Stress and Stressors: The Impact of the COVID-19 Pandemic on Students, Faculty and Staff at a Historically Black College/University

Ronald Barredo1 · Mohamed Kanu1 · Jemal Gishe2 · Edilberto Raynes3 · Brittany Cosby1 · Taylor Tolleson1

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Abstract
Due to COVID-19 restrictions, academic institutions have changed their modus operandi, particularly in adopting distance learning in lieu of face-to-face instruction. This has sometimes produced unanticipated effects on students. The purpose of this study was to determine COVID-19 pandemic stressors and coping mechanisms utilized as relief measures by students, faculty, and staff in the College of Health Sciences at a historically Black institution. Cross-sectional study. Sampling: A convenience sample of 209 students, 34 faculty, and 9 staff from the College of Health Sciences at a historically Black institution participated in this study. Instrument: A 32-item Qualtrics survey was utilized to gather demographic data, COVID-19-related stressors, and coping mechanisms. Analysis: Descriptive statistics, Chi-square test for categorical variables, and Cochran–Mantel–Haenszel tests for ordinal variables were used. Female students, African American students (AAS), and undergraduates perceived stress related to the risk of contagion during the pandemic higher than the male students (P-value = 0.0096), other races (P-value = 0.0249) and graduate students (P-value = 0.0141) respectively. Female students perceived more stress related to relationships with relatives (P-value = 0.0128). Caucasian students compared to others (P-value = 0.0240) and graduate students compared to undergraduate students (P-value = 0.0011) reported less perceived stress related to the relationships with other colleagues. Top coping strategies of students and staff included interaction with family and friends, social media, hand hygiene, and meditation/spirituality. Except for “avoidance of public spaces/transportation”, all other mechanisms were the same for faculty.

Keywords COVID · Stressors · Coping strategies · Students

Introduction
The deleterious effects of the COVID-19 pandemic on the health of global communities will probably remain a challenge for the foreseeable future; the social and economic impact may last even longer. Prior to the COVID outbreak, most employees were known to spend more time in the workplace than at home during the day. With the beginning of COVID, this situation changed as many more employees worked from home, thereby spending longer periods at home with spouses and other members of the family than before. Studies have indicated that spending longer times at home is associated with domestic violence [1] with its inherit mental stress for those affected.

On a daily basis, people face challenges that can be stressful, overwhelming, and cause strong emotions in adults and children. Since the beginning of COVID-19 in December 2019, public health actions, such as social distancing, became critically necessary to reduce the spread of the disease [2, 3], but these measures can make people feel isolated and lonely and can increase stress and anxiety. The non-availability of treatment for COVID-19 during the early stages of its onset created much panic across the world. At the time, scientists and public health practitioners could only confirm that social distancing, the wearing of masks
and similar actions were prophylactic measures people could take to prevent disease transmission. According to one study, greater than 40 percent of study participants reported experiencing symptoms of anxiety or depression, as well as an increase in substance use in the period leading to the survey [4]. In another study, the percentage of individuals older than 18 years who reported symptoms of anxiety increased by 14 percent in one month [5].

The contagious nature of COVID-19 forced governments and businesses across the globe to encourage people to work from home—a policy commonly dubbed “Safer in Place,” to reduce transmission among employees. Due to COVID-19 restrictions, institutions of learning similarly changed their modus operandi, particularly in the areas of adopting distance learning in lieu of face-to-face instruction. While distance learning became a great substitute for in-class instruction, the former also has inherent limitations. Students adapting to the new safer-in-place instructional methods (virtual lectures etc.) have complained about the lack of direct access to instructors and peers. Even worse is the case of non-traditional students, many of whom are less savvy with computer processes dealing with online course registration, accessing online course materials, participating in required self-paced online class activities/discussions, and submitting online assignments on time. These are in addition to missing traditional in-class student/faculty interactions and the benefits of peer-supported learning. All these challenges have inflicted mental stress on students to the extent that some have temporarily dropped out of school or considered doing so.

Communities of color have borne the brunt of the pandemic economically [6] in morbidity [7] and mortality rates [8]. These findings are worrisome for students and employees at minority-serving institutions, such as Historically Black Colleges where people of color are in the majority. Many students from low socio-economic backgrounds are already dealing with a plethora of non-COVID-related problems and the pandemic has only exacerbated the problem.

Mental health problems related to COVID-imposed isolation are not unique to students alone. Across university campuses, faculty and staff, especially those of older generations may be technologically challenged in using computer-based instruction and digital media. This and other work-related duties in a COVID-prone environment have affected students and employees’ mental health status. Almiskry and colleagues [9] whose study assessed the impact of COVID on mental health found that students, faculty, and staff experienced disruption in eating and sleeping patterns, along with concentration difficulties in varying degrees. The three groups also reported mild psychiatric problems and worry. Coping mechanisms were found to be different among men and women.

The current study had three main objectives: (1) Identify COVID-19-related stressors that affect students, faculty, and staff at a historically Black institution. (2) Explore which stressors are common among students and employees at the institution. (3) Determine coping mechanisms that are most frequently utilized by study participants.

**Methods**

This study was a cross-sectional online survey whose data were collected from students, faculty, and staff in a Historically Black College in the southern United States of America. The convenience sample (see additional details below) included both undergraduate and graduate students, as well as faculty and staff in the College of Health Sciences. Students in the sample were drawn from different departments within the College of Health Sciences that houses eight departments—Dental hygiene, respiratory care and health information management, human performance and sports sciences, are all undergraduate programs. Physical therapy, occupational therapy, and speech pathology and audiology are graduate programs including the school of nursing and public health and health administration, which have both undergraduate and graduate students.

Data were obtained using a 32-item online Qualtrics survey that was administered during the month of April 2022. To assess COVID-19 stressors, a twelve-item instrument was adapted from a General Health Questionnaire developed by [10] which contained 12 items that measures general distress. Similarly, items from the Penn State Worry Questionnaire (PSWQ) were used to assess worry as an integral component of COVID-19 pandemic among study participants. The Penn State Worry Questionnaire includes 16 items that assesses clinically significant worry among respondents [11]. When asked about worrying habits, participants’ response options on a Likert-scale ranged from “not at all typical of me” to “very typical of me.” The psychometric properties of the instrument have been described elsewhere [12].

The Coping Inventory for Stressful Situations (CISS-48) was used to assess coping strategies. The original measure comprises 48 items and are rated in a Likert-scale. The items ranged from “not engaged in the activity” to very much engaged in the activity. More information about these measures are available in [13].

Data on demographic characteristics, COVID-19-related stressors, and coping mechanisms due to the COVID pandemic were solicited. For COVID stressors, here are a few examples of questions that were posed to study participants: “How do you perceive the risk of contagion during this period?” “How do you perceive the condition of social isolation imposed during this period of Covid19 pandemic?
“How do you perceive the relationships with your relatives during this period of CoVID19 pandemic?” Responses in a Likert scale included: Not at all Stressful, Somewhat Stressful, Moderately Stressful, Very Stressful, and Extremely Stressful.

Study approval was received through the Tennessee State University’s Institutional Review Board and all study participants received, signed, and acknowledged consent.

A convenience sample of 209 students (98 undergraduates and 111 graduates), 34 faculty and 9 staff members (Office Managers, Administrative Assistants, Clinic Supervisors etc.) participated in this study. Among undergraduate students, 76.5% were between ages 18 – 24 years, 72.4% were females, 62.2% were African American and 90.8% were never married. For graduate students the respective percentages were 52.3%, 76.6%, 18.9% and 73%. Among faculty 44.1% were 55 years and above, 70.6% were female, 35.3% were African American, 79.4% were married and 38.2% were employed for 5 years or less at TSU and the respective percentages for staff were 33.3%, 100%, 66.7%, 55.6% and 88.9% (Tables 1, 2).

Summary statistics, Chi-square test for categorical variables, and Cochran–Mantel–Haenszel tests for ordinal variables were used for comparison by demographic characteristics. All data analyses were conducted using SAS Software System, Version 9.4 of the SAS System for Windows (SAS Institute Inc., Cary, NC, USA).

Table 1  Demographic characteristics of students by degree program

| Variables                          | Undergraduate Program [N = 98] | Graduate Program [N = 111] | P-value [2] |
|-----------------------------------|--------------------------------|-----------------------------|-------------|
| Age                               |                                |                             |             |
| 18–24                             | 75 (76.5)                      | 58 (52.3)                   |             |
| 25–34                             | 19 (19.4)                      | 45 (40.5)                   | 0.0013      |
| 35 and above                      | 4 (4.1)                        | 8 (7.2)                     |             |
| Gender                            |                                |                             |             |
| Female                            | 71 (72.4)                      | 85 (76.6)                   | 0.6491      |
| Male                              | 26 (26.5)                      | 24 (21.6)                   |             |
| Other                             | 1 (1.0)                        | 2 (1.8)                     |             |
| Race/Ethnicity                    |                                |                             |             |
| African/american (Black)          | 61 (62.2)                      | 21 (18.9)                   | <.0001      |
| European american (White or Caucasian) | 20 (20.4)               | 80 (72.1)                   |             |
| All other races and ethnicity     | 17 (17.3)                      | 10 (9.0)                    |             |
| Marital status                    |                                |                             |             |
| Divorced or Separated             | 3 (3.1)                        | 3 (2.7)                     | 0.0015      |
| Married                           | 6 (6.1)                        | 27 (24.3)                   |             |
| Never Married                     | 89 (90.8)                      | 81 (73.0)                   |             |
| Has the COVID pandemic caused you increased economic hardship? | | | |
| No                                | 24 (24.5)                      | 42 (37.8)                   | 0.0383      |
| Yes                               | 74 (75.5)                      | 69 (62.2)                   |             |
| Have you experienced any problems with internet connection while online learning during COVID 19 pandemic? | | | |
| No                                | 40 (40.8)                      | 52 (46.8)                   | 0.3808      |
| Yes                               | 58 (59.2)                      | 59 (53.2)                   |             |
| Have you experienced any problems with computer hardware/software while online learning during the COVID 19 pandemic? | | | |
| No                                | 44 (44.9)                      | 62 (55.9)                   | 0.1138      |
| Yes                               | 54 (55.1)                      | 49 (44.1)                   |             |
| Have you ever thought about dropping out of school because of challenges related to COVID? | | | |
| No                                | 62 (63.3)                      | 98 (88.3)                   | <.0001      |
| Yes                               | 36 (36.7)                      | 13 (11.7)                   |             |

[1] Frequency (percent)
[2] P-value from Chi-square test
Results

COVID-Related Stressors Among Study Participants

Summary statistics indicated that COVID-19 affected a significant proportion of the participants. Due to COVID-19, 75.5% of undergraduate students and 62.2% of graduate students (P-value = 0.0383) reported increased economic hardship; 59.2% of undergraduate students and 53.2% of graduate students (P-value = 0.0383) experienced problems with internet connection; 55.1% of undergraduate students and 44.1% of graduate students (P-value = 0.0113) had problems with computer hardware/software and 36.7% of undergraduate students and 11.7% of graduate students (P-value < 0.0001) thought about dropping out of school.

Among faculty and staff, 35.3% of the faculty and 33.3% of staff (P-value = 0.9126) reported increased economic hardship; 50.0% of faculty and 44.4% of staff (P-value = 0.7669) complained about problems with internet connection, and 52.9% of faculty and 44.4% of staff (P-value = 0.6502) had problems with computer hardware/software (Tables 1, 2).

In the area of stress, female students, African American students and undergraduate students perceived stress on the risk of contagion during the pandemic higher than male students (P-value = 0.0096), other races (P-value = 0.0249), and graduate students (P-value = 0.0141) respectively; female students perceived more stress related to relationships with relatives (P-value = 0.0128); Caucasian students compared to others (P-value = 0.0240) and graduate students compared to undergraduate students (P-value = 0.0011) reported less perceived stress related to the relationships with other colleagues; African American students compared to other students (P-value = 0.0386) and undergraduate students compared to graduate students (P-value = 0.0633) experienced more problems with internet connection and computer hardware/software.

Table 2  Demographic characteristics of faculty and staff

| Variables | Faculty [N = 34] | Staff [N = 9] | P-value |
|-----------|-----------------|--------------|---------|
|           | [1]             | [1]          | [2]     |
| Age       |                 |              |         |
| 44 and below | 11 (32.4) | 4 (44.4) | 0.7783  |
| 45–54     | 8 (23.5)  | 2 (22.2) |         |
| 55 and above | 15 (44.1) | 3 (33.3) |         |
| Gender    |                 |              |         |
| Female    | 24 (70.6) | 9 (100.0) | 0.0633  |
| Male      | 10 (29.4) | 0 (0.0)   |         |
| Race/Ethnicity |        |              |         |
| African/American (Black) | 12 (35.3) | 6 (66.7) | 0.1928  |
| European American (White or Caucasian) | 18 (52.9) | 3 (33.3) |         |
| All other races and ethnicity | 4 (11.8) | 0 (0.0)  |         |
| Marital status |            |              |         |
| Married   | 27 (79.4) | 5 (55.6) | 0.1447  |
| Divorced, never married or widowed | 7 (20.6) | 4 (44.4) |         |
| Length of employment with TSU |        |              |         |
| 5 years and below | 13 (38.2) | 8 (88.9) | 0.0235  |
| 6–10 years | 9 (26.5)  | 0 (0.0)  |         |
| 11 years and above | 12 (35.3) | 1 (11.1) |         |
| Has the COVID pandemic caused you increased economic hardship? | | | |
| No        | 22 (64.7) | 6 (66.7) | 0.9126  |
| Yes       | 12 (35.3) | 3 (33.3) |         |
| Have you experienced any problems with internet connection while working remotely during COVID 19 pandemic? | | | |
| No        | 17 (50.0) | 5 (55.6) | 0.7669  |
| Yes       | 17 (50.0) | 4 (44.4) |         |
| Have you experienced any problems with computer hardware/software while working remotely during the COVID 19 pandemic? | | | |
| No        | 16 (47.1) | 5 (55.6) | 0.6502  |
| Yes       | 18 (52.9) | 4 (44.4) |         |

[1] Frequency (percent)
[2] P-value from Chi-square test
Table 3  Self-reported Covid-related stress levels among students

| Variables | Not stressful [1] | Somewhat stressful [1] | Moderately stressful [1] | Extremely stressful [1] | P-value [2] |
|-----------|------------------|------------------------|--------------------------|--------------------------|------------|
| How do you perceive the risk of contagion during this period? | | | | | |
| Gender | | | | | |
| Female | 30 (19.2) | 48 (30.8) | 40 (25.6) | 38 (24.4) | 0.0096 |
| Male | 16 (32.0) | 16 (32.0) | 16 (32.0) | 2 (4.0) | |
| Race/Ethnicity | | | | | |
| African/American (Black) | 8 (10.0) | 25 (31.3) | 27 (33.8) | 20 (25.0) | 0.0249 |
| European American (White or Caucasian) | 31 (31.3) | 32 (32.3) | 22 (22.2) | 14 (14.1) | |
| All other races and ethnicity | 7 (25.9) | 7 (25.9) | 7 (25.9) | 6 (22.2) | |
| Degree program | | | | | |
| Graduate | 33 (30.3) | 33 (30.3) | 28 (25.7) | 15 (13.8) | 0.0141 |
| Undergraduate | 13 (13.4) | 31 (32.0) | 28 (28.9) | 25 (25.8) | |
| How do you perceive the social isolation imposed during this period of CoVID19 pandemic? | | | | | |
| Gender | | | | | |
| Female | 29 (18.6) | 48 (30.8) | 39 (25.0) | 40 (25.6) | 0.2259 |
| Male | 16 (32.0) | 11 (22.0) | 12 (24.0) | 11 (22.0) | |
| Race/Ethnicity | | | | | |
| African/American (Black) | 18 (22.5) | 25 (31.3) | 19 (23.8) | 18 (22.5) | 0.5615 |
| European American (White or Caucasian) | 22 (22.2) | 23 (23.2) | 25 (25.3) | 29 (29.3) | |
| All other races and ethnicity | 5 (18.5) | 11 (40.7) | 7 (25.9) | 4 (14.8) | |
| Degree program | | | | | |
| Graduate | 24 (22.0) | 28 (25.7) | 31 (28.4) | 26 (23.9) | 0.5616 |
| Undergraduate | 21 (21.6) | 31 (32.0) | 20 (20.6) | 25 (25.8) | |
| How do you perceive the relationships with your relatives during this period of CoVID19 pandemic? | | | | | |
| Gender | | | | | |
| Female | 37 (23.7) | 51 (32.7) | 40 (25.6) | 28 (17.9) | 0.0128 |
| Male | 22 (44.0) | 14 (28.0) | 12 (24.0) | 2 (4.0) | |
| Race/Ethnicity | | | | | |
| African/American (Black) | 22 (27.5) | 23 (28.8) | 21 (26.3) | 14 (17.5) | 0.8873 |
| European American (White or Caucasian) | 30 (30.3) | 34 (34.3) | 24 (24.2) | 11 (11.1) | |
| All other races and ethnicity | 7 (25.9) | 8 (29.6) | 7 (25.9) | 5 (18.5) | |
| Degree program | | | | | |
| Graduate | 34 (31.2) | 35 (32.1) | 29 (26.6) | 11 (10.1) | 0.2728 |
| Undergraduate | 25 (25.8) | 30 (30.9) | 23 (23.7) | 19 (19.6) | |
| How do you perceive the relationships with your university colleagues during this period of CoVID19 pandemic? | | | | | |
| Gender | | | | | |
| Female | 58 (37.2) | 43 (27.6) | 32 (20.5) | 23 (14.7) | 0.6558 |
| Male | 19 (38.0) | 15 (30.0) | 12 (24.0) | 4 (8.0) | |
| Race/Ethnicity | | | | | |
| African/American (Black) | 23 (28.8) | 25 (31.3) | 14 (17.5) | 18 (22.5) | 0.0240 |
| European American (White or Caucasian) | 45 (45.5) | 26 (26.3) | 22 (22.2) | 6 (6.1) | |
| All other races and ethnicity | 9 (33.3) | 7 (25.9) | 8 (29.6) | 3 (11.1) | |
| Degree program | | | | | |
| Graduate | 52 (47.7) | 26 (23.9) | 24 (22.0) | 7 (6.4) | 0.0011 |
| Undergraduate | 25 (25.8) | 32 (33.0) | 20 (20.6) | 20 (20.6) | |
compared to graduate students (P-value = 0.0016) indicated higher perceived stress with regards to relationships with professors. While a significant majority of the faculty and staff reported somewhat stressful or higher to the stress questionnaire, male faculty and staff had higher perceived changes in sexual life compared to female faculty and staff (P-value = 0.0047). (Tables 3, 4).

### Table 3 (continued)

| Variables                                                                 | Not stressful | Somewhat stressful | Moderately stressful | Extremely stressful | P-value |
|--------------------------------------------------------------------------|---------------|--------------------|----------------------|--------------------|---------|
| [N = 209]                                                                |               |                    |                      |                    |         |
| How do you perceive the relationships with your university professors during this period of COVID19 pandemic? |               |                    |                      |                    |         |
| Gender                                                                   |               |                    |                      |                    |         |
| Female                                                                   | 50 (32.1)     | 44 (28.2)          | 34 (21.8)            | 28 (17.9)          | 0.2325  |
| Male                                                                     | 18 (36.0)     | 17 (34.0)          | 12 (24.0)            | 3 (6.0)            |         |
| Race/Ethnicity                                                           |               |                    |                      |                    |         |
| African/American (Black)                                                 | 17 (21.3)     | 22 (27.5)          | 23 (28.8)            | 18 (22.5)          | 0.0386  |
| European American (White or Caucasian)                                   | 39 (39.4)     | 31 (31.3)          | 18 (18.2)            | 11 (11.1)          |         |
| All other races and ethnicity                                            | 12 (44.4)     | 8 (29.6)           | 5 (18.5)             | 2 (7.4)            |         |
| Degree program                                                           |               |                    |                      |                    |         |
| Graduate                                                                 | 46 (42.2)     | 35 (32.1)          | 18 (16.5)            | 10 (9.2)           | 0.0016  |
| Undergraduate                                                            | 22 (22.7)     | 26 (26.8)          | 28 (28.9)            | 21 (21.6)          |         |
| How do you perceive your academic studying experience during this period of COVID19 pandemic? |               |                    |                      |                    |         |
| Gender                                                                   |               |                    |                      |                    |         |
| Female                                                                   | 32 (20.5)     | 39 (25.0)          | 39 (25.0)            | 46 (29.5)          | 0.2789  |
| Male                                                                     | 14 (28.0)     | 14 (28.0)          | 14 (28.0)            | 8 (16.0)           |         |
| Race/Ethnicity                                                           |               |                    |                      |                    |         |
| African/American (Black)                                                 | 14 (17.5)     | 20 (25.0)          | 22 (27.5)            | 24 (30.0)          | 0.6844  |
| European American (White or Caucasian)                                   | 24 (24.2)     | 26 (26.3)          | 23 (23.2)            | 26 (26.3)          |         |
| All other races and ethnicity                                            | 8 (29.6)      | 7 (25.9)           | 8 (29.6)             | 4 (14.8)           |         |
| Degree program                                                           |               |                    |                      |                    |         |
| Graduate                                                                 | 28 (25.7)     | 27 (24.8)          | 27 (24.8)            | 27 (24.8)          | 0.6782  |
| Undergraduate                                                            | 18 (18.6)     | 26 (26.8)          | 26 (26.8)            | 27 (27.8)          |         |
| How do you perceive the changes in your sexual life due to the social isolation during this period of COVID19 pandemic? |               |                    |                      |                    |         |
| Gender                                                                   |               |                    |                      |                    |         |
| Female                                                                   | 96 (61.5)     | 28 (17.9)          | 13 (8.3)             | 19 (12.2)          | 0.1901  |
| Male                                                                     | 24 (48.0)     | 13 (26.0)          | 8 (16.0)             | 5 (10.0)           |         |
| Race/Ethnicity                                                           |               |                    |                      |                    |         |
| African/American (Black)                                                 | 44 (55.0)     | 14 (17.5)          | 9 (11.3)             | 13 (16.3)          | 0.1466  |
| European American (White or Caucasian)                                   | 65 (65.7)     | 20 (20.2)          | 8 (8.1)              | 6 (6.1)            |         |
| All other races and ethnicity                                            | 11 (40.7)     | 7 (25.9)           | 4 (14.8)             | 5 (18.5)           |         |
| Degree program                                                           |               |                    |                      |                    |         |
| Graduate                                                                 | 70 (64.2)     | 19 (17.4)          | 12 (11.0)            | 8 (7.3)            | 0.1131  |
| Undergraduate                                                            | 50 (51.5)     | 22 (22.7)          | 9 (9.3)              | 16 (16.5)          |         |

[1] Frequency (percent)

[2] P-value from Chi-square test

On the subject of worry, a significant majority of the students responded that worrying is somewhat typical of them.
Table 4 Covid-related stress levels among Faculty and Staff

| Variables                                  | Not Stressful [1] | Somewhat Stressful [1] | Moderately Stressful [1] | Extremely Stressful [1] | P-value [2] |
|--------------------------------------------|-------------------|------------------------|-------------------------|-------------------------|------------|
| How do you perceive the risk of contagion during this period? |                   |                        |                         |                         |            |
| Gender                                     |                   |                        |                         |                         |            |
| Female                                     | 4 (12.1)          | 9 (27.3)               | 11 (33.3)               | 9 (27.3)                | 0.1656     |
| Male                                       | 0 (0.0)           | 6 (60.0)               | 1 (10.0)                | 3 (30.0)                |            |
| Race/Ethnicity                             |                   |                        |                         |                         |            |
| African/American (Black)                   | 2 (11.1)          | 5 (27.8)               | 6 (33.3)                | 0.2945                  |
| European American (White or Caucasian)    | 2 (9.5)           | 9 (42.9)               | 14 (65.2)               | 0.1926                  |
| All other races and ethnicity              | 0 (0.0)           | 1 (25.0)               | 3 (75.0)                |                         |            |
| Faculty/staff                              |                   |                        |                         |                         |            |
| Faculty                                    | 3 (8.8)           | 10 (29.4)              | 12 (35.3)               | 1 (3.0)                 |            |
| Staff                                      | 1 (11.1)          | 5 (55.6)               | 0 (0.0)                 | 3 (33.3)                |            |
| How do you perceive the condition of social isolation imposed during this period of CoVID19 pandemic? |                   |                        |                         |                         |            |
| Gender                                     |                   |                        |                         |                         |            |
| Female                                     | 3 (9.1)           | 11 (33.3)              | 8 (24.2)                | 0.6474                  |
| Male                                       | 2 (20.0)          | 4 (40.0)               | 3 (30.0)                |                         |            |
| Race/Ethnicity                             |                   |                        |                         |                         |            |
| African/American (Black)                   | 3 (16.7)          | 5 (27.8)               | 3 (16.7)                | 0.5397                  |
| European American (White or Caucasian)    | 2 (9.5)           | 7 (33.3)               | 6 (28.6)                |                         |            |
| All other races and ethnicity              | 0 (0.0)           | 3 (75.0)               | 0 (0.0)                 |                         |            |
| Faculty/staff                              |                   |                        |                         |                         |            |
| Faculty                                    | 4 (11.8)          | 13 (38.2)              | 10 (29.4)               | 0.7943                  |
| Staff                                      | 1 (11.1)          | 2 (22.2)               | 2 (22.2)                |                         |            |
| How do you perceive the relationships with your relatives during this period of CoVID19 pandemic? |                   |                        |                         |                         |            |
| Gender                                     |                   |                        |                         |                         |            |
| Female                                     | 10 (30.3)         | 11 (33.3)              | 7 (21.2)                | 5 (15.2)                | 0.3722     |
| Male                                       | 3 (30.0)          | 4 (40.0)               | 0 (0.0)                 | 3 (30.0)                |            |
| Race/Ethnicity                             |                   |                        |                         |                         |            |
| African/American (Black)                   | 9 (50.0)          | 4 (22.2)               | 2 (11.1)                | 3 (16.7)                | 0.1847     |
| European American (White or Caucasian)    | 4 (19.0)          | 8 (38.1)               | 4 (19.0)                | 5 (23.8)                |            |
| All other races and ethnicity              | 0 (0.0)           | 3 (75.0)               | 0 (0.0)                 |                         |            |
| Faculty/staff                              |                   |                        |                         |                         |            |
| Faculty                                    | 11 (32.4)         | 13 (38.2)              | 4 (11.8)                | 6 (17.6)                | 0.4108     |
| Staff                                      | 2 (22.2)          | 2 (22.2)               | 3 (33.3)                | 2 (22.2)                |            |
| How do you perceive the relationships with your university colleagues (faculty), co-workers (staff) during this period of CoVID19 pandemic? |                   |                        |                         |                         |            |
| Gender                                     |                   |                        |                         |                         |            |
| Female                                     | 9 (27.3)          | 11 (33.3)              | 8 (24.2)                | 5 (15.2)                | 0.7641     |
| Male                                       | 2 (20.0)          | 3 (30.0)               | 2 (20.0)                | 3 (30.0)                |            |
| Race/Ethnicity                             |                   |                        |                         |                         |            |
| African/American (Black)                   | 5 (27.8)          | 7 (38.9)               | 4 (22.2)                | 0.6828                  |
| European American (White or Caucasian)    | 5 (23.8)          | 6 (28.6)               | 4 (19.0)                |                         |            |
| All other races and ethnicity              | 1 (25.0)          | 1 (25.0)               | 0 (0.0)                 |                         |            |
| Faculty/staff                              |                   |                        |                         |                         |            |
| Faculty                                    | 8 (23.5)          | 11 (32.4)              | 9 (26.5)                | 6 (17.6)                | 0.7840     |
| Staff                                      | 3 (33.3)          | 3 (33.3)               | 1 (11.1)                | 2 (22.2)                |            |
or worse while a significant majority of faculty and staff responded “not at all” or rarely typical of them to worry. To the question “I worry most of the time,” more proportion of White students compared to other races (P-value = 0.0383) responded “somewhat typical of them or worse;” and to the question “I worry when things go wrong”, more proportion of female students compared to male students (P-value = 0.0037) responded “not at all or rarely typical of them;” and to the question “worrying is part of me,” more proportion of White students (P-value = 0.0004) and the graduate students compared to the undergraduate students (P-value = 0.0173) responded “somewhat typical of them or worse;” but to the question I never worry at all, more proportion of the female students compared to the male students (P-value = 0.0037) responded “not at all or rarely typical of them;” and to the question “worrying is part of me, more proportion of White students

### Table 4 (continued)

| Variables                                      | Not Stressful [1] | Somewhat Stressful [1] | Moderately Stressful [1] | Extremely Stressful [1] | P-value [2] |
|------------------------------------------------|------------------|------------------------|--------------------------|-------------------------|------------|
| How do you perceive the relationships with your university students (faculty), supervisor and faculty (staff) during this period of CoVID19 pandemic? Gender |                  |                        |                          |                          | P-value     |
| Female                                         | 8 (24.2)         | 10 (30.3)              | 9 (27.3)                 | 5 (15.2)                | 0.7400     |
| Male                                           | 1 (10.0)         | 3 (30.0)               | 3 (30.0)                 | 3 (30.0)                |            |
| Race/Ethnicity                                 |                  |                        |                          |                          |            |
| African/American (Black)                       | 5 (27.8)         | 7 (38.9)               | 2 (11.1)                 | 3 (16.7)                | 0.5517     |
| European American (White or Caucasian)         | 4 (19.0)         | 5 (23.8)               | 8 (38.1)                 | 4 (19.0)                |            |
| All other races and ethnicity                  | 0 (0.0)          | 1 (25.0)               | 2 (50.0)                 | 1 (25.0)                |            |
| Faculty/staff                                  |                  |                        |                          |                          | P-value     |
| Faculty                                        | 5 (14.7)         | 10 (29.4)              | 12 (35.3)                | 7 (20.6)                | 0.0351     |
| Staff                                          | 4 (44.4)         | 3 (33.3)               | 0 (0.0)                  | 1 (11.1)                |            |
| How do you perceive your course preparation (faculty), duties and responsibilities (staff) experience, during this period of CoVID19 pandemic? Gender |                  |                        |                          |                          | P-value     |
| Female                                         | 8 (24.2)         | 10 (30.3)              | 8 (24.2)                 | 7 (21.2)                | 0.0455     |
| Male                                           | 2 (20.0)         | 1 (10.0)               | 7 (70.0)                 | 0 (0.0)                 |            |
| Race/Ethnicity                                 |                  |                        |                          |                          |            |
| African/American (Black)                       | 5 (27.8)         | 7 (38.9)               | 5 (27.8)                 | 1 (5.6)                 | 0.4055     |
| European American (White or Caucasian)         | 5 (23.8)         | 3 (14.3)               | 8 (38.1)                 | 5 (23.8)                |            |
| All other races and ethnicity                  | 0 (0.0)          | 1 (25.0)               | 2 (50.0)                 | 1 (25.0)                |            |
| Faculty/staff                                  |                  |                        |                          |                          | P-value     |
| Faculty                                        | 7 (20.6)         | 9 (26.5)               | 11 (32.4)                | 7 (20.6)                | 0.4405     |
| Staff                                          | 3 (33.3)         | 2 (22.2)               | 4 (44.4)                 | 0 (0.0)                 |            |
| How do you perceive the changes in your sexual life due to the social isolation during this period of CoVID19 pandemic? Gender |                  |                        |                          |                          | P-value     |
| Female                                         | 28 (84.8)        | 2 (6.1)                | 1 (3.0)                  | 0 (0.0)                 | 0.0047     |
| Male                                           | 4 (40.0)         | 6 (60.0)               | 0 (0.0)                  |                          |            |
| Race/Ethnicity                                 |                  |                        |                          |                          |            |
| African/American (Black)                       | 13 (72.2)        | 2 (11.1)               | 1 (5.6)                  | 1 (5.6)                 | 0.7442     |
| European American (White or Caucasian)         | 16 (76.2)        | 5 (23.8)               | 0 (0.0)                  |                          |            |
| All other races and ethnicity                  | 3 (75.0)         | 1 (25.0)               | 0 (0.0)                  |                          |            |
| Faculty/staff                                  |                  |                        |                          |                          | P-value     |
| Faculty                                        | 26 (76.5)        | 8 (23.5)               | 0 (0.0)                  | 1 (11.1)                | 0.0089     |
| Staff                                          | 6 (66.7)         | 0 (0.0)                | 1 (11.1)                 |                          |            |

[1] Frequency (percent)

[2] P-value from Chi-square test
Table 5  Self-reported levels of worry among student respondents

| Variables | Not at all or rarely typical of me [1] | Somewhat typical of me [1] | Often or very typical of me [1] |
|-----------|----------------------------------------|----------------------------|---------------------------------|
| I worry most of the time                   |                                        |                             |                                 |
| Gender                                        |                                        |                             |                                 |
| Female                                         | 45 (28.8)                              | 51 (32.7)                  | 60 (38.5)                        |
| Male                                           | 22 (44.0)                              | 15 (30.0)                  | 13 (26.0)                        |
| Race/Ethnicity                                 |                                        |                             |                                 |
| African/American (Black)                      | 27 (33.8)                              | 30 (37.5)                  | 23 (28.8)                        |
| European American (White or Caucasian)       | 28 (28.3)                              | 34 (34.3)                  | 37 (37.4)                        |
| All other races and ethnicity                 | 12 (44.4)                              | 2 (7.4)                    | 13 (48.1)                        |
| Degree program                                |                                        |                             |                                 |
| Graduate                                      | 32 (29.4)                              | 39 (35.8)                  | 38 (34.9)                        |
| Undergraduate                                  | 35 (36.1)                              | 27 (27.8)                  | 35 (36.1)                        |
| I tend to worry when things go wrong          |                                        |                             |                                 |
| Gender                                        |                                        |                             |                                 |
| Female                                         | 19 (12.2)                              | 49 (31.4)                  | 88 (56.4)                        |
| Male                                           | 18 (36.0)                              | 15 (30.0)                  | 17 (34.0)                        |
| Race/Ethnicity                                 |                                        |                             |                                 |
| African/American (Black)                      | 16 (20.0)                              | 23 (28.8)                  | 41 (51.3)                        |
| European American (White or Caucasian)       | 13 (13.1)                              | 35 (35.4)                  | 51 (51.5)                        |
| All other races and ethnicity                 | 8 (29.6)                               | 6 (22.2)                   | 13 (48.1)                        |
| Degree program                                |                                        |                             |                                 |
| Graduate                                      | 12 (11.0)                              | 39 (35.8)                  | 58 (53.2)                        |
| Undergraduate                                  | 25 (25.8)                              | 25 (25.8)                  | 47 (48.5)                        |
| When I am not busy, I cannot help it but worry |                                        |                             |                                 |
| Gender                                        |                                        |                             |                                 |
| Female                                         | 84 (53.8)                              | 37 (23.7)                  | 35 (22.4)                        |
| Male                                           | 31 (62.0)                              | 10 (20.0)                  | 9 (18.0)                         |
| Race/Ethnicity                                 |                                        |                             |                                 |
| African/American (Black)                      | 52 (65.0)                              | 20 (25.0)                  | 8 (10.0)                         |
| European American (White or Caucasian)       | 48 (48.5)                              | 20 (20.2)                  | 31 (31.3)                        |
| All other races and ethnicity                 | 15 (55.6)                              | 7 (25.9)                   | 5 (18.5)                         |
| Degree program                                |                                        |                             |                                 |
| Graduate                                      | 56 (51.4)                              | 26 (23.9)                  | 27 (24.8)                        |
| Undergraduate                                  | 59 (60.8)                              | 21 (21.6)                  | 17 (17.5)                        |
| When I am busy, I do not worry at all         |                                        |                             |                                 |
| Gender                                        |                                        |                             |                                 |
| Female                                         | 73 (46.8)                              | 35 (22.4)                  | 48 (30.8)                        |
| Male                                           | 28 (56.0)                              | 11 (22.0)                  | 11 (22.0)                        |
| Race/Ethnicity                                 |                                        |                             |                                 |
| African/American (Black)                      | 36 (45.0)                              | 23 (28.8)                  | 21 (26.3)                        |
| European American (White or Caucasian)       | 50 (50.5)                              | 19 (19.2)                  | 30 (30.3)                        |
| All other races and ethnicity                 | 15 (55.6)                              | 4 (14.8)                   | 8 (29.6)                         |
| Degree program                                |                                        |                             |                                 |
| Graduate                                      | 49 (45.0)                              | 28 (25.7)                  | 32 (29.4)                        |
| Undergraduate                                  | 52 (53.6)                              | 18 (18.6)                  | 27 (27.8)                        |
| When I am alone, I worry all the time         |                                        |                             |                                 |
| Gender                                        |                                        |                             |                                 |
| Female                                         | 77 (49.4)                              | 43 (27.6)                  | 36 (23.1)                        |
| Male                                           | 29 (58.0)                              | 13 (26.0)                  | 8 (16.0)                         |
Table 5 (continued)

| Variables                                      | Not at all or rarely typical of me [1] | Somewhat typical of me [1] | Often or very typical of me [1] | P-value [2] |
|------------------------------------------------|---------------------------------------|----------------------------|---------------------------------|-------------|
| Race/Ethnicity                                 |                                       |                            |                                 |             |
| African/American (Black)                       | 49 (61.3)                             | 22 (27.5)                  | 9 (11.3)                        | 0.0650      |
| European American (White or Caucasian)        | 45 (45.5)                             | 26 (26.3)                  | 28 (28.3)                       |             |
| All other races and ethnicity                  | 12 (44.4)                             | 8 (29.6)                   | 7 (25.9)                        |             |
| Degree program                                 |                                       |                            |                                 |             |
| Graduate                                       | 55 (50.5)                             | 29 (26.6)                  | 25 (22.9)                       | 0.8425      |
| Undergraduate                                  | 51 (52.6)                             | 27 (27.8)                  | 19 (19.6)                       |             |
| Gender                                         |                                       |                            |                                 |             |
| Female                                         | 128 (82.1)                            | 16 (10.3)                  | 12 (7.7)                        | 0.0037      |
| Male                                           | 30 (60.0)                             | 9 (18.0)                   | 11 (22.0)                       |             |
| Race/Ethnicity                                 |                                       |                            |                                 |             |
| African/American (Black)                       | 61 (76.3)                             | 12 (15.0)                  | 7 (8.8)                         | 0.6883      |
| European American (White or Caucasian)        | 77 (77.8)                             | 9 (9.1)                    | 13 (13.1)                       |             |
| All other races and ethnicity                  | 20 (74.1)                             | 4 (14.8)                   | 3 (11.1)                        |             |
| Degree program                                 |                                       |                            |                                 |             |
| Graduate                                       | 80 (73.4)                             | 14 (12.8)                  | 15 (13.8)                       | 0.4019      |
| Undergraduate                                  | 78 (80.4)                             | 11 (11.3)                  | 8 (8.2)                         |             |
| Worrying is a part of me                       |                                       |                            |                                 |             |
| Gender                                         |                                       |                            |                                 |             |
| Female                                         | 54 (34.6)                             | 51 (32.7)                  | 51 (32.7)                       | 0.0717      |
| Male                                           | 26 (52.0)                             | 14 (28.0)                  | 10 (20.0)                       |             |
| Race/Ethnicity                                 |                                       |                            |                                 |             |
| African/American (Black)                       | 37 (46.3)                             | 29 (36.3)                  | 14 (17.5)                       | 0.0364      |
| European American (White or Caucasian)        | 33 (33.3)                             | 27 (27.3)                  | 39 (39.4)                       |             |
| All other races and ethnicity                  | 10 (37.0)                             | 9 (33.3)                   | 8 (29.6)                        |             |
| Degree program                                 |                                       |                            |                                 |             |
| Graduate                                       | 34 (31.2)                             | 39 (35.8)                  | 36 (33.0)                       | 0.0577      |
| Undergraduate                                  | 46 (47.4)                             | 26 (26.8)                  | 25 (25.8)                       |             |
| I worry about unfinished tasks all the time    |                                       |                            |                                 |             |
| Gender                                         |                                       |                            |                                 |             |
| Female                                         | 28 (17.9)                             | 44 (28.2)                  | 84 (53.8)                       | 0.0023      |
| Male                                           | 21 (42.0)                             | 9 (18.0)                   | 20 (40.0)                       |             |
| Race/Ethnicity                                 |                                       |                            |                                 |             |
| African/American (Black)                       | 25 (31.3)                             | 19 (23.8)                  | 36 (45.0)                       | 0.0108      |
| European American (White or Caucasian)        | 13 (13.1)                             | 28 (28.3)                  | 58 (58.6)                       |             |
| All other races and ethnicity                  | 11 (40.7)                             | 6 (22.2)                   | 10 (37.0)                       |             |
| Degree program                                 |                                       |                            |                                 |             |
| Graduate                                       | 20 (18.3)                             | 34 (31.2)                  | 55 (50.5)                       | 0.0619      |
| Undergraduate                                  | 29 (29.9)                             | 19 (19.6)                  | 49 (50.5)                       |             |
| When out of time, I tend to worry on how I     |                                       |                            |                                 |             |
| will be able to finish it                      |                                       |                            |                                 |             |
| Gender                                         |                                       |                            |                                 |             |
| Female                                         | 26 (16.7)                             | 48 (30.8)                  | 82 (52.6)                       | 0.1151      |
| Male                                           | 15 (30.0)                             | 14 (28.0)                  | 21 (42.0)                       |             |
| Race/Ethnicity                                 |                                       |                            |                                 |             |
| African/American (Black)                       | 21 (26.3)                             | 22 (27.5)                  | 37 (46.3)                       | 0.0909      |
| European American (White or Caucasian)        | 16 (16.2)                             | 27 (27.3)                  | 56 (56.6)                       |             |
compared to other races (P-value = 0.0364) responded “somewhat typical of them or worse;” while to the question of “I worry about unfinished tasks all the time, more proportion of female students compared to male students (P-value = 0.0023) and Whites students compared to other students (P-value = 0.0108) responded “somewhat typical of them or worse.” For faculty and staff, no statistically significant difference was observed when compared by demographic characteristics, Tables 5, 6.

**Common Coping Mechanisms**

As reported earlier, the top coping strategies used during COVID-19 pandemic by the students and staff were interactions with family and friends, utilization of social media, hand hygiene and cleaning and engaging in mindfulness/meditation/spirituality. These findings were mirrored in the case of faculty; the only new finding for this group is avoidance of public spaces/transportation, which was included as a top coping strategy, Tables 7, 8.

**Discussion**

Inequities about the impact of COVID-19 among racial groups have been widely reported in the United States and they show that minorities and people of color are adversely and disproportionately affected than their White counterparts [7, 8]. In this study, results generally showed significant proportions of study participants were affected by the pandemic and this number is much higher for students compared to faculty and staff. African American students compared to other races, and female students compared to male students. About 75% of the student participants indicated that the pandemic affected their academic experience and increased economic hardship. About 90% of faculty and staff felt stress related to contagion and social isolation while significant proportion of male faculty indicated the pandemic affected their sexual life. The reasons for the impact on sexuality were not solicited and would constitute a worthy topic of investigation in a qualitative follow-up study.

The top four coping strategies used during COVID-19 pandemic by the students and staff were interactions with family and friends, utilization of social media, hand hygiene and cleaning and engaging in mindfulness/meditation/spirituality. For the faculty, they were interactions with family and friends, engaging in mindfulness/meditation/spirituality, avoidance of public spaces/transportation and hand hygiene and cleaning.

Prior to the availability of trusted vaccines, the situation faced by those diagnosed with COVID-19 was miserable, catastrophic and actually hopeless for many. As affected persons manifest symptoms, increased social distancing is recommended even for asymptomatic family members.
Table 6 Reported levels of worry among faculty and staff members

| Variables                                        | Not at all or rarely typical of me [1] | Somewhat typical of me [1] | Often or very typical of me [1] | P-value [2] |
|--------------------------------------------------|----------------------------------------|-----------------------------|-------------------------------|-------------|
| I worry most of the time                         |                                        |                             |                               |             |
| Gender                                           |                                        |                             |                               |             |
| Female                                           | 22 (66.7)                              | 9 (27.3)                    | 2 (6.1)                       | 0.5090      |
| Male                                             | 8 (80.0)                               | 1 (10.0)                    | 1 (10.0)                      |             |
| Race/Ethnicity                                   |                                        |                             |                               |             |
| African/American (Black)                         | 13 (72.2)                              | 3 (16.7)                    | 2 (11.1)                      | 0.1983      |
| European American (White or Caucasian)          | 14 (66.7)                              | 7 (33.3)                    | 0 (0.0)                       |             |
| All other races and ethnicity                    | 3 (75.0)                               | 0 (0.0)                     | 1 (25.0)                      |             |
| Faculty/staff                                    |                                        |                             |                               |             |
| Faculty                                          | 25 (73.5)                              | 7 (20.6)                    | 2 (5.9)                       | 0.5754      |
| Staff                                            | 5 (55.6)                               | 3 (33.3)                    | 1 (11.1)                      |             |
| I tend to worry when things go wrong             |                                        |                             |                               |             |
| Gender                                           |                                        |                             |                               |             |
| Female                                           | 12 (36.4)                              | 14 (42.4)                   | 7 (21.2)                      | 0.6407      |
| Male                                             | 5 (50.0)                               | 4 (40.0)                    | 1 (10.0)                      |             |
| Race/Ethnicity                                   |                                        |                             |                               |             |
| African/American (Black)                         | 9 (50.0)                               | 6 (33.3)                    | 3 (16.7)                      | 0.8114      |
| European American (White or Caucasian)          | 7 (33.3)                               | 10 (47.6)                   | 4 (19.0)                      |             |
| All other races and ethnicity                    | 1 (25.0)                               | 2 (50.0)                    | 1 (25.0)                      |             |
| Faculty/staff                                    |                                        |                             |                               |             |
| Faculty                                          | 13 (38.2)                              | 14 (41.2)                   | 7 (20.6)                      | 0.8061      |
| Staff                                            | 4 (44.4)                               | 4 (44.4)                    | 1 (11.1)                      |             |
| When I am not busy, I cannot help it but worry   |                                        |                             |                               |             |
| Gender                                           |                                        |                             |                               |             |
| Female                                           | 27 (81.8)                              | 4 (12.1)                    | 2 (6.1)                       | 0.4857      |
| Male                                             | 9 (90.0)                               | 0 (0.0)                     | 1 (10.0)                      |             |
| Race/Ethnicity                                   |                                        |                             |                               |             |
| African/American (Black)                         | 14 (77.8)                              | 3 (16.7)                    | 1 (5.6)                       | 0.6222      |
| European American (White or Caucasian)          | 18 (85.7)                              | 1 (4.8)                     | 2 (9.5)                       |             |
| All other races and ethnicity                    | 4 (100.0)                              | 0 (0.0)                     | 0 (0.0)                       |             |
| Faculty/staff                                    |                                        |                             |                               |             |
| Faculty                                          | 29 (85.3)                              | 2 (5.9)                     | 3 (8.8)                       | 0.2364      |
| Staff                                            | 7 (77.8)                               | 2 (22.2)                    | 0 (0.0)                       |             |
| When I am busy, I do not worry at all            |                                        |                             |                               |             |
| Gender                                           |                                        |                             |                               |             |
| Female                                           | 16 (48.5)                              | 7 (21.2)                    | 10 (30.3)                     | 0.0795      |
| Male                                             | 2 (20.0)                               | 1 (10.0)                    | 7 (70.0)                      |             |
| Race/Ethnicity                                   |                                        |                             |                               |             |
| African/American (Black)                         | 5 (27.8)                               | 5 (27.8)                    | 8 (44.4)                      | 0.4532      |
| European American (White or Caucasian)          | 11 (52.4)                              | 3 (14.3)                    | 7 (33.3)                      |             |
| All other races and ethnicity                    | 2 (50.0)                               | 0 (0.0)                     | 2 (50.0)                      |             |
| Faculty/staff                                    |                                        |                             |                               |             |
| Faculty                                          | 14 (41.2)                              | 6 (17.6)                    | 14 (41.2)                     | 0.9008      |
| Staff                                            | 4 (44.4)                               | 2 (22.2)                    | 3 (33.3)                      |             |
| When I am alone, I worry all the time            |                                        |                             |                               |             |
| Gender                                           |                                        |                             |                               |             |
| Female                                           | 25 (75.8)                              | 8 (24.2)                    |                                | 0.7809      |
| Male                                             | 8 (80.0)                               | 2 (20.0)                    |                                |             |
| Variables                               | Not at all or rarely typical of me [1] | Somewhat typical of me [1] | Often or very typical of me [1] | P-value [2] |
|----------------------------------------|----------------------------------------|-----------------------------|---------------------------------|-------------|
| Race/Ethnicity                         |                                        |                             |                                 |             |
| African/American (Black)               | 14 (77.8)                              | 4 (22.2)                    |                                 | 0.4595      |
| European American (White or Caucasian) | 15 (71.4)                              | 6 (28.6)                    |                                 |             |
| All other races and ethnicity          | 4 (100.0)                              | 0 (0.0)                     |                                 |             |
| Faculty/staff                          |                                        |                             |                                 |             |
| Faculty                                | 27 (79.4)                              | 7 (20.6)                    |                                 | 0.4209      |
| Staff                                   | 6 (66.7)                               | 3 (33.3)                    |                                 |             |
| Gender                                 |                                        |                             |                                 |             |
| Female                                 | 23 (69.7)                              | 5 (15.2)                    | 5 (15.2)                        | 0.2349      |
| Male                                    | 4 (40.0)                               | 3 (30.0)                    | 3 (30.0)                        |             |
| Race/Ethnicity                         |                                        |                             |                                 |             |
| African/American (Black)               | 13 (72.2)                              | 1 (5.6)                     | 4 (22.2)                        | 0.3495      |
| European American (White or Caucasian) | 11 (52.4)                              | 6 (28.6)                    | 4 (19.0)                        |             |
| All other races and ethnicity          | 3 (75.0)                               | 1 (25.0)                    | 0 (0.0)                         |             |
| Faculty/staff                          |                                        |                             |                                 |             |
| Faculty                                | 19 (55.9)                              | 7 (20.6)                    | 8 (23.5)                        | 0.1576      |
| Staff                                   | 8 (88.9)                               | 1 (11.1)                    | 0 (0.0)                         |             |
| Worrying is a part of me               |                                        |                             |                                 |             |
| Gender                                 |                                        |                             |                                 |             |
| Female                                 | 18 (54.5)                              | 9 (27.3)                    | 6 (18.2)                        | 0.8989      |
| Male                                    | 6 (60.0)                               | 2 (20.0)                    | 2 (20.0)                        |             |
| Race/Ethnicity                         |                                        |                             |                                 |             |
| African/American (Black)               | 11 (61.1)                              | 3 (16.7)                    | 4 (22.2)                        | 0.5974      |
| European American (White or Caucasian) | 12 (57.1)                              | 6 (28.6)                    | 3 (14.3)                        |             |
| All other races and ethnicity          | 1 (25.0)                               | 2 (50.0)                    | 1 (25.0)                        |             |
| Faculty/staff                          |                                        |                             |                                 |             |
| Faculty                                | 19 (55.9)                              | 7 (20.6)                    | 8 (23.5)                        | 0.1572      |
| Staff                                   | 5 (55.6)                               | 4 (44.4)                    | 0 (0.0)                         |             |
| I worry about unfinished tasks all the time |                                        |                             |                                 |             |
| Gender                                 |                                        |                             |                                 |             |
| Female                                 | 12 (36.4)                              | 15 (45.5)                   | 6 (18.2)                        | 0.8282      |
| Male                                    | 4 (40.0)                               | 5 (50.0)                    | 1 (10.0)                        |             |
| Race/Ethnicity                         |                                        |                             |                                 |             |
| African/American (Black)               | 9 (50.0)                               | 8 (44.4)                    | 1 (5.6)                         | 0.2551      |
| European American (White or Caucasian) | 7 (33.3)                               | 9 (42.9)                    | 5 (23.8)                        |             |
| All other races and ethnicity          | 0 (0.0)                                | 3 (75.0)                    | 1 (25.0)                        |             |
| Faculty/staff                          |                                        |                             |                                 |             |
| Faculty                                | 13 (38.2)                              | 15 (44.1)                   | 6 (17.6)                        | 0.8054      |
| Staff                                   | 3 (33.3)                               | 5 (55.6)                    | 1 (11.1)                        |             |
| When out of time, I tend to worry on how I will be able to finish it |                                        |                             |                                 |             |
| Gender                                 |                                        |                             |                                 |             |
| Female                                 | 13 (39.4)                              | 14 (42.4)                   | 6 (18.2)                        | 0.0428      |
| Male                                    | 7 (70.0)                               | 0 (0.0)                     | 3 (30.0)                        |             |
| Race/Ethnicity                         |                                        |                             |                                 |             |
| African/American (Black)               | 10 (55.6)                              | 6 (33.3)                    | 2 (11.1)                        | 0.6090      |
| European American (White or Caucasian) | 9 (42.9)                               | 6 (28.6)                    | 6 (28.6)                        |             |
who would otherwise provide psychological and other
support to sick relatives. This has resulted in loneliness
and necessity for applicable coping mechanisms. With or
without COVID, people have sought strategies to lessen
the burden imposed on them by the pandemic. As reported
elsewhere, [9] social support through family relations and
utilizing social media have been reported to be helpful
coping mechanisms. This finding has been confirmed in
the current study.

Investigating coping mechanisms related to this pan-
demic is a pragmatic and necessary public health effort
because emotional response to “disease risk such as
worry or anxiety,” according to [14] impact information
and health-seeking behaviors. Individuals with poor cop-
ing mechanisms who worry suffer in solitude resulting
from COVID isolation sanctions may suffer from poorer
health because of the effects of worrying and being anx-
ious about the disease. Students of minority racial groups
tend to already have many other stressors (such as full-
time employment) while attending college; and the onset
of COVID has made college attendance more tenuous for
some students who may temporarily withdraw from attend-
ing college if not dropping out altogether.

In conclusion, some of the findings in the current study
reinforce some of the challenges faced by minority stu-
dents, many of whom attend minority-serving institutions,
such as Historically Black Colleges. In addition to the
other problems they face, COVID-19 pandemic has exac-
erbated such problems. Findings from the current study
will shed light on COVID-related coping mechanisms and

| Variables [N=43] | Not at all or rarely typical of me [1] | Somewhat typical of me [1] | Often or very typical of me [1] | P-value [2] |
|------------------|----------------------------------------|---------------------------|-------------------------------|------------|
| All other races and ethnicity Faculty/staff | 1 (25.0) | 2 (50.0) | 1 (25.0) | |
| Faculty | 17 (50.0) | 9 (26.5) | 8 (23.5) | 0.2468 |
| Staff | 3 (33.3) | 5 (55.6) | 1 (11.1) | |
| I think worrying is a waste of time Gender | |
| Female | 15 (45.5) | 12 (36.4) | 6 (18.2) | 0.1117 |
| Male | 2 (20.0) | 3 (30.0) | 5 (50.0) | |
| Race/Ethnicity | |
| African/American (Black) | 8 (44.4) | 6 (33.3) | 4 (22.2) | 0.9431 |
| European American (White or Caucasian) | 7 (33.3) | 8 (38.1) | 6 (28.6) | |
| All other races and ethnicity Faculty/staff | 2 (50.0) | 1 (25.0) | 1 (25.0) | |
| Faculty | 12 (35.3) | 12 (35.3) | 10 (29.4) | 0.4320 |
| Staff | 5 (55.6) | 3 (33.3) | 1 (11.1) | |

[1] Frequency (percent)
[2] P-value from Chi-square test

| Coping strategies | Students [N=209] | Faculty [N=34] | Staff [N=9] |
|-------------------|-----------------|---------------|------------|
| Interactions with friends/family | 189 (90.4) | 34 (100.0) | 9 (100.0) |
| Utilization of Social Media Platforms | 134 (64.1) | 21 (61.8) | 6 (66.7) |
| Engagement in Mindfulness/Meditation/Spirituality | 113 (54.1) | 29 (85.3) | 8 (88.9) |
| Consultation with a mental Health professional (Psychologist, Counselor, Psychiatrist) | 48 (23.0) | 6 (17.6) | 3 (33.3) |
| Increased avoidance of public spaces/transportation | 79 (37.8) | 27 (79.4) | 4 (44.4) |
| Use of drugs and/or alcohol | 30 (14.4) | 5 (14.7) | 1 (11.1) |
| Increased emphasis on hand hygiene/cleaning | 136 (65.1) | 29 (85.3) | 6 (66.7) |
| Other | 23 (11.0) | 6 (17.6) | 2 (22.2) |

[1] Frequency (percent)
can guide students’ counselling and other efforts such as faculty advisement to improve students’ resilience to stay in college and complete their studies.

Limitations

At the time of this study, most classes at the University were still offered virtually because of COVID-19 restrictions and the University’s desire to keep staff and students safe. As a

### Table 8  Ranked coping strategies by frequency of use among all respondents

| Coping strategies and ranking | Students [N = 209] | Faculty [N = 34] | Staff [N = 9] |
|------------------------------|-------------------|-----------------|--------------|
| Interactions with friends/family |                  |                 |              |
| 1                            | 94 (45.0)         | 11 (32.4)       | 4 (44.4)     |
| 2                            | 52 (24.9)         | 8 (23.5)        | 3 (33.3)     |
| 3                            | 19 (9.1)          | 7 (20.6)        | 2 (22.2)     |
| 4                            | 14 (6.7)          | 4 (11.8)        | 0 (0.0)      |
| Utilization of Social Media Platforms |         |                 |              |
| 1                            | 30 (14.4)         | 1 (2.9)         | 1 (11.1)     |
| 2                            | 37 (17.7)         | 2 (5.9)         | 0 (0.0)      |
| 3                            | 30 (14.4)         | 4 (11.8)        | 1 (11.1)     |
| 4                            | 23 (11.0)         | 7 (20.6)        | 3 (33.3)     |
| Engagement in Mindfulness/Meditation/Spirituality |         |                 |              |
| 1                            | 20 (9.6)          | 11 (32.4)       | 2 (22.2)     |
| 2                            | 39 (18.7)         | 5 (14.7)        | 4 (44.4)     |
| 3                            | 27 (12.9)         | 2 (5.9)         | 1 (11.1)     |
| 4                            | 14 (6.7)          | 7 (20.6)        | 1 (11.1)     |
| Consultation with a mental Health professional (Psychologist, Counselor, Psychiatrist) |         |                 |              |
| 1                            | 7 (3.3)           | 0 (0.0)         | 0 (0.0)      |
| 2                            | 6 (2.9)           | 2 (5.9)         | 0 (0.0)      |
| 3                            | 15 (7.2)          | 1 (2.9)         | 0 (0.0)      |
| 4                            | 7 (3.3)           | 0 (0.0)         | 1 (11.1)     |
| Increased avoidance of public spaces / transportation |         |                 |              |
| 1                            | 14 (6.7)          | 4 (11.8)        | 1 (11.1)     |
| 2                            | 18 (8.6)          | 9 (26.5)        | 0 (0.0)      |
| 3                            | 19 (9.1)          | 9 (26.5)        | 1 (11.1)     |
| 4                            | 16 (7.7)          | 2 (5.9)         | 2 (22.2)     |
| Use of drugs and/or alcohol |                   |                 |              |
| 1                            | 4 (1.9)           | 1 (2.9)         | 0 (0.0)      |
| 2                            | 4 (1.9)           | 0 (0.0)         | 0 (0.0)      |
| 3                            | 6 (2.9)           | 1 (2.9)         | 1 (11.1)     |
| 4                            | 7 (3.3)           | 0 (0.0)         | 0 (0.0)      |
| Increased emphasis on hand hygiene / cleaning |         |                 |              |
| 1                            | 38 (18.2)         | 4 (11.8)        | 0 (0.0)      |
| 2                            | 26 (12.4)         | 7 (20.6)        | 2 (22.2)     |
| 3                            | 35 (16.7)         | 8 (23.5)        | 2 (22.2)     |
| 4                            | 24 (11.5)         | 8 (23.5)        | 0 (0.0)      |
| Other |                   |                 |              |
| 1                            | 7 (3.3)           | 2 (5.9)         | 1 (11.1)     |
| 2                            | 6 (2.9)           | 1 (2.9)         | 0 (0.0)      |
| 3                            | 1 (0.5)           | 1 (2.9)         | 0 (0.0)      |
| 4                            | 2 (1.0)           | 0 (0.0)         | 0 (0.0)      |

[1] Frequency (percent)
result, data were collected through an online survey. Low response rates, which affect the generalizability of study findings are a known limitation of online surveys [15]. Secondly, although the sample included students from different concentrations within the College of Health Sciences (nursing, public health, cardio-respiratory etc.) and classifications (undergraduate and graduates), our convenience sample cannot be considered truly representative of the entire study body. Confirmatory studies of this study’s initial findings would need to use more robust designs. Finally, this study was a cross-sectional study, and the findings are not causal. Nonetheless, they provide exploratory data on an important topic, whose full effects are still being assessed in the United States and around the world.

Future Research

The Coronavirus continues to mutate into different variants—some of them more contagious than others. As lab-based scientists continue to unravel the mystery about this virus and the pharmaceutical industry work arduously to find a “permanent” cure for COVID-affected individuals, behavioral lifestyles as partial antidote will continue to be critical until that final cure is attained. This represents the proverbial confluence or overlap, between public health practice (prevention) and clinical medicine. Crowding in college campuses will continue to pose a challenge for college administrators as they seek to protect the health of students, faculty and staff members. Future research may focus on whether or not coping mechanisms for students in their more familiar environments (such as home) are the same and have the same impact while on college campuses.

Author Contributions Dr. RB helped to conceptualize the study and revised the manuscript. Dr. MK contributed to the study’s conceptualization and produced the first draft of the manuscript. Dr. JG conducted the data analysis and also revised the manuscript. Dr. ER helped to conceptualize the student and contributed to the development of the study instruments. Ms. BC and Mr. TT collected the data.

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Ethical Approval The study received ethics approval by the Institutional Review Board of Tennessee State University—Ethical approval number: HS2022-4757.

Consent to Participate A statement was included in the survey that gave study participants the opportunity to decline participation if they so choose.

Consent for Publication N/A.

References

1. Plašilová, L., Hála, M., Krejčová, L., & Klapirová, K. (2021). The COVID-19 pandemic and intimate partner violence against women in the Czech Republic: Incidence and associated factors. International Journal of Environmental Research and Public Health, 18(19), 10502. https://doi.org/10.3390/ijerph181910502
2. Chan, L. Y., Yuan, B., & Convertino, M. (2021). Covid-19 non-pharmaceutical intervention portfolio effectiveness and risk communication predominance. Scientific Reports. https://doi.org/10.1038/s41598-021-88309-1
3. Arachchilage, K. H., & Hussaini, M. Y. (2021). Ranking non-pharmaceutical interventions against covid-19 global pandemic using global sensitivity analysis—Effect on number of deaths. Chaos, Solitons & Fractals, 152, 111458. https://doi.org/10.1016/j.chaos.2021.111458
4. Czeisler, M. É., Lane, R. I., Petrosky, E., Wiley, J. F., Christensen, A., Njai, R., Weaver, M. D., Robbins, R., Facer-Childs, E. R., Barger, L. K., Czeisler, C. A., Howard, M. E., & Rajaratnam, S. M. W. (2020). Mental health, substance use, and suicidal ideation during the COVID-19 pandemic—United States, June 24–30, 2020. MMWR: Morbidity and Mortality Weekly Report, 69(32), 1049–1057. https://doi.org/10.15585/mmwr.mm7013e2
5. Vahratian, A., Blumberg, S. J., Terlizzi, E. P., & Schiller, J. S. (2021). Symptoms of anxiety or depressive disorder and use of mental health care among adults during the COVID-19 pandemic—United States, August 2020–February 2021. MMWR: Morbidity and Mortality Weekly Report, 70(13), 490–494. https://doi.org/10.15585/mmwr.mm7013e2
6. Center on Budget and Policy Priorities. (2021, November 10). Tracking the COVID-19 economy's effects on food, housing, and employment hardships. Retrieved from https://www.cbpp.org/research/poverty-and-inequality/tracking-the-covid-19-econo-mys-effects-on-food-housing-and
7. Dalton, J. E., Gunzler, D. D., Jain, V., Perzynski, A. T., Dawson, N. V., Einstadtner, D., Tarabichi, Y., Imrey, P. B., Lewis, M., Kattan, M. W., Yao, J., Taksler, G., Berg, K. A., Krieger, N. L., Kaelber, D., Jehi, L., & Kalra, A. (2021). Mechanisms of socioeconomic differences in COVID-19 screening and Hospitalization. PLoS ONE. https://doi.org/10.1371/journal.pone.0255345
8. Magesh, S., John, D., Li, W. T., Li, Y., Mattingly-app, A., Jain, S., Chang, E. Y., & Ongkeko, W. M. (2021). Disparities in COVID-19 outcomes by race, ethnicity, and socioeconomic status. JAMA Network Open. https://doi.org/10.1001/jamanetworkopen.2021.34147
9. Al Miskry, A. S., Hamid, A. A., & Darweesh, A. H. (2021). The impact of covid-19 pandemic on university faculty, staff, and students and coping strategies used during the lockdown in the United Arab Emirates. Frontiers in Psychology. https://doi.org/10.3389/fpsyg.2021.682757
10. Goldberg, D. P., & Williams, P. (1991). A user’s guide to the General Health Questionnaire. Nfer-Nelson.
11. Meyer, T. J., Miller, M. L., Metzger, R. L., & Borkovec, T. D. (1990). Development and validation of the Penn State Worry
Questionnaire. *Behaviour Research and Therapy*, 28(6), 487–495. https://doi.org/10.1016/0005-7967(90)90135-6

12. Wuthrich, V. M., Johnco, C., & Knight, A. (2014). Comparison of the Penn State Worry Questionnaire (PSWQ) and abbreviated version (PSWQ-A) in a clinical and non-clinical population of older adults. *Journal of Anxiety Disorders*, 28(7), 657–663. https://doi.org/10.1016/j.janxdis.2014.07.005

13. Endler, N. S., & Parker, J. D. (1994). *Coping inventory for stressful situations (CISS): Manual*. Multi Health System.

14. Liu, P. L. (2020). COVID-19 information seeking on digital media and preventive behaviors: The mediation role of worry. *Cyberpsychology, Behavior, and Social Networking*, 23(10), 677–682. https://doi.org/10.1089/cyber.2020.0250

15. Sivo, S. A., Saunders, C., Chang, Q., & Jiang, J. J. (2006). How low should you go? Low response rates and the validity of inference in is questionnaire research. *Journal of the Association for Information Systems*, 7(6), 351–414.

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