

Comparing Concerns, Preventive Behaviors, and Career Intent among College Students Pursuing Healthcare and Non-Healthcare Careers During the COVID-19 Pandemic

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Abstract

Background: The COVID-19 pandemic brought about significant life changes for college students and resulted in healthcare and economic crises. In the Spring 2020 semester, U.S. universities closed campuses and moved all instruction online, then re-opened and resumed campus activities in the Fall 2020 semester with strategies to reduce the spread of the virus. The pandemic affected healthcare systems greatly. Research examining the perspectives of U.S. college students during the pandemic have rarely studied those pursuing healthcare careers, who may be particularly vulnerable to pandemic-related concerns. This study examined COVID-related concerns, engagement in preventive behaviors, and the impact of the pandemic on career intent among college students pursuing degrees/careers in healthcare relative to other groups.

Methods: Undergraduate students (n=711) from one university in the U.S. completed a survey examining pandemic-related concerns, COVID-preventing behaviors, and the impact of the pandemic on career intent. Responses were compared among students pursuing non-healthcare degrees (NHC), healthcare degrees (HC), and those in healthcare degrees who were engaging in clinical experiences involving patient care (CHC).

Results: Students indicated highest concern for family/friends contracting the virus, followed by others failing to engage in COVID-preventing behaviors, and the impact of the pandemic on the economy. The majority of students indicated engaging in behaviors to reduce or prevent the spread of COVID-19. The frequency of engaging in most behaviors was similar or slightly declined from Spring 2020 to Fall 2020. CHC students reported higher pandemic-related concerns and engagement in virus preventive behaviors than non-clinical HC students and those pursuing non-healthcare careers. Healthcare students were also less likely to report the pandemic had caused them to consider a change in career path than those pursuing non-healthcare careers.

Conclusions and Recommendations: The results indicate that college students pursuing healthcare careers who were engaged in clinical experiences reported greater concerns during the pandemic and were more likely to engage in virus-preventing behaviors. It is likely that variation among concerns and behaviors among students may be a function of career intent, educational training, and exposure to the healthcare system. Recommendations include continuing to examine differences in COVID-19 experiences among college students pursuing varying career paths, and for universities and healthcare education programs to use data to make evidence-based decisions about policy and teaching practices as the pandemic evolves.

Keywords: COVID-19; Pandemic; Healthcare students; Concerns; Preventive behavior.

Introduction

COVID-19 was first reported in China in late 2019, where the outbreak grew substantially, infecting over 70,000 and resulting in 1,800 deaths in the first 50 days. By March 2020, COVID-19 was recognized by the World Health Organization as a global pandemic, and by May was linked to over 5 million cases and 300,000 deaths worldwide [1,2]. The pandemic impacted economies and educational systems, caused a healthcare crisis, and brought about significant changes to daily life and work. State and local governments in the U.S. issued “stay-at-home” orders, and recommended COVID-prevention behaviors including increasing hand washing, wearing face masks in public, and engaging in physical distancing from others. In response to federal and state actions, during the Spring 2020 semester, universities across the U.S. sent residential students home, cancelled on-campus activities, and moved all instruction online to reduce the risk among students and faculty.

The experiences of college students and the effects of the pandemic on them are topics of great research interest, and relevant to university faculty and leaders. University students are considered an at-risk group who live with and attend classes in close proximity, experienced great life disruption, and are at a critical life stage for personal and professional development. Potential challenges for college students during the pandemic include housing and financial hardships, food insecurity, lack of social interaction, and managing the emergency change to online delivery of their education [3-9]. Much of the initial research on college students during the pandemic was conducted in China followed by European countries, where the disease first spread. Research on the impact of the pandemic on U.S. college students has begun to be published, with most reporting data collected during the Spring 2020 semester, when life and school changes were first encountered.

Many of these initial investigations focused on mental health, and documented an increase in depression, stress, and anxiety [4,7,10-16]. College students’ sources of stress include worry about health, reduced social interaction, and concerns about academic performance, and life after graduation [3,16]. Several studies reported that the majority of university students had greater concern for the welfare of family than themselves [4,16-18]. Additional data linked the pandemic to other health-related issues including a decrease in physical activity [12,19,20] and sleep quality [10, 20]. The extent to which U.S. college students engage in behaviors to reduce the spread of COVID-19 is also of interest. Early reports collected during the Spring 2020 semester indicated that over half reported doing so, with percentages varying from 50% to over 90% depending on the specific behavior [5,17].

The impact of the pandemic was well-publicized, and created an overwhelming strain on healthcare systems [21-24]. Healthcare providers were reassigned into non-traditional roles (e.g., screening, triage tents, COVID-19 testing) and had a higher level of exposure to the virus than many other professions [21,23,25-27]. University programs educating future healthcare professionals were faced with unique challenges including transitioning to online instruction, limiting or cancelling field-based clinical experiences, and meeting accreditation standards for graduates [24,28].

Similar to research on college students during the pandemic, examination of the experiences of those pursuing healthcare careers, has to a large extent, studied students in China, the Middle East, and Europe. These investigations have reported that health profession

students are concerned/anxious about the virus, with over 25% in China having clinically significant psychological distress [29], and greater than 50% of nursing students in Israel showing moderate to severe anxiety [30]. Reports indicate that most healthcare students in Iran [31], Jordan [32], India [33], and Saudi Arabia [34] engaged in COVID-preventing behaviors. With respect to the impact of the pandemic on career intent, one report indicated 9.3% of nursing students in China intended to leave the profession as a result of the pandemic [35]. Few studies, however, have compared healthcare students to other groups. Alsairafi et al. [21] reported that healthcare students from Kuwait were less worried than healthcare professionals about getting infected or transmitting the virus to family. Saddik et al. [36] found comparable rates of COVID-prevention behaviors among medical and non-medical students in the United Arab Emirates.

Much of the research on U.S. college students during the COVID-19 pandemic was collected during the Spring 2020 semester, when changes to life were first experienced. Since then, many universities have reopened, faculty and students have returned, and on-campus activities and instruction resumed. Thus, there exists the need to continue to examine college students' concerns and behaviors as the pandemic persists. Few studies have examined differences among student responses as a function of major or career intent, and limited data has been reported on healthcare students in U.S. universities. Healthcare students may be different from those pursuing non-healthcare degrees with respect to their education and training, the impact of the pandemic on their intended careers, as well as engaging in clinical field experiences that increase exposure to the virus. An additional limitation of existing research is the general absence of data examining the extent to which the pandemic has influenced students' anticipated career paths. Therefore, the purpose of this study was to examine the perspectives of healthcare students compared to college students pursuing other career paths. Of interest in this study were student concerns, the extent to which they engaged in COVID-19 preventive behaviors over two semesters, and the effect of the pandemic on career intent.

Methods

Setting and Participants

Participants were undergraduate students enrolled at a public university in the southeast United States. Located near two large metro areas, the university enrolls 14,000 students, and offers a variety of degrees in business, arts, humanities, math, science, education, and health sciences. Two undergraduate degrees in the health sciences college, nursing and athletic training, include field-based clinical experiences involving patient care as a requirement. In response to the COVID-19 pandemic, the university closed offices, cancelled on-campus activities, and moved all instruction online in mid-March of the Spring 2020 semester. On-campus instruction resumed for the Fall 2020 semester, with policies in place to reduce the spread of COVID-19, that included reducing class size, spacing desks, and mandatory wearing of a face mask in buildings. During the Fall 2020 semester, the majority of courses on campus were delivered using a hybrid format (combining face-to-face and online instruction).

Participating students (n=711) were at the sophomore (16.0%),

junior (35.9%) and senior level (48.1%), and were pursuing 19 different degrees. Reflecting the university's student population, the majority of the sample was female (81.2%) and within the 18-24 year age range (82.7%). Based on responses to demographic questions, participants were divided into three groups: non-healthcare students (NHC, n=260), healthcare students (HC, n=263) and clinical healthcare students (CHC, n=188). NHC students were those who indicated a non-healthcare career intent, and were pursuing degrees including general studies, psychology, sport management, teacher education, and business fields. Respondents categorized as HC students were those indicating a healthcare career path and degree (i.e., speech pathology, healthcare administration, pre-medicine, pre-physical therapy) but were not engaged in clinical experiences. Participants classified as CHC students were those majoring in athletic training and nursing, and engaged in mandatory field-based clinical experiences involving patient care as a component of coursework/training. Sex and age characteristics of groups are provided in Table 1. Prior to data collection, the study was approved by the university's Institutional Review Board, and participation was voluntary.

Methods

Data were collected using both a printed and online version of a survey designed for the study. The survey instrument included demographic questions and sections addressing concerns about the COVID-19 pandemic, engagement in behaviors to prevent its spread, and the impact of the pandemic on anticipated careers. Following a review of relevant previous studies, items were developed by researchers with expertise in survey-based research, and feedback was sought from other faculty and a small group of students. Items were face-valid questions with scaled response options. Participant recruitment was conducted via email and in-person meetings with intact classes throughout the university during the first month of the Fall 2020 semester (August), and completed surveys were accepted for two weeks. The following sections describe survey sections and items.

Concerns during the COVID-19 pandemic

This section of the survey included a list of concerns during the pandemic: "Personally contracting the virus," "Family or close friends getting the virus," "The negative impact of the pandemic on family employment," "The impact of the pandemic on the economy," "People failing to engage in COVID-preventing behaviors," and "The possibility of a resurgence in the virus causing a subsequent disruption." Participants rated each as a "Low," "Moderate," or "High" concern.

Engagement in preventive behaviors

In this section, participants were presented a list of behaviors to reduce or prevent the spread of COVID-19, and indicated the frequency of engaging in each behavior by selecting an option from the choices "Never," "Sometimes," "Often" or "Always." Behaviors included "Maintaining physical distance from others," "Frequent hand washing," "Avoiding touching of surfaces," "Limiting touching of your face," and "Wearing a face mask when in public areas." The list of behaviors was presented twice, and respondents indicated their behavior during the Spring 2020 semester (during the university closure), and currently (during the Fall 2020 semester).

Table 1: Demographic Characteristics of the Sample.

	Non-Healthcare Students	Healthcare Students	Clinical Healthcare Students	Total
n	260	263	188	711
Sex				
Female	208 (80.0%)	207 (78.7%)	162 (86.2%)	577 (81.2%)
Male	52 (20.0%)	56 (21.3%)	26 (13.8%)	134 (18.8%)
Age				
18-24 years	205 (78.8%)	233 (88.6%)	150 (79.8%)	588 (82.7%)
25-63 years	55 (21.2%)	30 (11.4%)	38 (20.2%)	123 (17.3%)

The impact of the COVID-19 pandemic on Career intent

The final section of the survey addressed the potential impact of the COVID-19 pandemic on students' career intent. The section was prefaced by statements indicating that the COVID-19 pandemic caused an economic and healthcare crisis affecting employment and work life for people in many careers (e.g., layoffs, business closures, potential exposure to the virus, and changes in work environments to reduce the spread of the disease). This was followed by the question "To what extent has the COVID-19 pandemic caused you to reconsider your career path?" Participants responded by selecting a response from the choices "Not at all," "Somewhat," or "Seriously" considering a change in career path.

Data Analysis

Data were analyzed to provide descriptive characteristics (frequency and percent) of responses for the entire sample, and for each group. For the purposes of analysis and reporting, we report the frequency and percent of participants indicating "high" pandemic-related concerns, and "often or always" engaging in preventive behaviors. Odds Ratio was calculated to compare NHC, HC, and CHC students' responses. The resulting values reflect the relative percent increase or decrease in one group compared to another reporting high concerns, often or always engaging in preventive behaviors, and indicated a pandemic-related change in career path. Data capture and analysis were conducted using Google Forms, Microsoft Excel 2013, and the Statistical Package for Social Sciences software, Version 25 (IBM Corp., Armonk, NY USA).

Results

Concerns during the pandemic

Concerns rated as a "high concern" by the greatest number of students were family/friends contracting the virus (61.0%, n=434), and others failing to engage in preventive behaviors (57.7%, n=427). These were followed by concerns for employment of family (56.0%, n=398), effects on the economy (53.7%, n=382), and a COVID resurgence extending the pandemic (41.6%, n=296). Personally contracting the virus was indicated as a high concern by the fewest number of participants (25.5%, n=181).

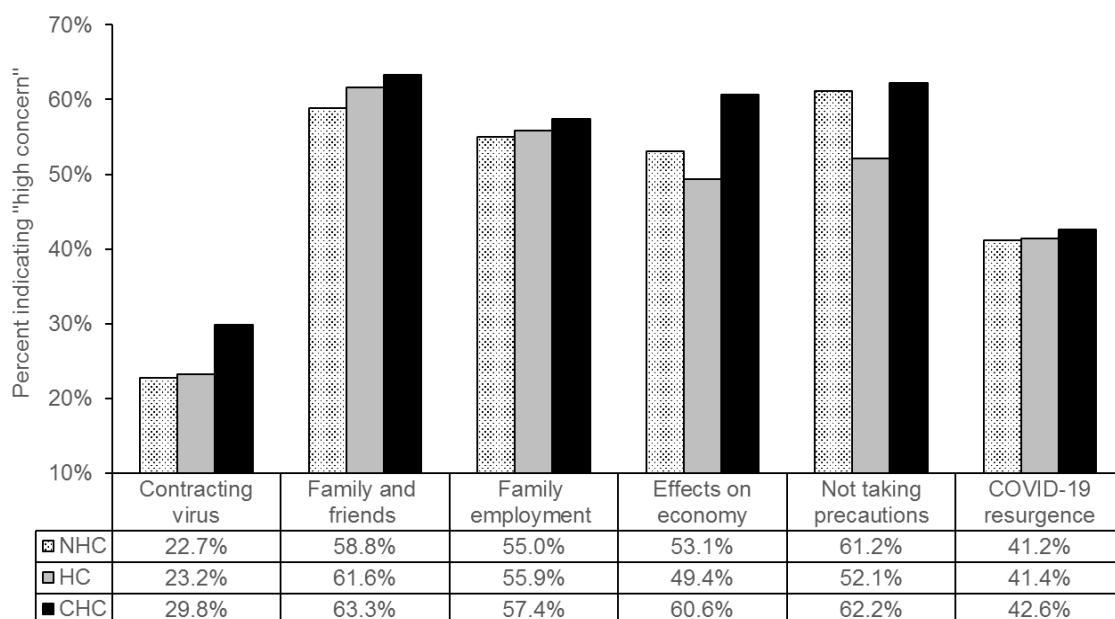
The percent of NHC, HC, and CHC students who rated concerns

as high is presented in Figure 1. Compared to other groups, a higher percent of CHC students indicated high concern for most items, with the greatest differences for personally contracting the virus, and the effects of the pandemic on the economy. Odds ratios (see Table 2) indicated CHC students were, on average, 29% more likely to indicate high concern. They were 36% and 58% more likely to have high concern for the effect of the pandemic on the economy than NHC and HC students, and 41% and 45% more likely to have high concern for personally contracting the virus. CHC students were also 52% more likely than HC students to express high concern for the failure of others to engage in COVID-preventing behavior, and 21% more likely than NHC students to have high concern for family/friends contracting the virus. Responses of HC and NHC students were relatively similar, with a mean odds-ratio of 0.96. However, HC students were 12% more likely to express high concern for family/friends contracting the virus, but less likely to express high concern for other failing to take precautions, and effects of the pandemic on the economy (Figure 1, Table 2).

Engagement in preventive behaviors

The majority of participants indicated engaging in behaviors to reduce or prevent the spread of COVID-19 during both Spring and Fall 2020 semesters. Hand washing and wearing a face mask were reported most often. The frequency of engaging in most behaviors was similar in Spring/Fall semesters or slightly declined, with the exception of wearing a face mask, which increased. The percent of participants indicating "often or always" engaging in behaviors was: frequent hand washing (Spring 92.7%, Fall 89.7%), wearing a face mask (Spring 86.5%, Fall 93.8%), social distancing (Spring 80.6%, Fall 75.2%), avoiding touching of surfaces (Spring 75.2%, Fall 71.6%), and attempting to limit touching ones face (Spring 73.1%, Fall 75.0%).

The percent of NHC, HC, and CHC students reporting "often or always" engaging in each behavior is presented in Figure 2. CHC students tended to report engagement in many behaviors more often than NHC and HC students. Differences were most evident for physical distancing, limiting face touching, and wearing a face mask in public areas, and for behavior during the Fall 2020 semester. Compared to NHC and HC students, odds ratios indicated CHC students were, on average, 45-51% more likely to engage in preventive behaviors during the Spring 2020 semester, and 47-56% more likely to do so



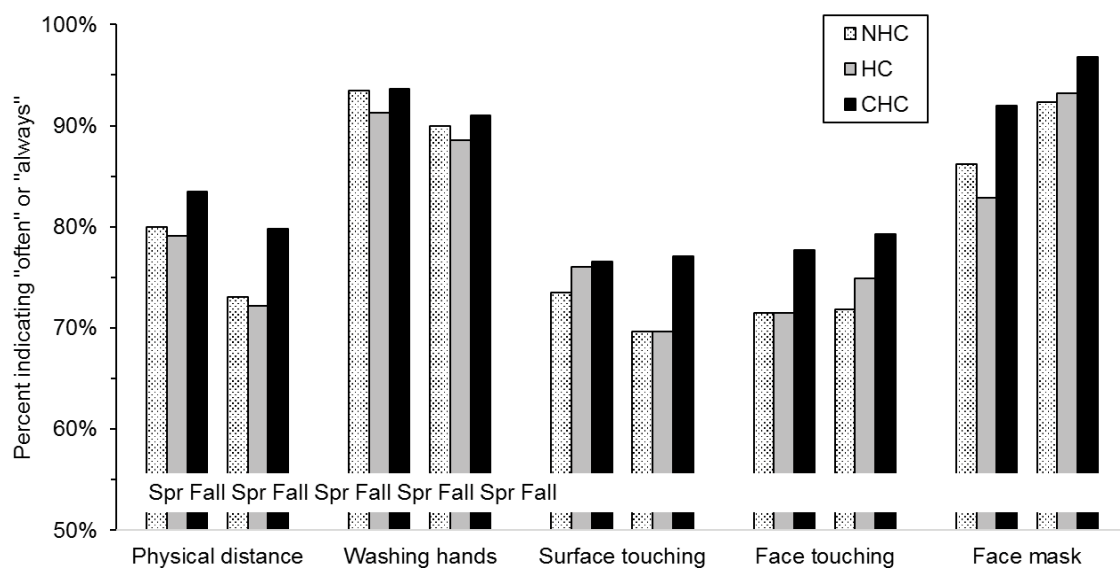
Note. NHC = Students pursuing non-healthcare degrees/careers; HC = Students pursuing degrees/careers in healthcare; CHC = students pursuing healthcare degrees/careers and engaged in clinical field experiences involving patient care.

Figure 1: Percent of Non-Healthcare, Healthcare, and Clinical Healthcare Students Indicating High Concern.

Table 2: Odds-Ratios Comparing Responses of Clinical Healthcare and Healthcare Students to Those Pursuing Non-Healthcare Careers.

	CHC vs. HC	CHC vs. NHC	HC vs. NHC
Concerns (high concern)			
Personally contracting the virus	1.41	1.45	1.03
Family/friends contracting the virus	1.08	1.21	1.12
Family employment	1.07	1.11	1.04
Effects on the economy	1.58	1.36	0.86
People not taking precautions	1.52	1.05	0.69
COVID resurgence	1.05	1.06	1.01
Mean Odds-Ratio	1.29	1.21	0.96
Spring 2020 Preventive Behaviors (often or always)			
Physical distance from others	1.34	1.27	0.95
Frequent hand washing	1.41	1.02	0.73
Limit touching surfaces	1.03	1.18	1.15
Limit touching face	1.39	1.38	0.99
Wearing face mask	2.38	1.85	0.78
Mean Odds-Ratio	1.51	1.45	0.96
Fall 2020 Preventive Behaviors (often or always)			
Physical distance from others	1.52	1.45	0.96
Frequent hand washing	1.30	1.12	0.86
Limit touching surfaces	1.47	1.47	1.00
Limit touching face	1.28	1.49	1.17
Wearing face mask	2.23	2.52	1.13
Mean Odds-Ratio	1.56	1.47	1.00

Note. NHC = Students pursuing non-healthcare degrees/careers; HC = Students pursuing degrees/careers in healthcare; CHC = students pursuing healthcare degrees/careers and engaged in clinical field experiences involving patient care.



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Figure 2: Percent of Non-Healthcare, Healthcare, and Clinical Healthcare Students Indicating “Often or Always” Engaging in COVID-19 Preventive Behaviors during the Spring 2020 and Fall 2020 Semesters.

during the Fall 2020 semester. Behaviors showing greatest odds-ratios included wearing a face mask (1.85 to 2.38 times more likely during the Spring 2020 semester; 2.23 to 2.52 times more likely during the Fall 2020 semester), physical distancing (27% to 52% more likely), and avoiding touching of surfaces (38% to 47% more likely) (see Table 2). Behavioral responses of HC and NHC students did not show a clear pattern of differences. HC students were slightly more likely to report limiting surface and face touching and wearing a face mask, but less likely to engage in frequent hand washing. Mean odds-ratio comparing HC to NHC students were 0.96 for the Spring 2020 semester, and 1.00 for the Fall 2020 semester (Figure 2).

The impact of the pandemic on career intent

When asked to indicate the extent to which the COVID-19 pandemic had resulted in students considering a change in career intent, most indicated “Not at all,” (77.2%, n=549). Approximately one in five students (19.3%, n=137) reported “Somewhat,” and relatively fewer (3.5%, n=25) indicated “Seriously” considering a change. A higher percent of NHC students reported the pandemic had resulted in them “Somewhat” (27.3%, n=71) or “Seriously” (6.5%, n=17) considering a change in career compared to HC (Somewhat: 16.0%, n=42; Seriously 1.9%, n=5) and CHC students (Somewhat: 12.8%, n=24; Seriously: 1.6%, n=3). Odds-ratios indicated HC students were 57% less likely to report that the pandemic had caused

them to change in career path than NHC students. CHC students were 67% less likely than NHC students, and 23% less likely than HC students to report considering a career change.

Discussion

The COVID-19 pandemic resulted in profound life changes for university students, as well as healthcare systems and professionals. Research examining U.S. college students during the pandemic has primarily focused on its impact on mental health with most data collected during the Spring 2020 semester when the pandemic's effects and universities' responses were first introduced. Data on university students' behaviors and perception of the pandemic are significant topics of research interest, and also particularly relevant to university leaders and faculty faced with developing policies and teaching practices in the current climate. Pandemic-related perceptions and concerns of college students pursuing healthcare careers are worthy of study, as they may be affected differently than other students. Most published research on healthcare students have examined those in China and other countries, and not compared them to students pursuing non-healthcare careers. Little study of healthcare students in the U.S. has been conducted. This study examined pandemic-related concerns, engagement in COVID-19-preventive behaviors, and perceptions of the pandemic's impact on career intent in a sample of college students from one U.S. university. Survey responses of students pursuing degrees in athletic training and nursing who were engaged in clinical field experiences involving patient care (CHC students) were compared to healthcare students not engaged in clinical experiences (HC), and students pursuing non-healthcare degrees/careers (NHC).

Pandemic-related concerns

Students in this study indicated highest concern for family/friends contracting the virus. In addition, over 50% were highly concerned about others failing to engage in COVID-preventing behaviors, and the impact of the pandemic on the economy and family employment. In agreement with previous findings [4,16-18], concern for personally contracting the virus was lower than the concern for the health of others. Data indicated that CHC students were, on average, 21-29% more likely to express high concerns than HC and NHC students, with the greatest differences for personally contracting the virus, effects of the pandemic on the economy, and concerns for family/friends. Differences between HC and NHC students were less evident. Thus, healthcare students engaged in clinical field experiences involving patient care had higher concerns than those pursuing non-healthcare fields and students with healthcare career intent but who were not currently engaged in patient care. These findings parallel those of Saddik et al. [36] who reported medical students from the United Arab Emirates were more worried about the pandemic than non-medical students, and the worry was greatest among medical students who had been in contact with COVID patients.

COVID-19 preventive behavior

Relatively little previous research has examined rates of COVID-19 preventive behaviors among U.S. college students, although existing data collected early in the pandemic indicated that most reported doing so. Data collected from a national sample [17] indicated 94.8% sheltered in place, over 70% engaged in social distancing and frequent hand washing, and approximately half (50.8%) wore a face mask. Another published study from a survey of students from one U.S. university reported somewhat higher values (e.g., 98.7% limited travel from home, 97.5% wearing a face mask) [5]. Our findings add to this existing work and indicate most students from this sample engaged in preventive behaviors during both the Spring 2020 and Fall 2020 semesters. The frequency of most behaviors was slightly lower during the Fall than Spring 2020 semester, which may reflect a reduction in pandemic-related worry [4].

Comparisons of responses among groups indicated CHC students reported more frequent preventive behavior engagement than other groups, on average being 45-56% more likely to do so. Differences were more pronounced between CHC students and those pursuing non-healthcare careers, but notable differences were also observed between CHC students and healthcare students not currently involved in patient care. On average, differences were somewhat greater during the Fall than the Spring 2020 semester, reflecting greater persistence in preventive behaviors. Previous research on behaviors of healthcare students from other countries including Jordan [32], India [33], and Iran [31] has reported 70-90% report COVID-preventing behavior, but reports have seldom compared healthcare to non-healthcare students.

Impact of the COVID-19 pandemic on career intent

While it has been recognized that the COVID-19 pandemic may affect college students' career intention, few studies have examined this possibility. In a survey of students from one U.S. university system, 12% indicated their choice of major had been impacted by the pandemic, with fewer in science and math technical degrees reporting a change than other majors [3]. Among our sample, most college students indicated the pandemic had not caused them to reconsider their career path, but 19.3% reported "Somewhat" and 3.5% "Seriously" doing so. However, students pursuing careers in healthcare were 57% less likely to report considering a change, and those engaged in clinical experiences were least likely to indicate so.

Conclusions and Recommendations

The results of this study indicate that U.S. healthcare students engaged in clinical experiences involving patient care expressed greater pandemic-related concerns, and were more likely to engage in COVID-preventing behaviors than other students. It is likely that these concerns and behaviors are, in part, a function of their career intent, educational training, and exposure to the healthcare system. The results also indicate that most healthcare students, rather than considering leaving the healthcare profession as a result of the pandemic, intend to continue in a healthcare career [25]. It may be important to note that the majority of the sample in this study, similar to the student population pursuing healthcare careers, was female. Previous studies of college students have indicated COVID-19 pandemic-related concerns are higher among women [11,30,36,37], thus this subgroup of students may be particularly at risk for pandemic-related mental health issues.

Universities throughout the world have had to adapt to the COVID-19 pandemic, modifying instructional formats, campus housing, and activities, and creating strategies to keep students and faculty safe; and developing contingency plans for the future. In general, university faculty should be aware of student challenges and concerns, and the COVID-19 pandemic magnifies this aspect of teaching. As student return to campus, it is important that university leaders and faculty be informed about pandemic-related behaviors and concerns, and data such as that reported in this study, may be used for evidence-based decisions about future policies, as well as advising and teaching practices. Our data suggest that universities particularly target students in non-healthcare degree programs and pre-clinical healthcare students for COVID-related education to highlight the disease and compliance with preventive behavior recommendations.

While previous research has reported U.S. university student experiences during the pandemic, few investigations have compared students pursuing different degrees/career paths, and this is the first study we are aware of to compare healthcare and non-healthcare students. Recommendations for future research include continued examination of university students' perspectives as the pandemic evolves, and examining how they vary with demographic characteristics and major.

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