

Search, Seek, Share: A National Survey Assessing Americans' Information Channels and Sharing Behaviors During a Pandemic

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Abstract

The spread of accurate and inaccurate information happened quickly in the early stages of the COVID-19 pandemic and understanding how this occurred is important to prepare for communication of future disease outbreaks. The purpose of this study was to understand Americans' information seeking and sharing behaviors during the early stages of COVID-19 and was guided by the following objectives: identify passive sources/channels of information; identify active sources/channels of information; and describe how frequently and across which channels/sources the U.S. public shared information about COVID-19 in early stages of the pandemic. Results indicated people first found information about COVID-19 from personal communication but turned to national and international organizations if they were to actively seek information. Scientists and universities were some of the least sought after and shared sources of information. The sources shared most were from the Centers for Disease Control and Prevention and the World Health Organization. Implications from this research are a need for communicators to use grassroots communication efforts during a crisis, to actively share information early during a crisis, to share information outside of traditional academic networks, and to collaborate with sources inside and outside of traditional Extension networks.

Keywords

Extension, communication, COVID-19, public health, agriculture

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Introduction and Problem Statement

The presence of infectious, zoonotic diseases is increasing and could pose significant impacts to the agricultural industry, particularly in sectors of the industry that involve animals. Policies and disease management will need a more proactive approach in order to address zoonotic diseases while ensuring an abundant food supply (Rohr et al., 2019). The full impact of an emerging infectious disease was exemplified during the COVID-19 pandemic. The novel coronavirus disease (COVID-19) was first identified in Wuhan China in late 2019 and spread rapidly through more than 160 countries, reaching the United States in late January. The impacts of COVID-19 surpassed the usual impacts of typical disease outbreaks and affected areas of science, entertainment, politics, economy, education, and more in countries around the world (Sahin et al., 2020). The World Health Organization (WHO) declared COVID-19 as a pandemic in March, followed by the United States declaring COVID-19 a national emergency, which allowed Americans to access federal support. Over the next few weeks through March and April, the United States experienced school closures, stay-at-home orders, economic turmoil, and individual and community interventions (American Journal of Managed Care [AMJC] Staff, 2020).

COVID-19 impacted the health of people around the world, as well as impacted the economy through job and income loss due to widespread business closures and decreased spending while people were staying at home. Additionally, COVID-19 brought about changes in public purchasing and consumption behaviors. The shelves at grocery stores were often emptied as people stocked up on household goods and cooked more frequently at home (Clements, 2020). The purpose of the current study was to understand the public's information seeking and sharing behaviors during these early stages of COVID-19.

Theoretical and Conceptual Framework

Information seeking behaviors, information channels, and sources impact a person's understanding of risk communication and, therefore, guided the conceptual framework of this study. The perception of a risk can impact the goals of an organization, making effective risk communication particularly important for health organizations or state and federal governments during a public health crisis (Covello & Sandman, 2001). The groundwork for trust in risk communication is laid between the community and the organization dealing with the risks involved (Telg, 2019).

Communication messages during a public health crisis should be carefully crafted, and the source and channel used for the message should be thoughtfully matched (Liu et al., 2011). Communication channels are the method in which a message is shared, including print media, online media, and social media; communication sources refer to the sender of the message, which could be an organization or an individual. Providing communication messages on targeted channels is only half of the process. Understanding the seeking and processing tactics that individuals use when confronted with messages can provide insight on the impact of the message. Bates (2005) described differences between active vs. passive information as simply

the act of an individual acquiring information about a topic versus passively taking in information. Bates (2005) further defined differences through types of behaviors associated with each. Awareness and monitoring are often considered passive behaviors, whereas searching and browsing are considered active behaviors. Curiosity and browsing often lead to directed searching or actively seeking information to answer specific questions (Bates, 2005). Kahlor et al. (2006) stated that active information seeking tends to be more purposeful and leads to more systematic processing of information.

As the agricultural industry proactively prepares for future disease outbreaks or pandemic situations, crisis communication should be considered. Two-way communication is particularly important during a pandemic or public health crisis, such as COVID-19. Covello (2003) recommended seven best practices for communication in a public health crisis, which include the following: (a) involve stakeholders as partners; (b) listen to all parties involved; (c) be truthful and transparent; (d) collaborate with other credible sources; (e) provide information to the media; (f) be compassionate and clear; and (g) plan ahead.

The information sources and channels used to communicate during a crisis warrant consideration as these can impact an individual's perception of the crisis (Nguyen et al., 2017). During natural disasters, the public has found traditional news sources, such as printed news, to be more credible (Endsley et al., 2014). COVID-19 occurred in the most technologically advanced time in history, which enabled the transfer of information to spread quickly through traditional and emerging channels. Rapidly increasing infection rates signified a need to provide knowledge and best practices "at a pace equal to or better than the spreading epidemic" (Chan et al., 2020, p. 1). Popular social media channels were utilized including Facebook, Instagram, and Twitter, all of which are commonly used to disseminate information. Early in the pandemic, the social media platform TikTok included users posting videos of a coronavirus dance, which featured moves that mirrored the steps for preventing the spread of COVID-19 (Wang, 2020). The platform also had inaccurate and culturally insensitive messages related to COVID-19 (Kenyon, 2020). The WHO saw this as an opportunity and joined the platform to spread valid health communication related to COVID-19 (Brown, 2020).

Purpose

The purpose of this study was to understand the U.S. general public's information seeking and sharing behaviors during the early stages of the COVID-19 pandemic, specifically to learn what information sources were passive and which were active in an effort to understand how to reach the public with purposeful communication during a zoonotic disease pandemic. The following objectives guided this study:

1. Identify the passive sources/channels of information used by the U.S. public in the early stages of the COVID-19 pandemic.
2. Identify the active sources/channels of information used by the U.S. public in the early stages of the COVID-19 pandemic.
3. Describe how frequently and across which channels the U.S. public shared information about COVID-19 in the early stages of the pandemic.

Methods

An online survey research design was utilized. A third-party company, Qualtrics, was consulted to obtain a nonprobability opt-in sample of U.S. residents 18 years of age or older. This approach is commonly used to make population estimates (Baker et al., 2013) and has become common in research examining public opinion of emerging issues due to increased access to internet, relatively low cost of online surveys, and higher response rates (Dillman et al., 2014). An online link was distributed to 4,935 U.S. residents during the second and third weeks of March, 2020. Attention filters (e.g. “select strongly agree for this answer”) were used to identify respondents not paying attention. Respondents who did not complete all items of the instrument or did not select the appropriate answer to attention filters were excluded from analyses. Useable responses were obtained from 1,512 residents (31% participation rate). Potential exclusion, selection, and non-participation biases can limit the use of nonprobability samples (Baker et al., 2013). To minimize impacts, post-stratification weighting methods (Kalton & Flores-Cervantes, 2003) were executed *post hoc* to balance results based on 2010 Census data to accurately approximate to the population (Baker et al., 2013).

An original researcher-designed questionnaire was the instrument for this study; it was reviewed for face and content validity by a panel that consisted of faculty and staff at the University of Florida and its One Health Center of Excellence. The instrument was reviewed for content accuracy, clarity of wording, readability, and survey flow (Colton & Covert, 2007). A pilot test ($n = 50$) was conducted to examine preliminary data distribution and ensure functionality of built-in survey logic. This instrument was a part of a larger study; four sections of the questionnaire used to meet the objectives of this study: (a) information search frequency; (b) active and passive use of information sources; (c) information sharing frequency; and (d) use of information-sharing networks and sources. Respondents' information-search frequency was assessed using a single item to gauge how frequently they sought information about COVID-19 the month prior to the study. Responses were collected using a 5-point ordinal scale: 0 = *never*; 1 = *rarely (1-2 times)*; 2 = *occasionally (3-4 times)*; 3 = *often (5-6 times)*; 4 = *very often (more than 6 times)*. To identify the channels through which respondents had passively received information about COVID-19, they were asked to indicate, by checking all that apply, where they had seen or heard information about COVID-19 during the past month. Active information-seeking behavior was assessed using 24 items designed to capture respondents' likelihood of use for both the source and method of delivery (e.g., “Department of Health websites,” “social media posts from the Department of Health,” etc.). Responses were collected using a 5-point Likert scale: 1 = *very unlikely*; 2 = *unlikely*; 3 = *neither likely nor unlikely*; 4 = *likely*; 5 = *very likely*. To assess information-sharing frequency, respondents were first asked to indicate if they had shared any information related to COVID-19 the month prior to the study (1 = *yes*; 2 = *no*). Respondents who had shared information were then asked how frequently they had done so. Responses were collected using the same, previously mentioned frequency scale. Use of networks and sources when sharing was assessed by first asking respondents to indicate, by checking all that apply, which networks they used to share information (e.g., Facebook). Respondents were then asked to list the top three sources of the information they had shared.

Data were analyzed using the SPSS26. Analyses consisted of descriptive statistics (e.g., means, standard deviations, modes, frequencies, and percentages). Open-ended responses of the top three sources of information shared were analyzed in Excel using Glaser’s constant comparative method (Glaser, 1965) to identify themes.

Findings

Passive Channels/Sources of Information

In order to understand how the public found out about information related to COVID-19, it was important to understand the passive ways someone saw information about the virus in the early stages of the pandemic. The passive items were provided in a “check all that apply” format, with a mix of the most common sources and channels. Because a filter question for completing the survey was “have you heard of the coronavirus disease COVID-19?”, all respondents had heard about COVID-19.

The largest percentage of people had heard or seen information about COVID-19 from conversations with friends or family members ($f = 1,160$; 76.7%), followed by national network television ($f = 1,117$; 73.9%), local TV news ($f = 1,045$; 69.1%), and general websites ($f = 1,015$; 67.2%). The least identified passive information sources were Twitter ($f = 412$, 27.2%), personal healthcare provider ($f = 407$, 26.9%), Instagram ($f = 382$, 25.2%), and TikTok ($f = 149$, 9.8%). Full results are in Table 1.

Table 1

Channels Through Which Respondents Saw or Heard Information About COVID-19 in the Early Stages of the Pandemic (n = 1,512).

Channel	<i>f</i>	%
Conversations with friends or family members	1,160	76.7%
National network TV news channels	1,117	73.9%
Local TV news channels	1,045	69.1%
Websites	1,015	67.2%
National cable TV news channels	917	60.6%
Facebook	841	55.6%
Radio	617	40.8%
Conversations with work colleagues	579	38.3%
TV programs (not news)	562	37.2%
Print newspaper	506	33.4%
YouTube	456	30.2%
Twitter	412	27.2%
Personal healthcare provider	407	26.9%
Instagram	382	25.2%
TikTok	149	9.8%

Note: Responses were collected using a “check all that apply” multiple-response format, so percentages do not add up to 100%.

Active Sources/Channels of Information Used by The Public about COVID-19

The next piece to fully understand how people received information about COVID-19 was to understand their active search for information. Researchers asked how often people actively sought information about COVID-19 over the month, i.e., late February through early March, 2020. The vast majority of people had actively searched for information related to COVID-19 ($f = 1,431$; 96.4%) to some extent, with the largest number of people searching very often for information ($f = 626$, 41.4%; see Table 2).

Table 2

Respondents' Search Frequency for Information about COVID-19 in the Early Stages of the Pandemic (n = 1,512)

Response Category	<i>f</i>	%
Very often (more than 6 times)	626	41.4
Occasionally (3-4 times)	343	22.7
Often (5-6 times)	276	18.3
Rarely (1-2 times)	185	12.2
Never	81	5.4

Next, researchers sought to understand where respondents were searching for information. All respondents, including the 5.4% who indicated they had not searched for information in the month prior to the study, were asked to indicate the likelihood they would seek information related to COVID-19 from select sources/channels. The highest means for actively seeking information were all for national or international organizations' websites involved in health: Centers for Disease Control and Prevention (CDC) websites ($M = 4.32$, $SD = .89$), Department of Health (DOH) websites ($M = 4.08$, $SD = .95$), and the World Health Organization (WHO) website ($M = 4.05$, $SD = 1.05$; see Table 3). Respondents also identified their personal healthcare providers ($M = 4.05$, $SD = 1.00$) among the top sources they would most likely seek. The sources least likely to be used were social media from friends and family ($M = 2.95$, $SD = 1.24$), universities ($M = 2.89$, $SD = 1.15$), Extension systems ($M = 2.86$, $SD = 1.22$), and social media posts from work colleagues ($M = 2.75$, $SD = 1.25$; see Table 3).

Table 3*Likelihood of Use of Sources for COVID-19 During the Early Stages of the Pandemic (n = 1,512)*

	<i>M</i>	<i>SD</i>
Centers for Disease Control and Prevention (CDC) websites	4.32	0.9
Department of Health (DOH) websites	4.08	1.0
World Health Organization (WHO) website	4.05	1.1
Personal healthcare provider	4.05	1.0
Social media posts from Centers from Disease Control and Prevention (CDC)	3.63	1.3
Social media posts from the World Health Organization (WHO)	3.56	1.3
Communication with friends or family members	3.52	1.1
National network TV news channels (ABC, CBS, NBC, etc.)	3.51	1.2
Social media posts from the Department of Health (DOH)	3.47	1.2
National cable TV news channels (Fox News, MSNBC, CNN, etc.)	3.42	1.3
Internet news sources	3.40	1.2
Other internet sources (e.g. WebMD)	3.37	1.2
Social media posts from national network TV news channels (ABC, CBS, NBC, etc.)	3.13	1.3
Newspaper	3.09	1.3
Social media posts from national cable TV news channels (Fox News, MSNBC, CNN, etc.)	3.09	1.3
Social media posts from local TV news channels	3.07	1.3
Communication with colleagues	3.06	1.2
Social media posts from friends or family	2.95	1.2
Universities	2.89	1.2
State Extension systems	2.86	1.2
Social media posts from work colleagues	2.75	1.3

Note. Responses were collected using a 5-point Likert scale: 1 = very unlikely; 2 = unlikely; 3 = neither likely nor unlikely; 4 = likely; 5 = very likely.

How the Public Shared Information about COVID-19

The next step in understanding information spread was to determine if people were sharing information about COVID-19 and, if so, how they were sharing information. Slightly more than two-thirds ($f = 1,045$; 69.2%) of respondents said they had shared information about COVID-19 in the month prior to this study (see Table 4). On average, respondents who indicated they had shared information about COVID-19 did so occasionally ($M = 2.59$, $SD = 1.06$).

Table 4

Frequency People Shared Information about COVID-19 in the First Month of the Pandemic (n = 1,045)

Item	<i>f</i>	%
Very often (more than 6 times)	289	27.6
Often (5-6 times)	209	20.0
Occasionally (3-4 times)	380	36.4
Rarely (1-2 times)	167	15.9

When asked specifically what personal and social networks they used to share information, the majority of people said they used a form of personal communication ($n = 831$, 54.9%). The next highest percentage was for Facebook ($n = 404$, 26.7%), and the lowest was for TikTok ($n = 44$, 2.9%). Full results are in Table 5.

Table 5

Personal and Social Networks Used to Share Information about COVID-19 with Others in Early Stage of Pandemic (n = 1,045)

	<i>f</i>	%
Personal communication	831	54.9%
Facebook	404	26.7%
Twitter	155	10.3%
Instagram	148	9.8%
YouTube	95	6.3%
TikTok	44	2.9%
Other	38	2.5%

Note. The “Other” category included WhatsApp, Snapchat, Reddit, Skype, Hangouts, and other forms of personal communication

The last step taken to understand how people shared information during the early stages of COVID-19 was to ask the 1,045 respondents who indicated they had shared information to list the top three sources they used to do so. Diversity in channels and sources shared were great (see Table 6). The largest number of people said they used the CDC or WHO ($f = 679$). The CDC and WHO had to be included in the same category because a large portion of people who said they used the CDC and WHO included these as one source in the form of CDC/WHO or similar instead of listing these as distinctly different sources. This was followed by news outlets ($f = 435$) and conversations with people ($f = 412$). A large number of sources in the middle range of use were highly specialized and ranged from social media ($f = 246$) and online sources ($f = 148$) to the government ($f = 153$) and doctors ($f = 143$). On the lower end were science and research ($f = 22$), blogs and maps/statistics ($f = 12$), email ($f = 11$), and religious sources ($f = 7$; see Table 6).

Table 6

Open-ended Responses for Three Sources Used by Respondents Who Indicated They Had Shared Information about COVID-19 in the Early Stages of The Pandemic (n = 1,045)

Source Category	Examples of Answers	f (%)
CDC/WHO	CDC website, CDC articles, News articles citing CDC/WHO, National Health Service, OMS	679 (65.0)
News Outlets	ABC, NBC, Today Show, CBS, CBSN, CNBC, Fox, CNN, MSNBC, New York Times, Washington Post, NPR, Media, Wall Street Journal, Huffington Post, Cable News	435 (41.6)
Conversations with People	Friends, family, colleagues, word of mouth, face to face, with people with who have the virus	412 (39.4)
Social Media	Facebook, Instagram, Twitter, TikTok, Snapchat, YouTube, Memes	246 (23.5)
Local News Sources	Texas Tribune, WLWT, WTVA news, news story about local company testing sars meds on COVID, local news on Facebook	164 (15.8)
Government	Federal, State, health departments, Fauci, Surgeon General, FDA, county information, Homeland Security, public health, congress	153 (14.6)
News	News	152 (14.5)
Online Searches/Articles	Internet, search engine results, business websites, research from internet, internet medical news sites, alternative media, conservative websites	148 (14.2)
Doctors/Medical Professionals	Doctor, health care professional, health care providers, care centers, nurses, hospitals, military medic, Web MD, CMS, medical website, articles written by medical experts	143 (13.6)
Newspaper/ Print Sources	Newspapers, printed materials, magazines	76 (7.3)
Podcasts/ Radio	Podcasts, radio, Joe Rogan	64 (6.1)
News Aggregators/ Online Sources	Apple News, Smart News, Bing, Tivi, Google, Yahoo, Wikipedia, Forbes, uberfacts, medium.com, Trenches World Report	50 (4.8)
Specialty Media Outlets	Inside Edition, ESPN, Dr. Oz, TV (not news), beal beats, famous people, PBS, Joe Rogan, Buzzfeed, Chinese resident videos, special shows	48 (4.6)
President	President, Trump, President speeches, President press conferences	39 (3.7)
Phone	Phone, phone alerts, smart phone, weather channel app, community app, mobile news app, texting, WhatsApp, next door app, video chat	32 (3.1)

Source Category	Examples of Answers	<i>f</i> (%)
Schools/University	Classes, district website, district emails, school closing, teachers, education, live feed from superintendent	31 (3.0)
Science/Research	Science, infectious disease experts, research, experts, Epidemiologist on my college campus	22 (2.1)
International Sources	BBC, Foreign News, UN website, Reuters	19 (1.8)
Other	Common sense, business, USAUS, MSJD, ship cruise information, strangers, trusted sources, Amazon	18 (1.7)
Blog	Blogs, Reddit, Zero Hedge, Daily Kos	12 (1.1)
COVID maps/information	Coronavirus map, detected counties, coronavirus task force press conferences, updates, information from other health officials not related to White House or staff, virus trackers, Worlometer website, numbers detected, number died	12 (1.1)
Email	Email	11 (1.1)
Church/Religious	Minister, church leaders, Christian tv news	7 (0.1)
Self	Myself	7 (0.1)

Conclusions, Discussion, and Recommendations

Both active and passive information-seeking behaviors among the American public early in COVID-19 were observed, as well as some key differences in the primary sources and channels of information when pursued actively versus consumed passively. These findings support Bates' (2005) recommendation to use multiple channels and sources to reach all audiences as part of an effective risk communication strategy. If members of the public were to actively seek information about COVID-19, they were more likely to do so from the websites of major national or international health organizations. While previous work indicated people found newspapers a more credible source during a crisis (Endsley et al., 2014), the results of the current study showed people were more likely to use online sources. With rapid changes occurring early in the COVID-19 pandemic, online sources may have been attractive to Americans due to the instantaneous nature of online channels and quickly updated crisis response information.

Respondents were not likely to actively seek information about COVID-19 from scientists, universities, and Extension systems directly, which provides further evidence for a need to work with health-focused organizations during a zoonotic disease outbreak. This also provides evidence that scientists and health communicators must move beyond using communication channels viewed only by people in academia. Effective science and health communication may also help a university or Extension program to establish a relationship before a public health crisis (Telg, 2019). Personal networks were also extremely important in the sharing process

among those who shared information in the early stages of the COVID-19 pandemic. This provides further support for the use of grassroots communication efforts for risk communication in the early stages of a pandemic. Though people indicated they eventually would seek information from national and international organizations' websites, these health organizations could have been on the forefront of communication if they were actively pushing information in the beginning stages of the pandemic. While social media channels received average to little consideration from people when they were in the passive or active search process, people indicated more use of personal communication, Facebook, Twitter, Instagram, YouTube, and TikTok when it came to sharing information about COVID-19. While only a small portion of people were using TikTok during the early stages of the pandemic, its emergence as a channel/source of information during this pandemic was rapid (Wang, 2020) and may indicate an emerging trend in its use for health communication messages in the future.

This work supports the continued use of Covello's (2003) best practices for communication in a public health crisis. Involving stakeholders as partners and listening to all parties involved will allow communicators to connect through personal networks, which were the most used active and passive channels in this study. Collaboration with other credible sources is also supported by this work, as the top active search channels/sources were all health-focused organizations. Scientists, universities, Extension programs, and communicators from many disciplines, including public health, science, and agriculture, will need to partner with health organizations in future zoonotic disease outbreaks.

Future research should investigate the trust of the public related to their primary and secondary passive and active sources of information to understand the role trust played in risk communication during COVID-19. Additionally, future research should explore the relationship between the public and popular sources of information, such as the CDC and WHO, to determine why people might react more positively to some sources compared to others. And lastly, research should be conducted to understand how these sources, channels, and behaviors changed throughout the pandemic.

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