

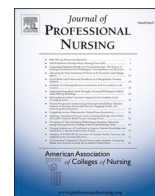


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Race, gender, and ethnicity differences of nursing students' experiences during the COVID-19 pandemic

Thomas Kippenbrock, EdD, RN^{*}, Jan Emory, PhD, RN

University of Arkansas, Eleanor Mann School of Nursing, 606 North Razorback Road, Fayetteville, AR, United States of America

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ABSTRACT

Background: The coronavirus disease caused physical, mental, and social stress to humans; however, the human impact was not balanced and proportionately distributed to all people; especially nurses. This study explored nursing students' lives affected by the pandemic.

Purpose: The purpose of this study was to investigate the effects of COVID-19 and the pandemic on students' experiences across different races, genders, and ethnicities.

Method: This cross-sectional study sought to investigate significant differences in reported experiences of nursing students during the COVID-19 pandemic based upon race, gender, and ethnicity classifications. A survey was developed to collect the data.

Results: A national sample of 616 student responses was analyzed. Significant differences were found in the pairwise comparisons. The differences found among the diverse student classifications revealed variations in survey responses to classes moved to on-line, interactions with peers, COVID-19 testing, fear/anxiety, and test performance.

Conclusion: The research adds knowledge about nursing students' experiences during the pandemic; especially unrepresented students from diverse backgrounds. The findings from this study suggested nursing students reacted differently based on race, ethnicity, and gender.

Introduction

The COVID-19 pandemic affected many aspects of daily life. However, the impact manifested differently for each individual requiring unique adaptation. Adaptation is essential for continuation of life. Humans develop coping mechanisms and stress reduction strategies when stressors occur. They adapt to the changing environment caused by the stressors. The coronavirus disease started in 2019 causing physical, mental, and social stress to humans; however, the human impact was not balanced and proportionately distributed for all demographics (Karmakar et al., 2021). The COVID-19 pandemic has brought attention to the social and racial injustices of the public health delivery system. These inequities were displayed in health, workforce, and educational outcomes (CDC, 2021a; OECD, 2020).

The implications of the COVID-19 pandemic on health inequalities were well documented in the United States (US). The Centers of Disease Control and Prevention (CDC) (2021a) reported race and ethnicity disparities for cases, hospitalizations, and deaths. This government agency indicated that Blacks or African American were more likely impacted

than Whites for the number of cases (1.1×), hospitalizations (2.8×), and deaths (2.0×). For other races, American Indian/Alaskan Native people were 1.7×, 3.4×, and 2.4×; Asian were 0.7×, 1.0×, and 1.0×; and Hispanic were 1.9×, 2.8× and 2.3× compared to White for the above listed risk markers. Furthermore, CDC (2021b) acknowledged several inequities in the social determinants of health that resulted in higher mortality and morbidity for underrepresented minority groups affected by COVID-19. These inequity factors were discrimination, lack of healthcare access, wealth gaps, occupation, and education/income/wealth gaps.

Educational inequalities occurred during the pandemic as well. The Organization for Economic Co-operation and Development (OECD, 2020) stated the pandemic affected all people; however, students from privileged families had better educational outcomes as compared to disadvantaged students. The OECD declared the disease resulted in educational system insufficiencies and inequities. Factors such as internet access, computer availability, and pedagogy development varied tremendously around the globe. Also, the organization identified that higher education was harshly affected by the pandemic. Some of the

^{*} Corresponding author.

E-mail addresses: tkippen@uark.edu (T. Kippenbrock), demory@uark.edu (J. Emory).

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examples were campuses closures and student lockdowns.

Background

Health care workers, nurses, and students during the pandemic

The effects of the virus caused unequal outcomes on workers. Occupational analysis revealed the workers in certain races were disproportionately affected by COVID-19. Mutambudzi et al. (2021) investigated job-related groupings for severe COVID-19 risk. The data sources were a United Kingdom biodata base and Public Health England, an executive agency of the Department of Health and Social Care. Of the 120,000 plus workers, 271 were listed with severe COVID-19. Associations between job related groups and COVID-19 findings were analyzed. The essential workers group, consisting of healthcare, social services, and education, had a higher risk of severe COVID-19 outcomes compared to non-essential workers. Analysis of race revealed non-White non-essential and non-White essential workers had a higher risk of COVID-19 outcomes when compared to White workers.

Using preexisting US occupational data, Zhang (2021) conducted a retrospective study to determine the differential risk of COVID-19 by disciplines. The database source was the Occupational Information Network (O*NET). The researcher found healthcare practitioners and technicians had the highest disease exposure of the 22 discipline groups analyzed. The exposure risk regression model found disease exposure and physical proximity predicted 47.5 % of the variance of case prevalence by occupation. The results of the model predicted the riskiest occupations were in the dental field followed by nursing being the second highest riskiest occupation.

Spencer and Jewell (2021, April 8) reported >3600 known U.S. healthcare worker COVID-19 died during the first year of the Covid infection. Nurses were the largest percentage of accounted deaths by discipline, followed by support staff. A death race analysis of the workers by percentage revealed the following: Whites (36 %), Black or African American (26 %), Asian/Pacific Islander (21 %), Hispanic (15 %), and Native Americans (2 %); however, no data about the nurses' demographics were given.

Nurse specific COVID-19 mortality records are very sparse and ominously under recorded. The International Council of Nurses (2021) reported 2262 deaths in nurses from 59 nations since the pandemic started. The western hemisphere accounted for >60 % of the nurse deaths in the ICN dataset. Brazil, US, and Mexico reported the highest number of reported COVID-19 nurse deaths. No race or ethnicity data were provided about the nurses.

England and Wales were the only countries that provided demographic data about the nurses. The Nursing Times reported >150 nurse deaths from March 9 to December 28, 2020. Approximately one third were men and two thirds were women. For male nurses, the mortality rate was reported as 79.1 deaths per 100,000 males; for female nurses, 24.5 deaths per 100,000. In the general working population, the death rate for men was 31.4 deaths per 100,000 men, and for women it was 16.8 deaths per 100,000 women. No race or ethnicity data were provided about the nurses (Mitchell, 2021).

The US Department of Education [DOE] (2021) reported that the pandemic affected students of color in disproportional ways. For example, the DOE that identified students of color did not have access to technologies affecting access to the virtual classroom. For college students, the Department noted that admissions and matriculation rates for students of color were diminished during the pandemic.

The American College Health Association (2020) reported survey findings about students' experiences during the COVID-19 pandemic from 14 US colleges or universities. Regarding discrimination, 41 % of students acknowledged witnessing race-based discrimination either in person or online and 5.5 % experienced discriminatory or hostile behavior because of their race or ethnicity during the pandemic. Other pandemic related findings were 86 % reported concerns about their

personal safety and security, 64 % reported being very or extremely concerned about people they care about contracting COVID-19, 66 % of college students experienced greater financial stress, and 35 % reported a change in their living situation because of the pandemic. Furthermore, college students reported more depression, lesser ability to access mental health care services, and lower academic performance.

There were no research studies found about race, gender, and ethnicity analysis of nursing students during the pandemic. This study seems to be the first to investigate the impact of the pandemic based upon race, gender, and ethnicity. Discoveries of the effects of the pandemic based upon race, gender and ethnicity will provide greater understanding and meaning to this phenomenon in nursing students. These discoveries are categorized into personal, academic, and work life experiences. The selection of the three categories of variables was influenced by the results of the pandemic that changes every aspect of nursing students' lives.

Data on race, gender, and ethnicity variables were collected from a survey that was distributed in a previously published work focusing on regional comparisons of student responses in the categories of personal, academic and work life experiences (Emory et al., 2021). While the sample populations are similar the outcomes measured and reported in this work are significantly different.

Purpose

The purpose of this study was to investigate the effects of COVID-19 and the pandemic on students' experiences across different races, genders, and ethnicities. Group comparisons were made between six categories of race, four categories of gender, and two categories of ethnicity for any significant differences in reported experiences. The three categories of variables queried were personal, academic, and work life experiences.

Method

Design, sample, and instrumentation

A cross-sectional design was used in this study. The investigators sought to investigate significant differences in reported experiences of nursing students based upon diversity classifications during the COVID-19 pandemic. Race, gender, and ethnic groups were compared in three categories of variables that included personal, academic, and work lives of nursing students enrolled in courses during the pandemic.

The researchers contacted approximately 50 academic nursing program administrators from across the US by phone and/or email asking for participation during Fall 2020. The convenience sampling design goal was to obtain a wide variety of nursing students based on Carnegie classification (doctorate-granting universities, master's colleges and universities, and baccalaureate colleges), institutional type (public and private), geographic location (East, Midwest, South, and West), and nursing programs offered (baccalaureate & graduate). The inclusion criterion was all currently enrolled baccalaureate and graduate nursing students. Exclusion criterion was non-enrollment in the program during the data collection phase. The data were collected between September and December 2020. The sampling design was a sample.

The Institutional Review Board at each nursing program's university approved this study. All participating schools provided consent or internal research review approvals. Before the survey was deployed, the link opened to a cover page explaining the purpose of the study, the voluntary participation, and implied consent statements if the student answered the survey. All responses were made anonymous to the researchers through the options available in Qualtrics©. The demographics collected could not identify student participants and their school affiliations.

Instrumentation

The survey development was guided by published reports using surveys with samples of students in higher education and majoring in health care (Aristovnik et al., 2020; Khalil et al., 2020; Ramos-Morcillo et al., 2020). Surveys were combined and additional items added from qualitative studies investigating the pandemic and nursing students (Aslan & Pekince, 2020; Christopher et al., 2020; Savitsky et al., 2020). The survey was reviewed by students and faculty. Feedback received from students and faculty resulted in modification of the survey demographics to eliminate bias in the diversity categories of gender. Two additional survey items were edited for clarity. The final survey was placed in the Qualtrics® platform for anonymous distribution by participating schools.

The final survey used for data collection consisted of 67 items with a mix of dichotomous, multiple choice, rating scale, and one open-ended question to capture the nursing students' COVID-19 experiences in the three categories of variables. Seven items collected demographic information. One of the seven items asked students to identify their race using the categories of White, Black or African American, American Indian or Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander, or Other with a textbox allowing for perceived race to be entered. An additional question asked students to categorize their ethnicity as either Hispanic, Latino or Spanish Origin or Non-Hispanic, Latino or Spanish Origin. Gender designation was determined by the categories of male, female, nonbinary (neither, both or something else), or prefer not to answer.

The survey asked students for responses that included binary (yes/no), ranked (1–5 scale; 1 = low or no to 5 = high), categorical such as race, and ordinal data measuring fear/anxiety, impact, and satisfaction. The survey items were categorized by content into three distinct areas of academic (30 items), personal (16 items), and work experiences (14 items).

Data collection

The nursing programs required varying levels of approval for the survey distribution. Depending upon the policies of the institution, the processes for approval were followed for each participating school. Most nursing programs participating offer a variety of degree seeking programs including prelicensure, degree completion, and graduate. The researchers requested all nursing students enrolled in the program be eligible to participate in the study. The survey link was provided to the schools' administrator. Consequently, the administrator contacted students by way of their email addresses. The researchers were not provided the email list of students by the participating schools nor were the student participation numbers sent the survey disclosed to the researchers.

Data analysis

The functions available in the StatIQ application in the Qualtrics® Experience Management platform were used for the data analysis. Analysis was completed comparing categories of race, gender, and ethnicity. Central tendencies were calculated for the demographic variables to describe the sample. The Chi-square test for independence was employed to analyze the ordinal and categorical variables for significant differences in the various categories for race, gender, and ethnicity. One-way analysis of variance was utilized for mean comparisons for individual survey items when appropriate. Cramer's V or Welch's F was calculated for effect size. Alpha was established at the traditional 0.05 level.

Results

Demographics of the aggregate

The convenience sample included 616 students located across the US. The largest percentage of students sampled represented the White category 79.7 %, (491) followed by Asian 7.3 %, (45), Black or African American 6.3 %, (39), American Indian or Alaskan Native 2.1 %, (13), Native Hawaiian or Other Pacific Islander 0.3 %, (2) and other 4.2 % (26). The largest gender representation was female 91.2 % (561) with male being 7.8 %, (55). Hispanic, Latino or Spanish origin was reported by 7.5 % (45) of nursing students.

The students reported their respective school of nursing as private (52 %) or public (38 %) institutions of higher learning. Ten percent of the students selected “not sure” for type of academic institution where they were enrolled. Black or African American (76.3 %) and American Indian or Native Alaskan students (84.6 %) reported a higher percentage of enrollment in public institutions compared to White (59.2 %) and Asian (52.3 %). When students were asked to identify the nursing program type in which they were currently enrolled, males (8.5 %) were enrolled in PhD programs in higher numbers than females (1.2 %).

The sample represented of program types preparing nurses for a variety of roles within the profession. Table 1 provides a list of program types and the representation in the sample.

Pairwise comparisons

Significant differences were found in the pairwise group comparisons considering the categories of variables for race, gender, and ethnicity. These differences are described and organized according to the category of variables (academic environment, personal, and work environments) included in the survey.

Academic environment

The majority of students (61 %) reported the pandemic had caused them to avoid the campus of their respective institutions. The Chi-Square analysis revealed Black or African American students (42.1 %) were on campus at the lowest percentage while Asian students reported the higher percentages for avoiding campus (77.3 %) when compared to the other race categories as shown in Table 2.

Students were asked to select statements that applied to their respective classroom teaching experience. Prior to the pandemic, 73.7 % of Black or African American students had primarily online courses compared to 40 % of their White, American Indian or Alaskan Islander, and Asia peers. Native Hawaiian or Other Pacific Islanders reported online only teaching of didactic courses at 100 % ($X^2(10) = 29.1; p = 0.001$). A little over 1/3 (38.5 %) of Black or African American students selected the statement “classes normally taught in person moved to a distance learning format using online resources, either self-paced or in real time”. The response from this race category was found to be significantly different from others as shown in Table 2. Further analysis

Table 1
Distribution of nursing programs represented in the sample.

Type	n	%
Traditional BSN	267	43.3
LPN to BSN	43	7.0
Associate Degree	3	0.5
RN to BSN degree completion	68	11.0
Accelerated BSN/Second degree	75	12.2
MSN program (non-licensed)	6	1.0
DNP	40	6.5
MSN program (licensed)	94	15.3
PhD	11	1.8
Other	9	1.5

Table 2
Significant differences between race category responses.

Category of experience	Selected statement		White/ Caucasian	Asian	Black or African American	Other	American Indian or Alaskan Native	Native Hawaiian or Other Pacific Islander	Chi-square tests of independence	ANOVA Cohen's <i>f</i> Sample
Academic	Pandemic caused avoiding campus	%	60.7	77.3	42.1	69.2	61.5	50	$X^2(5) = 11.5$ $p = 0.04$ $\Phi = 0.14$ $n = 612$	
	Impact of COVID-19 on clinical learning	M	3.82	3.97	2.32	3.2	3.44	1.0		$p = 0.00$ $f^2 = 0.24$ $n = 390$
	Primary method of teaching before pandemic was online	%	39.6	27.3	73.7	38.5	23.1	100	$X^2(10) = 29.1$ $p = 0.00$ $\Phi = 0.15$ $n = 610$	
	Instruction changed significantly	%	68.5	86.4	62.2	61.5	69.2	0	$X^2(5) = 12.2$ $p = 0.03$ $\Phi = 0.14$ $n = 607$	
	Changes in learning will affect my academic performance	M	2.64	1.97	3.14	2.69	3.50	5.0		$p = 0.04$ $f^2 = 0.17$ $n = 443$
Personal	Fear of personally dying from COVID-19.	M	2.21	3.44	3.47	2.57	2.73	2.50		$p = 0.00$ $f^2 = 0.32$ $n = 526$
	The response to COVID-19 has been influenced by political agendas	%	66.2	55.6	51.3	61.5	84.6	100		
	Fear of being hospitalized	%	15.9	42.9	29.6	30.4	9.1	0	$X^2(20) = 52.8$ $p = 0.00$ $\Phi = 0.16$ $n = 508$	
	Fear/anxiety of quarantine	M	2.49	3.06	2.89	2.0	1.44	1.0		$p = 0.00$ $f^2 = 0.18$ $n = 497$

revealed that 52.3 % of Black or African American students also selected the statement “no significant change in classroom delivery since the program was offered online”. This finding could explain the smaller percentage of students experiencing change in classes moving to a distance format. Most Black or African American students were already enrolled in online programs. The majority of students in each race category, except those in the Native Hawaiian or Other Pacific Islander category, indicated that the method of instruction had changed significantly since the spring 2020 semester. Asian students (86.4 %) indicated a significant change in method of instruction.

Clinical practicum

Clinical practicum experiences were also found to be significantly different between racial groups. Three hundred ninety students responded to the clinical practicum experience question asking if their quality of learning was impacted by a transition to online learning. All non-White race categories reported lower levels of impact to clinical quality of learning when compared to the White race ($X^2(20) = 41.3$; $p = 0.003$). Black or African American (42.1 %) students reported no impact at a much higher percentage than their White (19.2 %) or Asian (6.9 %) peers ($X^2(20) = 41.3$; $p = 0.003$).

Students were asked to indicate their level of agreement with the statement, “The changes in learning that have occurred because of the pandemic will affect my success on licensure and certification exams”. Fifty-eight percent of students selected “strongly agree” or “agree”. Similar results were found for agreement with the statement “The changes in learning that have occurred because of the pandemic will affect the quality of patient care” with >53 % selecting “strongly agree”

or “agree”. Asian students overall felt strongly (54.8 %) that their academic performance on tests in courses would be impacted because of the changes in learning that occurred because of the pandemic. When compared to their counterparts, the difference was significant ($X^2(20) = 38.3$; $p = 0.008$). The change in educational learning was also found to be significantly different in communications among classmates. Black or African American (50 %) and Native Hawaiian or Other Pacific Islander (100 %) students reported “no impact” at a significantly different rate than White (16.6 %) students ($X^2(20) = 33.6$; $p = 0.03$).

Students were asked about their satisfaction with their schools' support services such as tutoring and writing assistance. Satisfaction with mental health services, housing, and advising were consistently split between being satisfied/dissatisfied. For example, the level of satisfaction for mental health services was split with 42 % selecting satisfied or very satisfied and 40 % selecting dissatisfied or very dissatisfied.

In another set of questions, students were asked about their satisfaction with the school's COVID-19 testing and monitoring services since the onset of the pandemic. Asian students reported high levels of dissatisfaction when compared to the other race categories ($X^2(20) = 31.5$; $p < 0.05$). Students reported their satisfaction with online testing products, such as Proctor U®. Forty-one percent ($n = 169$) of students reported they were satisfied or very satisfied. Fifty-one percent ($n = 210$) reported they were dissatisfied or very dissatisfied.

Very few significant differences were found when comparing the gender categories and classroom and clinical variables. The exception was interactions with peers. Those students in the nonbinary category (100 %) indicated the highest level of impact (5) on peer interactions compared to their male, female and prefer not to answer peers as shown

in Table 3.

Work environments

Students responded to 24 survey items about their work lives during the pandemic. Over 62 % of students reported their employment as full-time, part-time, or PRN in a healthcare facility. When comparing race categories, most Asian (66.7 %) and White students (44 %) reported no experience as a licensed nurse more often than Black or African American (21.2 %), American Indian or Alaskan Native (22.1 %) or Native Hawaiian or Other Pacific Islander (0 %). Three hundred thirty-five students responded to the survey item asking if they were a licensed as an LPN, RN, or Advanced Practice Nurse. The majority of respondents were registered nurses. Black or African American students reported the largest percentage of advanced practice licensure at 65.5 %. Of those reported to have worked as a licensed nurse, American Indian or Alaskan Natives (44 %) had 5 to 10 years of experience.

Hispanic, Latino or Spanish Origin students experienced lower levels of furlough (13.3 %) at their respective jobs when compared to non-Hispanics (25.9 %). This could be due to the lower numbers of available health care workers in the different regions of the country. No other significant differences were found in the ethnicity group comparisons for responses on the survey.

Personal

Approximately 38 % in all race and ethnicity categories selected the highest levels of fear/anxiety for personal safety. Significant differences were found in levels of fear or anxiety related to personally dying from COVID-19 when considering race. Over 50 % of White students rated their level of fear at 1 (no fear) when compared to 8.8 % of Black or African American and 10.3 % of Asians ($X^2(20) = 65.5; p < 0.001$). Percentages of races rating their personal fear of dying from COVID-19 at 4 or 5 (greatest level of fear) was reported at 56.5 % of Asians, 55.9 % of Black or African American, 50 % of Hawaiian or Other Pacific Islanders, 36.4 % of American Indian or Alaskan Natives, and 23.3 % for Whites. Fear of hospitalization received similar responses with White students (63 %) more likely to rate at 1 or 2 compared to their Black or African American (41 %) and Asian (25.7 %) counterparts ($X^2(20) = 52.8; p < 0.001$) as shown in Table 2.

When asked about fear/anxiety related to safety of friends and family, Asian (60 %) and Black or African American (56 %) listed either 4 or 5 (highest fear/anxiety) compared White (30 %) and American Indian or Native American (18 %).

Students were asked to select statements from a list to reflect their personal beliefs about current events associated with the COVID-19 pandemic. Asian students (11.1 %) and Black or African American students (2.6 %) selected the statement “the response to the pandemic has been an overreaction creating unnecessary hardships” compared to the

White (24.8 %) and American Indian or Alaskan Native (53.8 %) races. This seems to be consistent with the White (46 %) selection of the statement “the response was not enough and more stringent policies should have been in place” which was significantly lower than Asian (80 %) and Black or African American (59 %) races.

When comparing gender categories, statements most often selected for best describing views about the response to COVID-19 were, “The long-term effects of the pandemic will be significant” (87 % overall) and “The response has been influenced and fueled by political agendas” (83.7 % overall). The statements selected least often for describing views about the response to COVID-19 were “The response has been an overreaction creating unnecessary hardships” (19.7 % overall) and “The response to COVID seems inconsistent with other serious infectious disease outbreaks” (55.6 % overall). Similar responses were found in the ethnic category responses where both Hispanic and non-Hispanics believe the long-term effects of the pandemic will be significant (76.5 %) and the response has been influenced and fueled by political agendas (70 %).

Students were asked to rate the impact of managing childcare on academic environments (classroom and clinical settings) since the onset of the pandemic. Seventy percent of all students rated the level of impact as “none” for both learning environments while 15 % rated the impact as “significant”. When asked to prioritize the most disruptive or difficult factor(s) affecting learning during the pandemic, students ranked childcare issues as the highest followed by financial hardship, fear/anxiety for safety of self, and fear/anxiety for safety of family. No significant differences were found in responses to the childcare items between racial categories.

In the gender comparisons, females (73 %) reported “no impact” when compared to their male peers (39.3 %) for managing childcare when traditional classroom settings were changed to distance/online learning. These findings could be the result of a number of factors such as age of the child(ren), policies of the school where child(ren) were attending during the pandemic, and status of childcare options as shown in Table 3.

Discussion

A major finding was fear/anxiety for the safety of family across all races, genders, and ethnicities. This factor was found to be the most disruptive or difficult affecting nursing student learning during the study period. Other findings were friends and family safety concerns, changes in teaching learning delivery, alternation in practicum learning, and more test taking anxiety since the onset of the pandemic. When comparing the groups represented in the student sample, for race, gender, and ethnicity, again differences were found with fear/anxiety. White students had the lowest fear for their safety compared to other races. In contrast, Blacks or African American and Asian students rated higher fear levels for their families and friend than Whites. Male nursing

Table 3
Significant relationships between Gender and COVID-19 experiences.

Area of experience	Question	Female	Male	Nonbinary	Prefer not to answer	Chi-square tests of independence	ANOVA Cohen's f Sample
Academic	Impact on interactions with classmates	57.6 % (5 = high)	51.8 % (5 = high)	100 % (5 = high)	33.3 % (5 = high)	$X^2(12) = 23.4$ $p = 0.02$ $\Phi = 0.14$ $n = 418$	
Personal	Fear/anxiety for safety of family.	$M = 2.49$	$M = 3.88$	$M = 1.67^a$	$M = 4.5^a$		$p = 0.00$ $f^2 = 0.28$ $n = 562$
	Impact on managing childcare from classroom to online learning	73 % (no impact)	39.3 % (no impact)	100 % (no impact)	0 % (no impact)	$X^2(12) = 27.9$ $p = 0.005$ $\Phi = 0.16$ $n = 352$	

^a Datapoints contained same values in this category and were excluded from analysis.

students had more fear for their family's safety than females. This finding could correlate with the increased numbers of Blacks or African American and Asians contracting COVID-19 when compared to their White counterparts (CDC, 2021a). Statistics provided early in the pandemic showed Blacks or African American to be impacted at much higher percentage than Whites (CDC, 2021b).

Other race differences in the students' responses were instructional methods. Asian students reported the most changes in method of instructions. Black or African American and Asian students indicated significant clinical practicum changes from pre-pandemic time period compared to the pandemic phase. Asian students strongly believed their academic test performances would be impacted and were less satisfied with COVID-19 testing and monitoring.

The American Council of Education reported only one quarter of all ACT test takers met the college readiness benchmark for all four subjects (English, mathematics, reading, and science); however, Asian students had the highest rates of 50 % in all four subjects. American Indian or Alaska Native (7 %), Black or African American (6 %), and White (33 %) students achieved lower benchmark scores (Taylor et al., 2020).

Black or African American and Asian nursing students' responses to fear of personally dying from COVID-19 and fear of being hospitalized were the highest scores among the race categories. A possible explanation was reported by the CDC (2022) that Black or African American rate ratios were 2.3× for death and 1.7× for hospitalization compared to White. These epidemiological data could explain Black or African American students' fears; however, the Asian rate ratios when compared to whites were not high. Asians rate ratios were 0.8× for death and 0.8× for hospitalization when compared to Whites. Another possible explanation for the Asian students' fear responses was hate crimes were occurring during the pandemic early stage. Gover et al. (2020) and colleagues reported Asian Americans experienced substantial verbal and physical assaults during the early pandemic period. Factors such as xenophobia, fear of foreigners, and the virus origin being China contributed to these hate crimes. These racial crimes could be the triggers for the Asian students' fear.

These findings are preliminary discoveries using exploratory methodology; however, the findings add to the current knowledge. Nursing students experienced stress and anxiety because academic and clinical expectations. Other recent research studies confirm this finding. For example, McGreehin Heilferty et al. (2021) found BSN students' school life had changed resulting in uncertainty during the COVID-19 pandemic. There were changes in students' academic performances with difficulties transitioning from on-campus to on-line learning. Also, there was evidence of losses focusing on personal, social, and material items. Some students shared stories of family members' death during the pandemic. This study found similar findings as McGreehin Heilferty's study but what added knowledge was differences found in students' race and gender. For example, race and gender difference existed in safety concerns, changes in teaching learning delivery, alternations are practicum learning, test performance changes during the pandemic, and fears levels for their families and friends.

Limitation of the study

The following were limitations identified by the researchers. The survey could use more rigorous reliability testing. Many of the survey items were found in other studies and some were developed by the researchers; however, no pilot testing was done for principal components or internal consistency. Another limitation is the survey questions did not include all possible item responses. The consequence is data could be missing because of this error.

Convenient sample methodology was used to recruit the nursing students. Schools agreed to allow survey distribution to their students and the researchers had little control over the administration. Also, institutional and program data were not collected because the consent agreements did not allow the identification. As a result of this sampling

method, there was a possibility that the technique did not produce representative categories of race, gender, and ethnicity of US nursing students.

Implication for nursing education

The American Association of Colleges of Nursing (2021) identified in their position statement that improvements for nursing education need to occur in the school's culture of diversity, equity, and inclusion (DEI). Particularly, faculty and administrative leaders' beliefs surrounding DEI need to be stated in the school's values and operations. This study investigated nursing students' beliefs based on the students' race, gender, and ethnicity during a pandemic. Some of the findings identified insufficient school and university resources to maintain students' inclusiveness and maintain quality education and learning. This global health crisis was a time to enhance students' inclusion and learning. This action would be in alignment with the AACN's position.

Future research

The NLN (2020) developed research priorities for the next decade. Based on a national nursing organizational roadmap, this study's future direction should include multiple considerations. The selected NLN priorities fall under three categories: develop precise and appropriate measurement and assessment techniques, build capacity for nursing practice by focusing on global nursing education, and evaluate innovative teaching and learning strategies.

Future research initiatives derived from this study would be the following the three steps. The data collection instrument needs more development including more testing of the COVID-19 experiences survey with higher levels of construct validity, reliability with Cronbank's alpha results, and item analysis. Plus, the sampling should be expanded to a multinational global student population since this was a worldwide pandemic affecting nursing student everywhere. Finally, intervention study designs should be developed to reduced students' fears and improve clinical performance during learning environment interruptions.

Conclusion

During the pandemic, nursing programs developed processes to mitigate the virus infection. These actions included offering on-line courses and focusing on students' matriculation progressions. The findings from this study suggest nursing students' across the country reacted differently based on race, gender and ethnicity. Nursing administrators and faculty should recognize and respond to students' uncertainties when external stressors occur. Extra support is needed for all races and men with anxiety, stress, and uncertainty about their learning and safety. Faculty and advisors can direct students to student services to assist them with financial aid, online learning technical support, and mental health services.

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