much more aware of virology now and that rapid antigen tests will become a more routine part of living amid COVID and its future surges and, thus, will seek out polymerase chain reaction (PCR) tests to confirm positive test results (Khamsi, 2022).

Pedagogical research on course modality changes due to COVID have been widely studied by researchers. Ousey et al. (2021) posit that the hybrid approach to teaching will continue, particularly in healthcare courses, where prioritization will be given to face-to-face clinical activities combined with online delivery of much of the academic content. Further, the hybrid approach used in the converged classroom model, which combines on-campus and online sections simultaneously in a live class session is gaining popularity, particularly in engineering courses (Keyser, 2019a; Keyser, 2019b; Keyser & Parvathareddy, 2017; Wiles & Keyser, 2016). Colclasure et al. (2021) discovered challenges related to remote learning in a study of predominantly undergraduate institutions, such as many students were not in the mindset to take classes virtually, students' lack of access to technology, the feeling of isolation while being away from other students, and anxiety with the remote learning experience. Gentles & Brown (2021) cite the reluctance and resistance among Latin American and Caribbean teachers to overcome technology challenges by learning and practicing

digital literacy. In a large study to evaluate the readiness for teaching online English education in Wuhan, China, Zou et al. (2021) conclude that, on the one hand, the biggest challenge for students was technical problems during online study, and on the other hand, the biggest challenge for faculty was student disengagement during online classes. A large cross-sectional study of seven state universities concluded that challenges faced by students included lack of motivation, anxiety, stress, and isolation in addition to social distancing, the change to remote learning, and going out less (Browning et al., 2021).

Using semi-structured interviews in a study of 31 chief online officers from higher education institutions across the U.S., Bouchey et al. (2021) discovered a rapid expansion of student support services due to the COVID-19 pandemic, an increased emphasis to more access and equity in online student support services across participant institutions, and existing online student support services enable a more seamless shift to emergency remote delivery.

PURPOSE OF THIS STUDY

The purpose of this IRB-approved study during the 2022 Spring semester is to gain insights about concerns and perceptions over the COVID-19 virus and its variants at an R2 research university in Georgia. This university is a fast-growing, predominantly undergraduate (90%), institution of higher education and one of the 50 largest public institutions in the country. It has a diverse student population and an enrollment of over 40000 students as of 2022.

A survey research design was employed to explore the university community's reflections on the following three research questions:

RQ1: What socio-demographic factors are significant regarding concern for COVID-19 variants and inclination to receive vaccination?

RQ2: How does the age of participants and role at the university campus effect perceptions on vaccine booster preference?

RQ3: Would participants' concern about new variants affect their inclination to receive vaccination?

METHODS

The data collection process was conducted using Qualtrics™, an online survey software, where a survey was created with a total of thirteen multiple choice and free response questions of which six of the research questions appear in this study. These questions were thoroughly evaluated to ensure that there was no intentional bias. Once the research questions were finalized and the Qualtrics™ survey was created, the research and survey instrument were approved by the KSU Institutional Review Board.

The first portion of the survey was a consent form that included a brief introduction, a description of the research project, and the estimated time required to complete the survey. This section also informed individuals that their participation was purely voluntary, that no personally identifiable information would be collected in the survey, and that they were allowed to skip questions or opt-out of the survey entirely at any point. Furthermore, all individuals were required to be at least 18 years of age to participate. If the individual declined their consent or was below the age of 18, the survey would terminate, and no information would be recorded.

Once informed consent was obtained, the participant was able to respond to the research questions. The multiple-choice questions consisted of several detailed response options and an option for those who preferred not to answer. The Likert-scale questions employed a 5-point scale with 1 (Strongly Disagree) to 5 (Strongly Agree). Additionally, a demographics section evaluated the genders, ages, ethnicities, and university roles of survey respondents.

The survey was distributed to students, staff, faculty, administrators, and Other via the university's daily electronic newsletter. The survey asked university students, staff, faculty, and administrators regarding their concerns about the newly identified COVID-19 variants, Delta and Omicron, and their impact on respondent decisions to get the COVID-19 vaccine or booster shots and whether they feel safe interacting on campus during the pandemic. It was disseminated on four consecutive days: Thursday, Friday, and the following Monday and Tuesday. This allowed participants the opportunity to complete the survey over the weekend. At the conclusion of the survey period, the researchers allowed three weeks for all responses to flush out.

DATA ANALYSIS

During the four-day dissemination period and a 3-week filtering period, a total of 226 survey responses were received, of which there were 189 completed surveys. The results conveyed in this paper emerge from the $n = 189$ completed surveys. Frequency Analysis was used to show number of occurrences for each response while the Chi-Square analysis was performed to identify factors that are significant to participants perception and attitude towards COVID-19 vaccine booster and concern for new variant.

RESULTS

Demographics of Respondents

The study involved 189 participants, of which 147 (78.19%) were female and 38 (20.21%) were male. The distribution of responses across age groups closely reflects that of the university community, with 54 (28.72%) participants aged between 18-29, 31 (16.49%) aged between 30-39, and 37 (19.68%) aged between 40-49. In terms of race, most participants, 121 (64.36%), identified as white. Regarding the participants' roles in the university community, most responses, 102 (53.97%), were from staff. Additional detailed demographic information is provided in Table 1 (Appendix).

Chi-square analysis

The results shown in the tables below contain detailed information on the significant factors based on the Chi-Square test with a p-value of 0.05.

As shown in Tables 2 and 3 (Appendix), both the age and campus role of participants influence their preference toward booster shots for COVID-19 with staff expressing the highest level of favorability, followed by faculty, and then students. Age is another significant factor in assessing preference for booster shots, with the older population (aged 60+) showing a greater inclination toward boosters due to their higher risk status, as compared to the younger group (aged 18-29).

As indicated in Table 4 (Appendix), age is a significant factor relating to participants' level of concern of the new variant. Data indicates that a larger proportion of older participants express concern compared to younger ones.

Table 5 (Appendix) indicates that females are more likely to get vaccinated upon the emergence of new variants, compared to males. It is worth noting that the number of responses in other gender categories is limited, so we were unable to include them in our comparison.

Participants' safety concerns on campus are strongly correlated with participants' concern for the appearance of new COVID-19 variants, and subsequently these participants are more inclined to receive vaccination at the appearance of new variants. Table 6 (Appendix) shows that among the participants who felt the safest on campus, 75.8% were not concerned about the appearance of new COVID-19 variants, while participants who did not feel safe on campus, 100% were concerned about the appearance of new COVID-19 variants. Similarly, participants who felt the safest on campus, about 74.1% were not inclined to receive vaccination at the appearance of new COVID-19 variants, while participants who did not feel safe on campus, only 16.7% were inclined not to get vaccinated.

The four graphs in Figure 1 (Appendix) present categorical data related to the research questions examined in this paper. Among the 189 participants, 133 of them indicated that they would receive a booster shot or future booster shots, 27 would not, and the rest were undecided. Out of all the participants, 101 were inclined to get vaccinated with the emergence of new COVID-19 variants, while 79 were not inclined. Concerning new COVID-19 variants, 126 participants expressed concern, whereas 49 did not. In terms of feeling safe on campus, 35 participants reported feeling the safest, while 19 participants reported not feeling safe at all.

DISCUSSION

The emergence of COVID-19 had a significant impact on daily life worldwide, including the university community that is the focus of this study. The insight obtained through this IRB-approved study relates to concerns from this R2 university community about the prevalence of COVID-19 and its variants while they are on campus. The study took place in Spring 2022 and was the fourth research project performed by researchers in the university's Industrial & Systems Engineering department. During the past two years, the university has worked vigorously to provide a safe campus and to allow students to continue their education with minimal interference. Protocols were put in place to keep the university community safe, many of which are no longer in place (such as mask mandates), but the practices have remained (most of the university community continue to wear masks on campus).

Our research findings conclude that: 1) Approximately 2/3 of survey respondents are concerned about the appearance of the newly identified COVID-19 variants, Delta and Omicron; 2) 53.7% of respondents were inclined to get vaccinated after learning about new COVID-19 variants surfacing vs. 42% of respondents who were not inclined to get vaccinated; 3) Roughly 1 in 5 respondents (22.2%) tested positive for COVID-19 after becoming fully vaccinated; 4) 70.4% of respondents said they would get the booster shot for COVID-19 vs. 14.3% who would not and 15.3% who were undecided; 5) Over 3 out of 4 respondents (77.2%) felt that there would be a new COVID variant identified beyond Delta and Omicron sometime this year; and 6) Less than 20% of survey respondents feel safe being on campus during the COVID-19 pandemic. Hence, although the university community is acutely aware of COVID-19

and its variants, there remains a general feeling of vulnerability while on campus two years into the COVID-19 pandemic.

Regarding the most prevalent demographic information, approximately 30% of respondents were in the 18-29 age group, nearly 2/3 of all survey respondents were White/Caucasian, 78.3% of respondents were female, and most respondents were comprised of staff and faculty (~74%). Student respondents accounted for 21.2% of all responses.

In addition to gathering demographic information, the survey investigated participants' perceptions of COVID-19 variants and vaccinations. After conducting a Chi-Square analysis, several unique findings emerged.

Firstly, we conducted comparisons across different roles and age groups regarding their preference for receiving booster shots or future booster shots. The comparisons across roles were significant (p -value = 0.016) among faculty, staff, and students, with staff being more likely to agree to receiving booster shots or future booster shots, followed by faculty, and then students. One possible explanation for the finding that staff members were more likely to favor booster shots is that they tend to have a higher presence on campus once university activities resume and therefore have more frequent interactions with others. This may make them more aware of the potential risks of COVID-19 and more inclined to seek additional protection through booster shots. Furthermore, comparisons within age groups of who would be concerned about the appearance of new COVID-19 variants were made. The results indicated that age groups 18-29 and 50-59 were significant (p -value = 0.034), with the younger age group being the least concerned about the appearance of new COVID-19 variants.

We also compared gender differences in inclination to receive vaccination after the appearance of new COVID-19 variants, and the results indicated that this comparison was significant (p -value = 0.013), with female being more likely to receive vaccination after the appearance of new COVID-19 variants than male. Finally, we investigated how participants' perceptions of campus safety influence their concern for new COVID-19 variants and their attitude toward vaccination. Participants were asked to rate their feeling of campus safety using a Likert scale from 1 (least safe) to 5 (safest). Our analysis suggests a strong positive correlation between these variables. Participants who feeling the safest on campus were not concerned about new variants and are less willing to get vaccinated.

This study has certain limitations that should be taken into consideration when interpreting the results. Firstly, the survey questions had a limited scope, which restricted the extent of the analysis that could be conducted, as the survey responses were mainly categorical. Secondly, the survey was conducted solely at one public university in Georgia, which limits the generalizability of our findings to other universities in the region. Future studies that involve different universities and how institutions can proceed with making responses more equitable, safe, and responsive to faculty and staff concerns would be beneficial in providing a broader perspective on the impact of COVID-19. However, despite these limitations, our survey results provide valuable insights into how gender, race, age, and role at the university affect perceptions of COVID-19 variants and vaccinations.

CONCLUSION

COVID pandemic has a lasting impact on higher education. The mitigation procedures and course delivery changes have significantly shaped the campus dynamics. This study assesses the concern of the COVID variants among a R2

university community, and our findings suggest there remains a general feeling of vulnerability while on campus two years into the COVID-19 pandemic. Efforts should be made to ease the concerns and help universities to return to normalcy.



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Appendix

Table 1. Demographic Data.

Demographic Data	N	%
Sex		
Female	147	78.19%
Male	38	20.21%
Not Listed	1	0.53%
Prefer not to answer	2	1.06%
Age		
18 - 29	54	28.72%
30 - 39	31	16.49%
40 - 49	37	19.68%
50 - 59	36	19.15%
60 - 69	22	11.70%
70 +	5	2.66%
Prefer not to answer	3	1.60%
Race		
American Indian/Alaska Native/Native American	2	1.06%
Asian/Asian American	11	5.85%
Black/African American	16	8.51%
Hispanic/Latino(a)	21	11.17%
White/Caucasian	121	64.36%
Other	5	2.66%
Prefer not to answer	12	6.38%
Role		
Administrator	4	2.12%
Faculty	38	20.11%
Staff	102	53.97%
Student	40	21.16%
Other	2	1.06%
Prefer not to answer	3	1.59%

Table 2. Age and Booster Preference.

Factor	Category	Booster Preference		P-value
		No	Yes	
Age	18-29	13	33	0.028
	60+	1	20	

Table 3. Role at the University.

Factor	Category	Booster Preference		P-value
		No	Yes	
Role	Faculty	4	30	0.016
	Staff	11	77	
	Student	11	22	

Table 4. Age and Concern for New Variant.

Factor	Category	Concern for New Variant		P-value
		No	Yes	
Age	18-29	21	29	0.034
	50-59	7	28	

Table 5. Gender and Inclination for Vaccination.

Factor	Category	Inclination for Vaccination		P-value
		No	Yes	
Gender	Female	41	76	0.013
	Male	21	15	

Table 6. Safety by Concern for New Variant and Inclination to Vaccinate.

Factor	Category	Concern for New Variant		P-value	Inclination to Vaccinate		P-value
		No	Yes		No	Yes	
Safety	1	0	19	<0.001	3	15	0.001
	2	2	26		8	19	
	3	3	53		20	31	
	4	16	20		11	20	
	5	25	8		20	7	

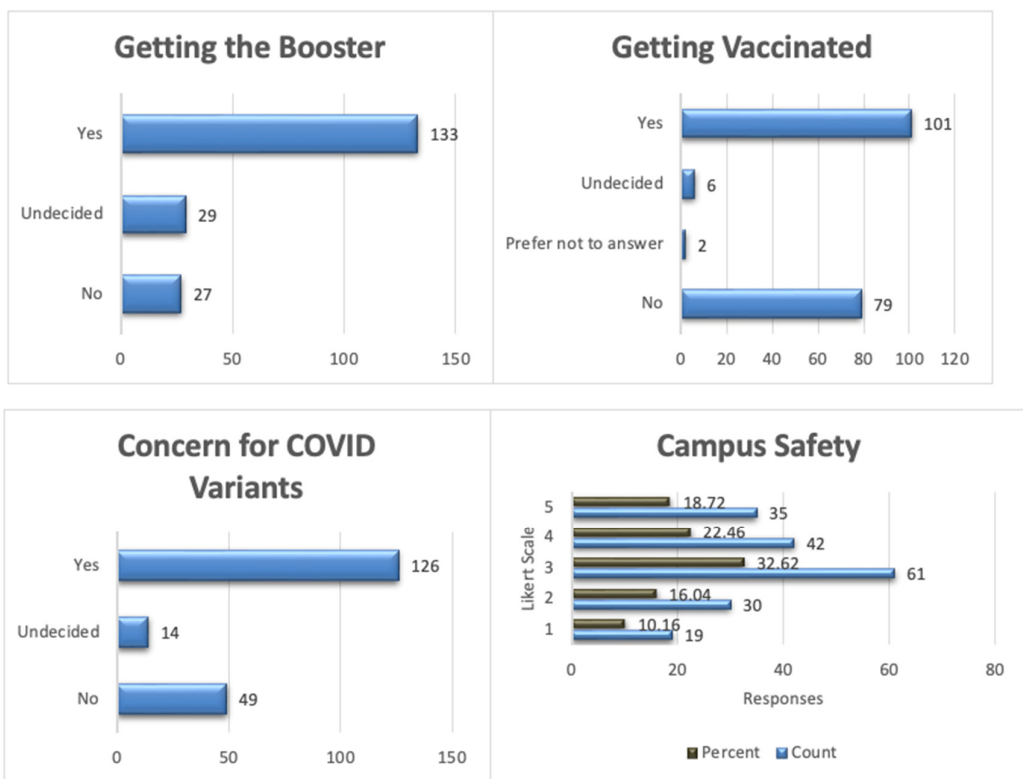


Figure 1. Categorical Data.