

COVID-19 Information Seeking Behaviors of University of Hawai'i at Mānoa Undergraduates: Information Channels, Sources, and Consumption

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Abstract

This study explored how undergraduate students at the University of Hawai'i at Mānoa sought and consumed information about the virus that causes COVID-19. This study also examined student perceptions of the severity of and their susceptibility to the virus and their main concerns about it. Four hundred fifty-six students completed online surveys between October and early December of 2020 and 2021. Students reported low to moderate levels of information seeking across four domains: (1) knowledge about COVID-19 and its symptoms; (2) preventing the spread of the virus; (3) the current state of the pandemic in Hawai'i; and (4) the likely future of the pandemic in Hawai'i. Overall, websites, television, and Instagram were the top 3 channels used by students to seek information for these domains. Students reported primarily paying attention to information from government and news organizations as sources. However, students' preferred channels and sources varied with the type of information they sought. Students also reported believing that COVID-19 is severe and that they are susceptible to being infected with it. The more time students reported seeking information, the greater their perceptions of COVID-19's severity across all domains. Students' primary concerns about COVID-19 centered on state regulations/policies, vaccines, tourism/travel, the economy, and pandemic/post-pandemic life. These findings can help public health practitioners in Hawai'i determine how best to reach an undergraduate student population with information related to COVID-19.

Keywords

University of Hawai'i, undergraduates, information seeking, communication channel, communication source, COVID-19

Abbreviations and Acronyms

*CDC = Centers for Disease Control and Prevention
COVID-19 = SARS-CoV-2, the virus that causes COVID-19
HDOH = Hawai'i Department of Health
UHM = University of Hawai'i at Mānoa
WHO = World Health Organization*

Introduction

The novelty of both SARS-CoV-2, the virus that causes COVID-19, and the dynamics of a global pandemic has raised many questions, such as how to recognize COVID-19, how to prevent its spread, and what the future holds. Scholarship in health communication suggests that this uncertainty leads people to seek information.^{1,2} This can include reading the news, watching television, searching online, and talking to health professionals, friends, or family.³⁻⁵ This study investigated information-seeking about COVID-19 by college students at the University of Hawai'i at Mānoa (UHM). Understanding

where these students get their information from is important, as it can help public health practitioners determine how best to reach this population.

According to the State of Hawai'i's Department of Health (HDOH), individuals aged 18-29 make up 24% of COVID-19 cases in Hawai'i,⁶ which is greater than their share of the state population.⁷ Given this, it is important to understand where (ie, through what *channel*) and from what *sources* college students are getting information about COVID-19; how they perceive COVID-19 (ie, its severity and their susceptibility); and to identify their main concerns or questions related to COVID-19. Recognizing that there are different domains of knowledge and perceptions related to COVID-19, this study explored information-seeking behavior in 4 areas: (1) basic knowledge about the virus and symptoms; (2) how to prevent the spread of COVID-19; (3) the current state of the pandemic in Hawai'i; and (4) the likely future of the pandemic in Hawai'i.

Specifically, this study examined how often UHM undergraduates sought and consumed information about COVID-19 across these domains; the communication channels they used most often; and the communication sources they paid the most attention to when seeking information about COVID-19. It also investigated UHM undergraduates' perceptions of the severity of and their vulnerability to COVID-19, and if their perceptions of severity and vulnerability varied with information consumption. Additionally, this study sought to identify the main questions UHM undergraduate students have about COVID-19. Finally, given the evolving nature of the COVID-19 pandemic, it examined whether these information seeking patterns, perceptions, and questions related to COVID-19 changed between fall 2020 and fall 2021.

Methods

During the fall semesters of 2020 and, between October and early December, a convenience sample of 456 undergraduate students at UHM currently living in Hawai'i completed an online survey about their information seeking behavior related to COVID-19 in exchange for course credit or extra credit. The survey took approximately 15 minutes to complete (*Median* = 14.5 minutes in 2020, *Median* = 14.0 minutes in 2021). This study was approved by the University of Hawai'i Institutional Review Board (#2020-00800).

Instrumentation

Self-reported information seeking. Participants were asked to report their perception of how much time in the last week they had spent looking for and consuming (ie, reading, watching, and/or listening to) information about (1) what COVID-19 is and its symptoms, (2) how to prevent the spread of COVID-19, (3) the current state of the COVID-19 pandemic in Hawai‘i, and (4) the future of the COVID-19 pandemic in Hawai‘i, respectively. Responses were on a 7-point scale (1 = *none*, 7 = *a great deal*).

Information channel. Participants were asked to select all channels they used to seek information for each topic area. The communication channels provided as answer options were: television, radio, print newspapers, print magazines, telephone, email, text chat and message (eg, SMS, WhatsApp, Line), video chat (eg, Skype, FaceTime, Zoom), face-to-face (in person), website (except social media), Facebook, Instagram, Twitter, YouTube, other, and none. Participants selecting “other” provided their own answers.

Information source. Participants were asked to select the information source they paid most attention to when they sought information about the 4 topic areas. The communication source options were: news organizations (local, national, or international), government organizations, the World Health Organization (WHO), specialized organizations covering COVID-19 issues, UHM’s COVID-19 news updates and resources, universities and research institutions other than UHM, colleagues/coworkers, friends, family, professors, medical personnel, politicians, celebrities, social media influencers, other, and none. Participants selecting “other” provided their own answers.

Students also indicated how often they looked at numbers or statistics related to COVID-19 in Hawai‘i (eg, number of new cases per day, number of hospitalizations, or positivity rate), with seven ordinal response options (*never, once a month or less, several times a month, once a week, several times a week, once a day, and several times a day*).

Susceptibility and severity. To assess perceptions of COVID-19, students rated their agreement with the statements, “I believe that the COVID-19 is severe” and “It is possible that I may get infected with COVID-19” on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*).

Questions and concerns. To explore their concerns and questions, participants were asked to respond to the open-ended item, “What are the main questions, issues or concerns related to COVID-19 that you are concerned about?”

All items were developed by the authors for this study, guided by previous research on information-seeking.^{3-5,8}

Data Analysis

IBM SPSS Statistics version 28.0.0.0 (IBM Corporation: Armonk, NY) was used to manage data and conduct statistical analyses (ie, descriptive statistics, correlations, and *t*-tests) on quantitative data. Data from Likert-type scales were treated as continuous, as is standard practice in social scientific communication research. Open-ended responses on concerns related to COVID-19 were qualitatively analyzed for themes by the first and second authors.

Results

Participants were 288 students in 2020 and 168 students in 2021. Their average age was approximately 20 years old (2020: mean (SD) = 19.97 (3.04) and 2021: 20.86 (5.19)), and a majority identified as women (54% in 2020 and 69% in 2021). Most participants reported their ethnicity as White, Filipino, Japanese and/or Chinese; see **Table 1** for a detailed breakdown of ethnic identification, as well as complete participant demographics. Across all domains, self-reported information seeking time was higher in 2020 than in 2021 according to independent sample *t*-tests. Within each year, students reported spending more time seeking information about the current (2020: mean (SD) = 3.35 (1.73) and 2021: 2.96(1.94) on a 7-point scale) and future state (2020: 3.28 (1.80) and 2021: 2.84 (1.71) on a 7-point scale) of the pandemic than about symptoms (2020: 2.84 (1.58) and 2021: 2.39 (1.43) on a 7-point scale) or prevention (2020: 2.78 (1.61) and 2021: 2.28 (1.40) on a 7-point scale), according to post-hoc tests following a repeated measures analysis of variance for each year. (Data not shown. Detailed statistics for all comparisons reported in this section are available from the authors by request.)

Participants’ reported use of different information channels is presented in **Table 2**. Across all domains and in both years, websites (excluding social media), television, and Instagram were the most frequently used channels (ranging from 30% to 73%). YouTube was also a relatively frequent channel for information about symptoms and prevention in both 2020 and 2021 (ranging from 24% to 29%); however, YouTube was not used as frequently for information seeking about the present and future state of the pandemic (ranging from 7% to 14%).

The sources participants reported paying most attention to are presented in **Table 3**. In 2020 and 2021, a plurality of students ranging from 39% to 54% reported paying most attention to government organizations (such as the CDC or HDOH) when seeking information about symptoms and preventing the spread of COVID-19. However, when seeking information about the current state of the pandemic, a plurality of students reported looking to news organizations (local, national, or international). Responses differed between years for information related to the future of the pandemic: in 2020, 2 in 5 students (41%) reported looking most to news organizations, while in 2021, almost 2

in 5 students (38%) reported looking to government organizations. In 2020, a majority of students (53%) reported looking at numbers or statistics related to COVID-19 in Hawai‘i once a week or more. However, in 2021, only 38% reported doing so.

Students reported perceiving COVID-19 to be severe (mean (SD) = 5.68 (1.58) in 2020 and 5.50 (1.57) in 2021) and that they were susceptible to getting infected (mean (SD) = 5.22 (1.70) in 2020 and 5.36 (1.55) in 2021, both on a 7-point scale). These perceptions did not differ between years according to independent sample *t*-tests. In 2020, there were positive correlations between perceived severity of COVID-19 and amount of time participants reported spending seeking information in the last week about symptoms (Pearson’s $r = .227, P < .001$), prevention ($r = .224, P < .001$), current state of the pandemic ($r = .261, P < .001$), and the future of the pandemic ($r = .216,$

$P < .001$). There were also positive correlations between participants’ perceived susceptibility to COVID-19 and the amount of time they reported spending seeking information in the last week about the current state ($r = .118, P = .046$) and future ($r = .173, P = .003$) of the pandemic in Hawai‘i.

In 2021, there were similar positive correlations between perceived severity of COVID-19 and the amount of time participants reported spending seeking information in the last week about symptoms ($r = .234, P < .001$), prevention ($r = .237, P = .003$), current state of the pandemic ($r = .251, P = .001$), and the future of the pandemic ($r = .260, P < .001$). However, in 2021, there were no significant correlations between perceived susceptibility and the amount of time participants reported spending seeking information related to COVID-19 in the last week.

Table 1. UHM Student Participant Demographic Characteristics for 2020 and 2021 Data Collection Periods

Demographic Characteristic	2020 (N = 288)	2021 (N = 168)
Gender		
Women	54%	69%
Men	44%	29%
Outside binary or prefer not to answer	2%	2%
Age in Years	19.97 (3.04)	20.86 (5.19)
Ethnicity		
White/Caucasian	36%	40%
Filipino	29%	23%
Japanese	27%	27%
Chinese	23%	24%
Hispanic	12%	10%
Native Hawaiian	10%	11%
Korean	6%	4%
Pacific Islander (non-Hawaiian)	5%	4%
Black/African American	2%	6%
American Indian or Alaska Native	2%	1%
Other ethnicity	7%	9%
Class Standing		
First year student	44%	35%
Second year	19%	23%
Third year	19%	21%
Fourth year	14%	17%
Beyond fourth year	3%	5%
Number of academic majors represented	57	46
Know someone who contracted Covid-19	73%	82%

Note: Age information is presented as $M (SD)$. Number of academic majors is presented as a frequency (number of majors). In fall 2020, no single major represented more than 8% of the sample; in fall 2021, no single major represented more than 14% of the sample.

A total of 320 students provided questions and concerns about the COVID-19 pandemic. Their responses addressed a range of topics (see **Table 4**). In both 2020 and 2021, people expressed questions and concerns about the state of Hawai‘i’s regulations and policies (eg, what was and was not allowed). Vaccines were also a frequent topic of interest in both years. In fall 2020, questions focused on the timeline for availability and vaccine safety; in fall 2021, vaccine-related questions also addressed policies and mandates. Across both years, participants expressed concerns about when the pandemic would “end” and what life will look like post-pandemic. A closely related theme was when UHM would be able to return to fully in-person classes and activities. Tourism and concerns about when/whether travel was safe for

Hawai‘i residents was another common theme; alongside this were also concerns about the state’s economy and job market. Some questions pertained to factual information that is currently available (eg, number of positive cases of COVID-19); other questions pertained to the unknown information about the COVID-19 virus (eg, whether there would be more variants in the future). Participants also asked questions about finding quality information and public messaging efforts and expressed concern for the pandemic’s risks to people’s mental and physical health. Finally, in fall 2021, questions about government overreach, as well as general skepticism about the pandemic, emerged as a theme.

Channel	Domain ^a							
	Symptoms		Prevention		Current State		Future	
	2020	2021	2020	2021	2020	2021	2020	2021
Websites (except social media)	73%	72%	69%	67%	62%	64%	57%	55%
Television	53%	51%	52%	42%	51%	41%	48%	35%
Instagram	43%	43%	44%	37%	38%	38%	30%	30%
YouTube	24%	29%	26%	24%	14%	7%	14%	11%
Twitter	24%	19%	16%	14%	12%	13%	12%	8%
Face-to-face (in person)	19%	30%	16%	22%	13%	24%	13%	15%
Email	15%	19%	12%	12%	12%	13%	10%	7%
Text chat and messaging	15%	19%	10%	11%	8%	14%	5%	7%
Radio	10%	8%	10%	7%	12%	14%	8%	8%
Facebook	10%	12%	10%	7%	9%	7%	8%	6%
Other	9%	8%	6%	5%	6%	5%	4%	2%
Print newspapers	8%	7%	7%	7%	9%	8%	8%	5%
Video chat	8%	8%	5%	4%	3%	4%	3%	3%
Telephone	7%	10%	4%	6%	4%	5%	3%	3%
Print magazines	3%	2%	2%	2%	1%	0%	1%	1%
None of these	1%	1%	1%	3%	1%	4%	6%	9%

^a “Symptoms” refers to what COVID-19 is and its symptoms; “Prevention” refers to how to prevent the spread of COVID-19; “Current State” refers to the current state of the COVID-19 pandemic in Hawai‘i; and “Future” refers to the future of the COVID-19 pandemic in Hawai‘i.

Table 3. Information Source that UHM Students Reported Paying Most Attention to When Seeking Information by Domain for 2020 and 2021 Data Collection Periods

Source	Domain ^a							
	Symptoms		Prevention		Current State		Future	
	2020	2021	2020	2021	2020	2021	2020	2021
Government organizations (eg, CDC, HDOH)	40%	41%	39%	54%	23%	27%	22%	38%
News organizations (local, national, international)	23%	17%	18%	9%	48%	42%	41%	28%
WHO	15%	13%	16%	11%	4%	3%	5%	5%
Medical personnel	9%	9%	10%	11%	3%	2%	4%	2%
Family	5%	10%	4%	5%	4%	5%	3%	4%
UHM's COVID-19 news updates and resources	3%	7%	3%	5%	9%	10%	9%	10%
Friends	2%	1%	1%	1%	2%	2%	1%	2%
Universities and research institutions other than UHM	1%	0%	1%	0%	1%	1%	0%	1%
Politicians	1%	1%	0%	0%	1%	0%	1%	1%
Social media influencers	0%	1%	0%	1%	0%	2%	0%	1%
Specialized organizations covering COVID-19 issues	0%	1%	1%	0%	4%	2%	6%	2%
Professors	0%	0%	0%	0%	0%	1%	0%	1%
Colleagues/co-workers	0%	0%	0%	1%	1%	0%	0%	1%
Other (fill in below)	0%	1%	1%	1%	1%	1%	1%	1%
None of these	1%	2%	1%	2%	0%	4%	2%	5%

^a "Symptoms" refers to what COVID-19 is and its symptoms; "Prevention" refers to how to prevent the spread of COVID-19; "Current State" refers to the current state of the COVID-19 pandemic in Hawai'i; and "Future" refers to the future of the COVID-19 pandemic in Hawai'i.

Table 4. Topics and Percentages of Responses Addressing Topics in UHM Students' Questions, Issues, and Concerns about COVID-19 for 2020 and 2021 Data Collection Periods

Topic	2020	2021
State regulations & policies	23%	20%
Vaccines	21%	16%
Availability & safety	18%	8%
Policies & mandates	3%	8%
Tourism & travel	15%	7%
Future of the pandemic	13%	24%
Economy & jobs	10%	5%
Questions about information currently available	9%	9%
Questions about the COVID-19 virus	6%	8%
Returning to UHM	6%	4%
Information quality & messaging	5%	8%
Anxiety about risk & health	4%	4%
Government overreach/skepticism	1%	4%

Note: A total of 320 participants provided valid responses to the open-ended prompt (n = 179 in 2020 and n = 141 in 2021). Thirty participants provided more than one question, issue, or concern. All topics mentioned in a given response were coded, so percentages add up to more than 100%.

Discussion

This study explored how UHM college students sought information related to COVID-19 in 4 domains: (a) knowledge about the virus and symptoms; (b) prevention of the spread of COVID-19; (c) the current state of the pandemic in Hawai'i; and (d) the likely future of the pandemic in Hawai'i. It examined and compared survey responses at 2 time points: in fall 2020, which was approximately 7-8 months into the pandemic in Hawai'i, and fall 2021, which was approximately 19 to 20 months into the pandemic in Hawai'i. Overall, responses were fairly similar across these 2 time points, with a few exceptions.

Frequency of Information-Seeking

At both time points and in all domains, UHM college students reported low to moderate levels of seeking information related to COVID-19. They consistently reported seeking information about the current state and likely future of COVID-19 in Hawai'i more frequently than they did information about symptoms and prevention of COVID-19. To the extent that the current and future state of the pandemic are more dynamic, it makes sense that these topics would prompt more active efforts to seek information. It is also notable that students reported seeking information more in fall 2020 than in fall 2021 on all topics, potentially suggesting they may have been acclimating to uncertainty surrounding the virus, were burning out on COVID-19 related news, or believed they have sufficient information.

Channels and Sources

Websites, television, and Instagram were the top 3 channels used by UHM students to seek information about COVID-19, its symptoms, how to prevent it, and the current and future state of the pandemic in Hawai'i. This suggests that university or public health officials who are interested in reaching college students should make information available via these channels. Of social media outlets, Instagram was by far the most popular, indicating that social media targeting college students should focus on this platform. YouTube was also a relatively popular channel for seeking information related to symptoms and prevention of COVID-19. This suggests that YouTube videos may be a useful way to disseminate more stable, factual information about COVID-19 to college students, but is not necessarily a good means to publicize more dynamic information about its current state. These findings contrast somewhat with COVID-19 related studies of college students in the midwestern US⁴ (who reported going primarily to official public health-related sources) and the Philippines⁹ (who reported mass media, particularly television, as their most preferred channel) in terms of sources of information preferred and sought. The preferences students in Hawai'i expressed in this study also differ some from those reported in a comparison between information sources used by respondents in nationwide surveys in the US and China, who primarily sought information from television, social media,

and news.⁵ They also diverged somewhat from information sources used during the SARS epidemic and H1N1 pandemic for Canadians³, who looked primarily to traditional mass media (newspaper, television, and radio) for information. This highlights the importance of understanding the local information-seeking preferences of target populations, as they can differ by location and time period.

Overall, UHM students reported primarily paying attention to information about COVID-19 from government and news organizations. Not surprisingly, similar to channel use, students' preferred sources varied with the type of information they sought. For relatively stable information about symptoms and prevention, a plurality of students looked to government organizations. In contrast, for more dynamic information about the current and future state of the pandemic, a plurality looked to news organizations. This suggests that those seeking to reach college students should consider partnering or working with news and government organizations, for example via press releases with new or important information, as college students report attending to information from these sources.

Perceptions of Severity and Susceptibility

On average, UHM students perceived that COVID-19 was severe, and that they were susceptible to being infected with it. Interestingly, despite the change in availability of vaccines during this time period, from no vaccines available to the general public in 2020 to vaccines being widely available in 2021, subjective ratings of susceptibility did not change significantly from fall 2020 to fall 2021. In fall 2021, 88% of participants reported being fully vaccinated; according to UHM policies for the semester, students taking in-person classes had to be either fully vaccinated or be tested weekly.¹⁰

Perceptions of severity were related to self-reported amount of time spent seeking information; the more time students spent seeking information about COVID-19 across all domains, the more severe they believed the virus to be. This finding is consistent with several other studies that have examined perceived severity and information-seeking in this population.^{11,12} One possible explanation is that much of the information students are likely to encounter is likely to emphasize the seriousness and severity of COVID-19. It is also possible that students who believe that COVID-19 is severe are more concerned about recognizing symptoms, preventing the spread of the virus, and being aware of the current state of the pandemic, leading to greater information seeking.¹³

Students' Concerns about COVID-19

Finally, it appears that students' primary concerns relate to Hawai'i's COVID-19 policies, vaccines (and associated regulations), travel and associated issues of infection risk, the state's economic recovery, and when and how the pandemic will

change or end. This suggests that that if university officials, public health officials, or other entities that wish to reach college students can address these concerns – or tie other messages they wish to disseminate to these concerns – they are likely to find an interested audience.

Limitations and Future Directions

This study had limitations that should be considered when interpreting its findings. First, it employed a convenience sample of students from a single university (UHM) on O‘ahu. Although students came from a variety of majors and backgrounds, these students’ responses may not be generalizable to UHM as a whole, or to students from other colleges or universities in the state (or elsewhere). Students who chose to participate in a study on information seeking related to COVID-19 may also be more interested in issues related to the pandemic than students who did not choose to participate; as such, these results may overestimate the prevalence of information seeking. This study also relied on students’ self-report of their information seeking behaviors, which may not be objectively accurate. Questions about severity and susceptibility also did not assess students’ sense of their own personal risk of serious disease, but rather asked about COVID-19 in general. Individuals’ behaviors are likely to follow their sense of personal risk more closely than an abstracted sense of risk; thus, correlations between severity and information-seeking might have been higher if personal risk were assessed. Further research can focus on other elements of the health belief model¹⁴ (eg, perceptions of benefits, barriers, and self-efficacy) to extend this research to adoption of health behaviors. Finally, the COVID-19 pandemic has been a highly dynamic and evolving experience; like much research on this topic, this study can only provide a “snapshot” of behaviors and beliefs at specific points in time. As the local situation changes – for instance, as new variants emerge, or cases surge or decline – so may the information seeking behaviors investigated here.

Conclusion

These limitations notwithstanding, this study provides insights into how college students in the State of Hawai‘i have been seeking information during the COVID-19 pandemic. Its findings suggest that those interested in effectively reaching college students in Hawai‘i should consider disseminating messages via conventional websites, television, and Instagram, and should engage with local government and news organizations to do so. They might also seek to connect their messaging to issues that college students report caring about: vaccines, travel, the state’s economic recovery, and how the pandemic will evolve as Hawai‘i looks to the future.

Conflict of Interest

None of the authors identify any conflict of interest.

Disclosure Statement

Jessica Gasiorek and Amy S. Ebesu Hubbard are faculty in the Communicology program in the School of Communication and Information in the College of Social Sciences at the University of Hawai‘i at Mānoa. Soo Yun Shin was faculty in the Department of Communicology during data collection, but is now faculty at Seoul National University. None of the authors reported any financial disclosure.

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