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The Impact of the COVID-19 Pandemic on the Academic Performance, Level of Knowledge, and the Health and Well-being of Students on an HBCU Campus

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Introduction

Count your blessings if you are alive and well enough to read the researchers' study! As of November 12, 2022, there have been 630,832,131 confirmed cases of COVID-19 worldwide, including 6,584,104 deaths reported by The World Health Organization (2022) [1] that impacted every aspect of human life. COVID-19 is a disease caused by a coronavirus named SARS-CoV-2 and was discovered in December 2019 in Wuhan, China. It is strongly contagious and has continued to spread across the world [2].

The SARS-CoV-2 virus can spread through small droplets and particles when breathing in the air when close to an infected person. The small particles or droplets that contain the virus can land on the eyes, nose, or mouth, specifically when someone coughs or sneezes, which can infect others. In addition, the virus can be spread when touching those same areas of the body with hands that have the virus on them. Symptoms of COVID-19 can appear between two (2) and 14 days following exposure to the virus. Symptoms can include fever, cough, fatigue, difficulty breathing, body aches, loss of taste or smell, congestion, and nausea or vomiting. Symptoms range from mild to severe illness, sometimes resulting in death [3].

The purpose of the study was to determine the impact of the COVID-19 pandemic on academic performance, the level of knowledge of COVID-19, and the health and well-being of students according to characteristics such as age, race/ethnicity, sexual orientation, academic year, student status, and residency on a Historically Black College and University (HBCU) campus. There is a great deal of information on disparities related to Black/African Americans having a higher percentage of COVID-19 cases and deaths. The findings are less documented for the adverse impact on academic performance, level of knowledge, and health and well-being of students on an HBCU campus. Data for the quantitative explanatory study were collected electronically from 97 participants through Survey Monkey, using a structured questionnaire of 62 questions. The study tested four (4) hypotheses focusing on 1) knowledge of COVID-19 signs and symptoms, 2) impact on academic performance, 3) health and well-being, and 4) impact on academic performance and well-being by student characteristics. The researchers in the study reported the findings from the impact of COVID-19 on the lives of students attending an HBCU university.

Significance of the Problem

The importance of COVID-19 on HBCU campuses has brought a great deal of attention to how students were impacted at the university level. Early in the pandemic, students had to adjust to virtual learning. In March 2020, the world shut down, and transitions were made to virtual platforms for employment, businesses, educational institutions, and more. COVID-19 required students to adapt to a new way of life and learning for survival in all aspects of their lives; HBCUs around the country changed the way business was done. According to Giusti et al. [4], the COVID-19 pandemic caused schools to restructure the teaching and learning environment, which impacted standard face-to-face learning approaches and the full experience of university life. In numerous ways, academic transitions had both positive and negative impacts on college students across the country [4].

According to Guy-Sheftall and Jackson [5], Congress passed the "HBCU Propelling Agency Relationships towards a New Era of Results for Students Act," also known as the "HBCU Partners Act." HBCUs historically struggled with receiving funding for students, and the implementation of this policy facilitates access to federal funding for programs and other services to address financial challenges at HBCUs. Following significant advocacy efforts, the HBCU Partners Act was passed on December 12, 2020, which was a highlight for these higher education institutions. During this time, however, HBCU administrators continued to face the challenges associated with COVID-19. Even with the additional funds, HBCUs experienced a drastic decline in enrollment and were forced to make decisions related to students returning to campus, potentially sacrificing the health and safety of African American students. The study assessed the levels of students' awareness of COVID-19-related

situations and how it impacted their overall health and well-being and the learning environment.

The quantitative explanatory study measured several dependent variables to analyze the impact of COVID-19 on an HBCU community. The researchers' findings significantly related to the availability of limited research data on students who self-identify on the sexual orientation spectrum with regard to their academic performance and knowledge of COVID-19. The findings in this study will be used to add to the body of knowledge of the Behavioral Sciences, including Nursing.

Literature Review

The literature is saturated with information addressing the devastation of the COVID-19 pandemic across the globe. The pandemic has created havoc in all aspects of human life, including academia, health and well-being, economics, and the delivery of goods and services. The adverse impact on student learning in all academic settings has been immeasurable. There are many studies quantifying the challenges experienced by institutions of higher learning during the COVID-19 pandemic. According to Aucejo et al. [6], a study of 1500 undergraduate students at Arizona State University in the United States, reported an adverse impact on student performance in higher education. The study reported findings on academic outcomes, which indicated that COVID-19 had led to a large number of students delaying graduation (13%), withdrawing from classes (11%), and intending to change majors (12%). Aucejo et al. [6] further revealed that 50% of students reported a decrease in their study hours and academic performance, with a decreased preference for online instruction as a result of their recent experiences.

Yang et al. [7] also found that during the COVID-19 epidemic, China's college students' health and well-being were impacted by the separation from their classmates, academic workload, and fears of contagion. These reactions caused stress and anxiety and had an overall negative impact on their health and well-being. The variables measured in the study on an HBCU campus addressed similar concerns with university students. Students' knowledge of COVID-19 has been affected by their learning style and thought process. Although some colleges previously offered online classes, the transition to a completely virtual teaching and learning modality changed the dynamic of the learning environment for college students [8].

In a cross-sectional study on the effect of COVID-19 among students in a higher education community, Baloran [9] found anxiety, depression and coping strategies affected the ability of students to remain focused in academia during the pandemic. Baloran [9] focused on the knowledge of COVID-19 among students in two private colleges in the area of Davao del Sur, Southern Philippines, from April 25 - May 8, 2020. Knowledge of COVID-19 was reported as 73.58% (390/530) of the students who understood that COVID-19 could spread through touching, sneezing, kissing, and food. The students realized that the primary sign of COVID-19 is fever 97.55% (517/530). Additionally, 91.70% (486/530) of the students appreciated the significance of staying at home as a precautionary measure to minimize the spread of the disease locally.

Giusti et al. [4] found additional changes to academic performance among college students as it related to COVID-19. The study used a cross-sectional research design to highlight the effects of distance learning on college students. The results displayed that 70% of students showed increased difficulties with virtual learning. Seventy-five percent of the participants described dissatisfaction with their experience with distance education. In addition, only 30% of students reported having higher GPAs, 40% reported no change, and 30% of students reported lower GPAs. According to Guisti et al. [4] overall, approximately 60% of students reported not having achieved their curricular objectives.

Berman et al. [10] reported mental health concerns increased among 80% of college students, with 43.7% reporting negative effects and 30.4% reported worse effects. Regarding academic self-efficacy, 43.6% experienced worse self-efficacy. In addition, Sauer et al. [11] evaluated the psychological condition of students in academia during the COVID-19 pandemic. The final analysis of 613 students found that the negative psychological effects on students were concerning. Sixty-eight percent of students indicated fear of missing out (FOMO), 74.5% of respondents expressed concerns about their career development, and 73.4% of students reported frustration. Sauer et al. [11] also found that student sexuality was impacted by COVID-19. Reduced interest in sexual activity was prevalent among students who were unquestionably concerned about their health.

The literature is limited on studies related to students' sexual orientation and the impact of COVID-19 on knowledge of COVID-19, academic performance, health and well-being, and student characteristics, such as lesbian, gay, bisexual, and transgender LGBT individuals [12]. A research study confirms that limited data is available on how the COVID-19 pandemic has impacted the lives of LGBT individuals (LGBT) in the U.S. The study involved self-identified LGBT individuals who were examined over two months by the Kaiser Family Foundation (KFF) COVID-19 Vaccine Monitor and found LGBT people have experienced the COVID-19 pandemic differently than non-LGBT people, including being harder hit in some areas [12]. LBGT individuals reported COVID-era job loss 56% v. 44%, 74% worried, stressed – a negative impact on their mental health, compared to 49% of those who are not LGBT and are more likely to say the impact has been devastating (49% v 23%) [12].

The study further revealed that the LBGT individuals masked up, socially distanced, and engaged in other COVID-19 preventive measures, such as vaccinations. In the study, there were no comments on academic performance [12]. However, their health and wellness were seriously impacted with stress and worry. The findings from this study to determine the impact of the COVID-19 pandemic on academic performance, level of knowledge, and the health and well-being of students on a HBCU campus will be used to add to the body of knowledge.

Methodology

Research Design

A quantitative, explanatory study was utilized to test four research hypotheses to examine the impact of the COVID-19 pandemic on students attending an HBCU in the Mid-Atlantic Region of the United States. The researchers assessed academic performance, level of knowledge, and health and well-being related to COVID-19 among the students, using an expost facto research design. Conversely, there was no opportunity to manipulate academic performance, level of knowledge, or health and well-being, as these variables were assessed after the fact.

Sampling Procedures

A university granted IRB (Institutional Review Board) approval to conduct a non-probabilistic (convenience) sample to identify students, ages 18 to 60. This study surveyed 97 students from a HBCU. An informed consent authorization form discussed the purpose and significance of the study. All of the participants were informed that their participation would be voluntary and confidential. By providing their written consent to be involved in the study, the students were allowed to ask questions freely of the researchers, or withdraw from the study at any given time without penalty. Inclusion criteria required that all participants be currently enrolled as a student. Exclusion criteria included: 1) age less than 18 years; 2) age greater than 60. Over a period of six weeks, all participants consented to participate in the study. The participants completed an alphanumerically coded questionnaire via Survey Monkey. There was no incentive offered for participating in the study other than the knowledge that their participation would be contributing to a larger body of research on the impact of COVID-19 on university students.

Data Collection Procedures

Data were obtained from all participants using a self-assessment

tool completed by all study participants. The scales used in the study were adapted from already existing instruments. First, the academic performance scale is adapted from Limniou [13]. Secondly, the knowledge scale is adapted from Jones et al. [14], and thirdly, the health and well-being scale [15]. The researchers trained and oriented undergraduate students on collecting the data, including creating variable labels before the survey was created.

The researchers created a flyer with a QR code and a survey link. Flyers were posted on campus to recruit study participants. All university students were sent the study survey via Survey Monkey. The participants received information stating that their participation would be voluntary and anonymous. Only participants who met the eligibility criteria were allowed to participate in the study. The study participants' information was coded to protect their privacy and confidentiality.

Instrumentation

The data collection instrument used in this research was Survey Monkey, an online questionnaire program. The survey consisted of 62 questions. The academic performance scale assessed educational processes and outcomes. The questions included the following: 1) has your university provided you with clear instructions for how to access the instructional materials for your classes? and 2) since the onset of COVID-19, how has your cumulative grade point average changed? The knowledge scale assessed the student's knowledge of COVID-19 and asked students to indicate whether the statements were correct, including the following: 1) The mode of transmission of COVID-19 is by direct contact with an infected person, and 2) Ordinary residents can wear general medical masks to prevent infection by the COVID-19 virus. Finally, the health and well-being scale assessed the students by asking if, since the onset of the COVID-19 pandemic, students experienced any adverse effects on their health and well-being that included: 1) Moving or speaking so slowly that other people could have noticed, or the opposite -being so fidgety or restless that you have been moving around a lot, more than usual, and 2) Feeling down, depressed, or hopeless. Additionally, all study participants recorded their responses on the demographic scale, with 11 items ranging from their age to their education level, including gender, sexual orientation, race, student status, monthly income, source of income, number of children, and residence.

The scores for each of the three scales were calculated once the respective scores for the responses were assigned. Internal consistency on the items related to each scale and the total score was computed using Cronbach's Alpha. The reliability scores for knowledge of COVID-19 ($\alpha = .70$) and health and well-being ($\alpha = .92$) were moderate to highly reliable, respectively. In contrast, the score for impact on academic performance ($\alpha = .63$) was relatively low. A Cronbach's alpha of .75 was obtained for the 35 items related to the three scales.

Method of Data Analysis

The analysis for this investigation was quantitative. T-test, Pearson correlation, factorial ANOVA, and stepwise multiple regression were used to analyze the data using IBM SPSS version 26. The analysis occurred in two stages:

1) Inferential statistics were used in the form of a table of frequency, percentages, means, graphs, and standard deviation, and 2) four research hypotheses were tested. A p-value of significance was set at a .05 level for all analyses.

Results

Variables	Sample (n = 97)	%
Age		
18 to 22	73	75.3
23 to 27	16	16.5
28 to 32	4	4.1
33 to 37	2	2.1
43 to 47	1	1.0
56 to 60	1	1.0
Gender		
Male	14	14.4
Female	82	84.5
Did Not Report	1	1.0
Race/Ethnicity		
Black or African American	91	93.8
American Asian	1	1.0
White	2	2.1
Other	3	3.1
Sexual Orientation		
Heterosexual	75	77.3
Homosexual	6	6.2
Bi-Sexual	12	12.4
Pansexuality	4	4.1
Classification		
Freshman	14	14.4
Sophomore	17	17.5
Junior	25	25.8
Senior	41	42.3

Table 1. to be cont...

Student Status		
Full-time	92	94.8
Part-time	5	5.2
Residency		
District of Columbia	6	6.2
Maryland	81	83.5
Virginia	1	1.0
Other	9	9.3

Table 1: Demographic Profile of the Participants

As displayed in Table 1, a total of 135 students responded to the Assessing the Impact of COVID-19 among Students Attending an HBCU survey. After excluding 37 responses with missing data and one response due to the respondent's reported classification being a graduate student, a total pool of 97 valid responses were included in the analysis. Majority of the students were Black/African American (93.8%) and female (84.5%), between the ages of 18 and 22 years (75.3%). Most of the respondents were from Maryland (83.5%). Students who reported their sexual orientation as heterosexual comprised 77.3% of the survey respondents (see Table 1). The 42.3% of the students were classified as seniors and 94.8% were enrolled on a full-time basis. When looking at the classification level, 31.9% of the respondents were considered to be lowerclassmen.

Hypotheses			test	p	Conclusions
H1: Knowledge of COVID-19 is significantly greater among upper-class students (third-and fouryear students) than lower class students (first- and second-year students).	Knowledge of COVID-19	Upper Class v. Lower Class	$t = .511$	.611	Not Supported
H2: There is an inverse relationship among student's knowledge of COVID-19, the impact on academic performance, and their health and well-being.		Impact on Academic Performance and Health and Well-Being	$r = -.334$	.001	Supported
		Impact on Academic Performance and Knowledge of COVID-19	$r = -.115$	.262	Not Supported
		Knowledge of COVID-19 and Health and WellBeing	$r = .159$	.122	Not Supported
H3: Students' health and well-being were adversely impacted by COVID-19 based on the selected student characteristics (age, gender, sexual orientation, classification, and student status).	Knowledge of COVID-19	Gender x Sexual Orientation	$F = 5.371$	.024	Supported
		Gender	$F = .301$	.585	Not Supported
		Race/Ethnicity	$F = 2.786$	.100	Not Supported
		Age	$F = 1.689$	.198	Not Supported
		Sexual Orientation	$F = 2.383$	.077	Not Supported
		Classification	$F = .179$	.911	Not Supported
		Student Status	$F = .254$	.616	Not Supported
H4: Selected student characteristics are predictors of knowledge of COVID-19, impact on academic performance, and students' health and wellbeing at an HBCU.	Knowledge of COVID-19	Bi-sexual	$b = -1.44$	.017	Supported
		Freshman	$b = -1.49$	.009	Supported
	Impact on Academic Performance	Male	$b = -.269$	.793	Not Supported
		Other Racial Group	$b = -.365$	.831	Not Supported
		23 and older	$b = -.674$	.432	Not Supported
		Homosexual	$b = -.128$	.931	Not Supported
		Bi-sexual	$b = -1.28$	.165	Not Supported
		Pansexual	$b = -.613$	.725	Not Supported
		Freshman	$b = .077$	.949	Not Supported
		Sophomore	$b = -1.162$	.249	Not Supported
		Junior	$b = -.466$	.595	Not Supported
		Part-Time	$b = -.967$	.576	Not Supported
	Health and Well-Being	Bi-sexual	$b = 5.37$	.025	Supported

Table 2: Summary of Findings

As displayed in Table 2, descriptive statistics classified students' characteristics through frequency distribution, means, and standard deviation. Cutoff scores using median values of 12, 4, and 20 categorized the low and high levels of the three scales examined in this study, respectively. The four hypotheses were analyzed using independent samples t-test, Pearson correlation, factorial analysis of variance (ANOVA), and stepwise and multiple linear regression.

For hypothesis one, independent samples *t*-test assessed the difference between upper class and lower-class students and their knowledge of COVID-19. For hypothesis two, Pearson correlation measured the inverse relationships among students' knowledge of COVID-19, the impact on their academic performance, and their health and well-being. For hypothesis three, factorial ANOVA evaluated the differences among the selected student characteristics and their health and well-being. Finally, for hypothesis four, stepwise and multiple linear regression analyses examined whether the selected student characteristics significantly predicted the three scales.

The results for hypothesis one revealed no significance in the relationship (H_{01}: $p = .611$) between upperclassmen and lowerclassmen and their knowledge of COVID-19. It was surmised that both upper class and lower-class students were similar in their knowledge of COVID-19. Hypothesis two results found a significant inverse relationship between health and well-being and impact on academic performance (H_{02}: $p < .001$). This result indicated that students' health and well-being was inversely correlated with increases of impact on their academic performance. Students' knowledge of COVID-19 was neither correlated with impact on academic performance nor health and well-being.

A two-way interaction between gender and sexual orientation was found for hypothesis three (H_{03}: $p < .05$). Female students whose sexual orientation was heterosexual ($M = 23.12$, $SD = 2.487$) exhibited higher health and well-being scores than male students who were heterosexual ($M = 16.55$, $SD = 1.487$). There were no main effects or interactions found for health and wellbeing with gender ($p = .585$) or sexual orientation ($p = .077$), nor with the other student characteristics.

Finally, the results for hypothesis four indicated that knowledge of COVID-19 was significantly predicted by freshman ($b = -1.487$, $p = .009$, $sr^2 = .07$) and bi-sexual ($b = -1.443$, $p = .017$, $sr^2 = .06$) variables; and health and well-being primarily predicted by the bi-sexual ($b = -5.369$, $p = .025$, $sr^2 = .02$) variable. Conversely, none of the selected student characteristics significantly predicted the impact on academic performance (see Table 2). The results suggested that freshman students and students who reported their sexual orientation as bi-sexual were 1.487 and 1.443 times more likely, respectively, to exhibit lower knowledge of COVID-19 than their peers. The results further suggested that, for students who reported their sexual orientation as bisexual, health and well-being was 5.369 times more likely to be lower than their peers.

Limitations

There were limitations to the study. The first limitation relates to the use of a single research site. Multiple HBCUs might have yielded a broader representation of participants for the study. Additionally, there was an uneven sample of participants classified as upper-class and lower-class. Respondents who identified as juniors and seniors, upper-class, were approximately two times greater than those who were classified as freshmen and sophomores, lower-class. The difference may have yielded a more balanced sample.

Conclusion

Findings of the study demonstrated that, when observing for knowledge of COVID-19, there were variations in the effect of knowledge of COVID-19 on HBCU student academic performance and health and well-being. Findings appear directly related to the unexpected transition of a largely in-person learning environment to a completely virtual one [16]. Study findings demonstrated no significant difference between the knowledge COVID-19 of freshman and sophomore level students versus that of junior and senior level students. Conversely, the study found that respondents with a greater level of knowledge of COVID-19 experienced less impact on their academic performance and health and wellbeing.

When observing student characteristics, such as age, gender, sexual orientation, academic level and full or part-time status, students who identified as freshmen and bisexual were shown to have less knowledge of COVID-19. Students who were not freshmen or bisexual largely showed no difference in their knowledge of COVID-19, impact on level of academic performance, or on their health and wellbeing. Finally, the health and wellbeing of students who were bisexual was negatively impacted based on their knowledge of COVID-19.

Implications for Practice

Results of the study were based on whether data supported or did not support four hypotheses that were presented. One aspect of the study results, impact of COVID-19 on the health and well-being of HBCU students, elicited a curiosity about the overall health and wellbeing of these students in events like the pandemic. It is imperative that universities equip themselves to provide and maintain adequate counseling services for students whose health and well-being may be negatively impacted by events like a pandemic, should a similar event occur in the future [17]. Counseling support services are especially critical for students in the health and behavioral disciplines, like nursing, social work and psychology, as the health and well-being of these students could impact services they provide to their clients.

Competing interest: The authors declare that they have no competing interests.

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