A Human Security Perspective on Information Access and Use during the COVID-19 Pandemic:

Short Study Report

June 2021

Human Security and the Practices of Empowerment in East Asia Research Project

JICA Ogata Sadako Research Institute for Peace and Development

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SUMMARY

The novel coronavirus (COVID-19) outbreak highlighted multiple human insecurities in 2020 and continues to do so. The virus has spread rapidly between and within countries and became a global threat, further aggravating existing social and economic challenges. In addition, the uncertainty and unpredictability of this infectious disease has contributed to heightened fear and anxiety among communities, leading to a greater level of vulnerability and insecurity. Across all these constraints and challenges, the need to access reliable information and stay informed about the pandemic are crucial human security issues that everyone must address.

This report details the results of an online survey conducted and distributed in four prefectures in Japan in 2020. Its main objective is to gain a glimpse of people's information-seeking behavior during the COVID-19 pandemic by presenting the intersection between crisis information seeking and human security. The study utilizes a human security perspective in analyzing people's information seeking during crises and emergencies, highlighting that (a) information sources are critical tools in making informed decisions during a crisis, (b) information-seeking needs and access are influenced by diverse factors such as socio-demographic characteristics, and (c) access to crisis-related information can influence the level of risk perception.

This qualitative study of combined literature review and emerging studies related to human security, risk information, and COVID-19 affirms that information is an essential resource during a crisis. Its forms, its presence or absence, and its quality contribute to people's security in confronting the crisis. More so, access to risk information is an essential element in ensuring human security. Information from protection actors provides and makes available the answers to people's varied concerns. Likewise, the information people receive and access empowers them to make informed decisions, including following safety protocols and helping in further consideration of COVID-19 vaccination.

Keywords:

COVID-19 pandemic, human security, crisis information seeking, risk information, risk communication

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1. INTRODUCTION

a. Background

In the early months of 2020, the COVID-19 pandemic highlighted our various human insecurities. The rapid spread of this novel coronavirus affirmed the global nature of the crisis and humanity's relative interconnectedness. Infectious diseases went from exclusively being a health issue to a security concern (Enemark 2009; Caballero-Anthony 2006; Davies 2008). Even more so, the infrequent, complex, and threatening nature of a pandemic hazard activity demands the ability to deal with considerable risk and uncertainty (Paton et al. 2008). The catastrophic impacts of this novel coronavirus are taking their toll on countries and relevant agencies' and institutions' capacities to address various security issues.

The current COVID-19 crisis conforms to the key baseline description of a disaster as it arises from the combination of hazard and vulnerability that occurs at multiple levels simultaneously, with the responses to a hazard often exposing as many vulnerability problems as the original hazard (Kelman 2020). It has affected people disproportionately, highlighting the need for an all-inclusive response to their differentiated needs. With the ever-present demand for health, food, and economic security in these times of uncertainty, access to accurate and sufficient information becomes essential.

The current COVID-19 crisis conforms to the key baseline description of a disaster as it arises from the combination of hazard and vulnerability that occurs at multiple levels simultaneously, with the responses to a hazard often exposing as many vulnerability problems as the original hazard (Kelman 2020).

An April 2020 COVID-19 Policy Brief by the UN Office of Disaster Risk Reduction stated that access to information is often a barrier for persons with specific communication needs, thus the need to ensure that targeted risk communication reaches all vulnerable groups is imperative (United Nations Office of Disaster Risk Reduction 2020). Uncertainty is a common feature of crises and extreme events, and the public is likely to engage in information seeking to reduce uncertainty and dissonance (Burke, Spence, and Lachlan 2010). In line with this, disaster risk information is defined as the comprehensive information on all dimensions of disaster risk, including hazards, exposure, vulnerability and capacity, related to persons, communities, organizations and countries and their assets (United Nations General Assembly 2016). While this pandemic is categorically different from the conventional disasters from natural hazards, the risk information pertained in this report mirrors the same features. The lack of sufficient and accurate facts about a health hazard positions people in a greater vulnerability and insecurity level. For this reason, access to emergency and related information during a crisis is an equally crucial human security issue that everyone must address.

Infectious diseases, like natural and human induced-hazards, can have an extensive impact in urban areas. The Tokyo metropolitan area has a much greater risk of infectious diseases than local areas due to its large population and consistent increases in visitor numbers (both domestic and from abroad) (Suzuki 2010).[1] Such areas have been among the critical sites confronting the transmission and surge in COVID-19 cases because of their extensive social and economic engagements. And so, risk information becomes a primary tool for crisis mitigation and response.

This report details an online survey conducted and distributed in four prefectures in Japan during 2020. Its main objective is to gain a glimpse of people's information-seeking behavior during the COVID-19 pandemic by presenting the intersection between crisis information seeking and human security. There have been studies in the past on the importance of information seeking during health emergencies and pandemics; however, the changing landscape of information exchanges and the resources available provide a timely perspective of people's information-seeking behavior, needs, and challenges. Furthermore, the study utilizes a human security perspective in analyzing people's information seeking during crises and emergencies, highlighting how information access is an equally vital human security concern for all.

b. COVID-19 Crisis in Japan

b.1. Timeline of the Pandemic

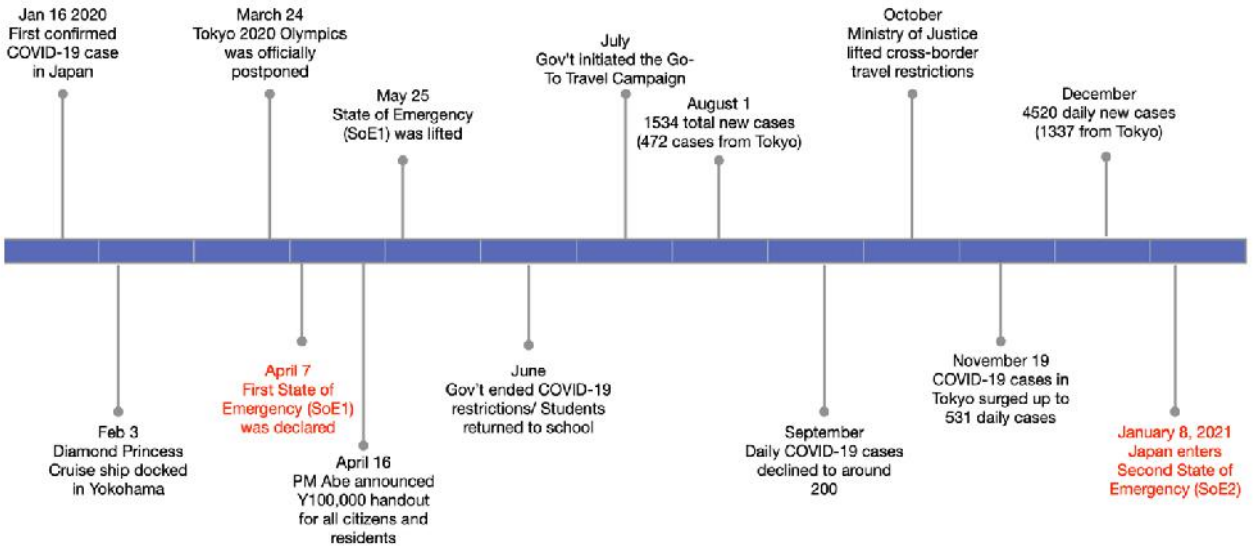
Based on combined data from the World Health Organization, national agencies here in Japan and credible domestic news sources, the succeeding details provide an overview of the COVID-19 situation in Japan, from its initial detection to its present circumstances. Figure 1 visualizes these developments[2].

Within the year 2020 certain key events led to Japan's current COVID-19 situation. While the virus outbreak in China had already been reported since late 2019, it was not until January 16, 2020 when the first confirmed positive case of COVID-19 in Japan was reported (World Health Organization 2020b; Ministry of Health, Labour and Welfare 2020; Omi and Oshitani 2020). By the end of January, the World Health Organization had declared COVID-19 a "Public Health Emergency of International Concern" (PHEIC), [3] and awareness about the new coronavirus had grown in Japan as the Diamond Princess Cruise ship, with confirmed positive cases of the infection docked at Yokohama Port on February 3, 2020 (Muto et al. 2020). [4] Cumulative positive cases had reached about 100 by February, and the first death in the country from COVID-19 was reported on the 13th of February (World Health Organization 2020b). With the growing extent of the virus globally, COVID-19 was officially declared a pandemic by mid-March (World Health Organization 2020a). Early responses to the pandemic were put in place in March through closures of schools[5] and travel entry restrictions for travelers from China and Korea. [6] With the significantly increasing number of confirmed cases worldwide, the Tokyo Olympics 2020 was officially postponed on March 24 until 2021. In April, there was a rapid increase in coronavirus cases nationwide, and new outbreaks were also happening in many areas beginning in Hokkaido. To prevent the spread of the virus, Former Prime Minister Shinzo Abe declared a month-long **state of emergency (SoE1)** [7] for Tokyo, Saitama, Chiba, and Kanagawa in Eastern Japan, and Osaka, Hyogo, and Fukuoka in the Western region effective April 8. This was eventually expanded nationwide on April 16.

In essence, the declaration of a state of emergency empowers prefectures to take restrictive actions, without legal consequences, to ensure the functioning of the medical care system and to ask for cooperation to avoid contacts to reduce the spread of the infection (Sugiyama 2020).

This declaration was made as an exercise of the government's power under the Special Measures on New Influenza Act (Act No. 31 of 2012) (Government of Japan 2013). In essence, the declaration of a state of emergency empowers prefectures to take restrictive actions, without legal consequences, to ensure the functioning of the medical care system and to ask for cooperation to avoid contacts to reduce the

Figure 1. Japan COVID-19 Timeline (Prepared by authors)



spread of the infection (Sugiyama 2020). Supplementing this state of emergency, the government announced a ¥100,000 handout scheme for all citizens and foreign residents on April 16. Payouts began the following month nationwide. In addition, the government increased the countries included in the travel ban by 70 countries and regions, including the suspension of visa applications. This first state of emergency lasted until May 25. As economic activity significantly declined, private consumption fell by almost 20% in April compared to the previous year, impacting various industries. [8] The number of hospitalized COVID-19 patients dropped from about 10,000 to almost 2,000 cases by May during this state of emergency[9]. In June, the government ended the COVID-19 restrictions, and students began to return to schools.

Following the lifting of SoE1 in late May, the daily number of COVID-19 cases stayed below 100 from May 16 to June 25 (World Health Organization 2021). Preventive measures have been continuously encouraged without any strict consequences. However, cases increased again during the summer, especially for big cities facing virus transmission cases in nightlife districts and care facilities and similar transmission challenges in less-populated prefectures (Abe and Noguchi 2020). More so, the Japanese government subsidy program "Go-To Travel" campaign led to a surge in travel-associated cases (Anzai and Nishiura 2021). In August, the government announced over 60,000 job losses caused by the pandemic, mainly those working in part-time jobs and the tourism sector. [10] The then recently elected Prime Minister Yoshihide Suga, who succeeded PM Shinzo Abe, emphasized that the "response to the virus is the immediate priority," aiming to hold the Tokyo Olympics in 2021.

From October 1, 2020, the Ministry of Justice lifted cross-border travel restrictions to allow the re-entry to Japan for holders of "Student," "Dependent," and other residence statuses, in addition to cross-border business travelers. Unfortunately, there was a resurgence of weekly recorded cases in mid-October (3,744 cases, October 12, 2020), leading to another peak of 39,821 confirmed cases in a single week during the New Year holiday (World Health Organization 2021). Despite repeated reminders for preventive measures, the number of cases increased, straining the medical system.

On November 19, Tokyo reported a new daily record high of 534 COVID-19 cases, leading the Tokyo Metropolitan Government to raise the capital to the highest alert level. Despite continuous reminders, numbers of daily coronavirus cases in major cities such as Tokyo, Osaka, and Sapporo had broken the highest record by the end of November. As a result, the Tokyo Metropolitan Government requested restaurants that serve alcohol to shorten their operating hours for three weeks as the number of new COVID-19 cases in Tokyo increased rapidly. As the number of COVID-19 cases around Japan continues to spike, regions acted independently of the central government in announcing warnings and new preventive measures in mid-December.

Following the central government's decision to suspend the "Go-To" Travel campaign over the 2021 New Year holiday, the Kansai region declared a state of emergency in the New Year to curb the virus's spread. The Union of Kansai Governments – which includes the prefectural governments of Hyogo, Kyoto, Nara, Osaka, Shiga, Tokushima, Tottori, and Wakayama – advised Kansai citizens to avoid unnecessary travel during the holidays. On December 31, the daily new coronavirus cases marked the highest number so far, 3708, in Japan.[11] With these drawn-out challenges and the discovered presence of new COVID-19 variants globally, a **second state of emergency (SoE2)** was enforced on January 8, 2021, for Tokyo and its surrounding prefectures with 8 additional prefectures added on January 1, and this was expected to last until February 7. As of June 2021, Japan is in its extended third State of Emergency since late April 2020. The country continues to confront the fluctuating number of cases while expediting vaccination roll-out.

b.2. Consequential Challenges

Japan, like other countries, has suffered from the accompanying downside risks of the pandemic. Despite efforts to minimize this, it has affected the various aspects of people's daily lives. Among the primary challenges that countries faced, including Japan, was the shortages of personal protective equipment (PPE) and hospital spaces. As the number of critical coronavirus patients surged, the demand for intensive care unit (ICU) beds and protective equipment consequentially increased. This predicament was one of the vital drivers for declaring the state of emergency (in both April 2020 and January 2021) in Japan. In addition, the declaration of SoE1 in April 2020 was a source of uncertainty for many people. Along with the need to understand the coronavirus, people continuously worry about things that directly affect their everyday lives. These changes, coupled with the uncertainty of the situation, caused a rise in panic-buying of some goods and supplies, including masks and disinfectants.

The education sector was among those initially affected by the pandemic. According to the UNESCO Institute for Lifelong Learning (2020), most governments worldwide have temporarily closed educational institutions to stop the spread of the coronavirus. These quick closures and mandatory shifts caused several challenges for students, professors, and universities. For students, the transition of learning style from in-person to online deepened the gap between those who have access to the internet and technology and those who do not. Also, students who have part-time jobs struggled with the loss of income during the pandemic. This challenge is also present in Japan. In addition, the closure of schools in Japan also affected parents who are working while struggling with child care.

This infectious disease outbreak has also negatively affected the transportation and tourism sectors. Individuals are afraid of contracting the disease and are unwilling to spend long periods in confined spaces with others, or to travel to high-risk destinations. For

example, domestic media reports on the Kansai area showed a severe business slump as international visitors plummeted amid the COVID-19 outbreak (Schreiber 2020). This decrease in international tourists led to an accompanying decline in sales and profits for the industrial and social sectors engaged in tourism and related industries.

If there is perhaps one entirely implicit but essential challenge, it is the necessity to access accurate and trustworthy information about this pandemic. People continue to seek answers to their specific concerns to respond to the pandemic's challenges appropriately. Despite

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Japan's level of development, it was not able to evade the dreadful consequences of the pandemic. The ongoing concern for COVID-19 pushes people to learn more about the current crisis and to form sound decisions. Hence, people need to be enlightened about the situation, and the knowledge of other concerns (economic, social-cultural, psychological) certainly makes risk information valuable.

2. HUMAN SECURITY AND INFORMATION ACCESS DURING THE PANDEMIC

The overarching objective of this study is to show how in the context of a global pandemic, access to information is an equally significant human security issue. The combination of denial and inability to access population-specific information can exacerbate crises and situate people to a greater level of vulnerability. Moreover, as a human security issue, the absence of adequate and accurate information may restrict people's freedom from fear and want. Below are three key themes that support discussions on the nexus of human security and risk information:

a. Information sources are critical tools in making informed decisions during a crisis

During a crisis, people's information-seeking needs are heightened. This puts value on the communication about risks and how they are presented and conveyed to address differentiated needs. Risk communications may take many forms, including word of mouth, social media, flyers, and mass media campaigns and are generally carefully planned with tested and targeted messages (Seeger and Sellnow 2019, 112). These forms have advantages and disadvantages depending on their specific context. At a time like this pandemic, the availability and veracity of the information found in these various formats are critical in creating informed decisions to improve one's situation and security.

b. People's information-seeking needs and access are influenced by diverse factors such as socio-demographic characteristics

Spence and colleagues (2007) stressed the need to create crisis preparedness messages for high-risk populations from different social groups. This implies that the vulnerability of different social groups characterizes their differentiated needs, highlighting that people are variously vulnerable in times of crisis and have differentiated information-seeking requirements

and preferences. The pattern for how people seek out information constantly changes to adapt to their specific contexts and conditions. Demographic characteristics and situational variables contribute to people's heterogeneity in terms of information seeking and needs. These are the sources of combined vulnerabilities and strengths in confronting a crisis.

c. People's access to crisis-related information can influence their level of risk perception

Studies of disasters have shown how people's action/inaction during a crisis is related to their perception of existing risks and the threats they post to their safety (Bankoff 2003; Oliver-Smith 1996; Viscusi and Zeckhauser 2006). Health crises, like other disasters, are sources of uncertainty. Thus, when faced with these, people turn to others to reduce their uncertainty and seek guidance (Paton et al. 2008). People's confidence and satisfaction with their information sources provide a sense of empowerment. People gain the ability to assess and manage their risks based on their knowledge of the crisis and its potential impact on the issues that matter to them.

This Online Survey is a short-term study under the Human Security Empowerment Project at the JICA Ogata Research Institute, Tokyo, Japan. The inception of this study comes as a timely contribution to the project's overall theme on human security. It provides a people-centered approach to global health that focuses on empowerment and protection, [wherein] empowerment strategies enhance the capacity of individuals and communities to assume responsibility for their own health (Commission on Human Security 2003). While the government and relevant institutions deliver the necessary means and related information to ensure the health and safety of everyone, an individual's capability to access and share information that is accurate, relevant, and timely, resonates empowerment. It offers a projection on the possible forms of empowerment developed by people to secure their survival, livelihood, and dignity.

it is vital to understand people's basic information-seeking preferences and needs. For people to be adequately informed based on their needs reduces their anxiety (freedom from fear) and can help them access resources (freedom from want) to manage their risks accordingly.

This short survey is intended to support JICA's mission of working on human security at the institutional level, particularly in empowering the people, communities, and institutions regarding crisis-related information access. In times of health crises like the current COVID-19 pandemic, people's actions and the processes enacted afterwards are based on the degree of their perceived empowerment from the information they have and their level of trust in its sources. Thus, it is vital to understand people's basic information-seeking preferences and needs. For people to be adequately informed based on their needs reduces their anxiety (freedom from fear) and can help them access resources (freedom from want) to manage their risks accordingly.

3. METHODOLOGY

This qualitative study is based on the combined review of the literature and emerging studies related to human security, risk information, and COVID-19. The main research instrument in

this study is an anonymous 27-question internet-based survey prepared to gather five kinds of data: (1) basic socio-demographic details, (2) information seeking during the pandemic, (3) information sources, (4) information usage, and (5) risk perception [see Appendix A: Full Survey (in English)]. Figure 2 summarizes the flow and content of each section. The question types are mainly close-ended questions in the form of single and multiple responses. The survey questions were based on combined reviews of crisis information seeking during disasters like the 2011 Great East Japan Earthquake (GEJE) (Kawasaki, Henry, and Meguro 2011; Henry, Kawasaki, and Meguro 2011) and the H1N1 influenza outbreak (Majid and Rahmat 2013; Walter et al. 2012; Gray et al. 2012). These were modified to fit the current pandemic's information-seeking trends and issues. This internet-based survey is designed to provide data about information patterns and preferences and people's risk perceptions concerning COVID-19 from January 2020. It was distributed to residents of Tokyo, Chiba, Saitama, and Kanagawa. These prefectures were selected as the sites to be covered in this study because of their vastly interconnected social and economic engagements and geographic proximity. During the first State of Emergency imposition on April 7, 2020, these four prefectures and three other prefectures in the Western region (Osaka, Hyogo, and Fukuoka) were initially placed under such a state. To adapt to the linguistic diversity of potential survey participants, the survey was made available in multiple languages, including Japanese, English, Chinese, Korean, Vietnamese, Indonesian, Portuguese, Nepalese, and Spanish[12] [see Appendix B: Screenshots of The Online Survey (In 8 Languages)]. The study utilized the SurveyMonkey® platform to design and distribute the survey. This application also supported the generation of result summaries that substantiated this study.

The survey was distributed through a snowball sampling technique targeting distributions to the four prefectural offices, the embassies and regional/country associations, universities, community-based organizations, and requests from the researcher's social contacts. Survey respondents consented to take the survey voluntarily and this was kept open in an online

Figure 2. Survey Content Flowchart

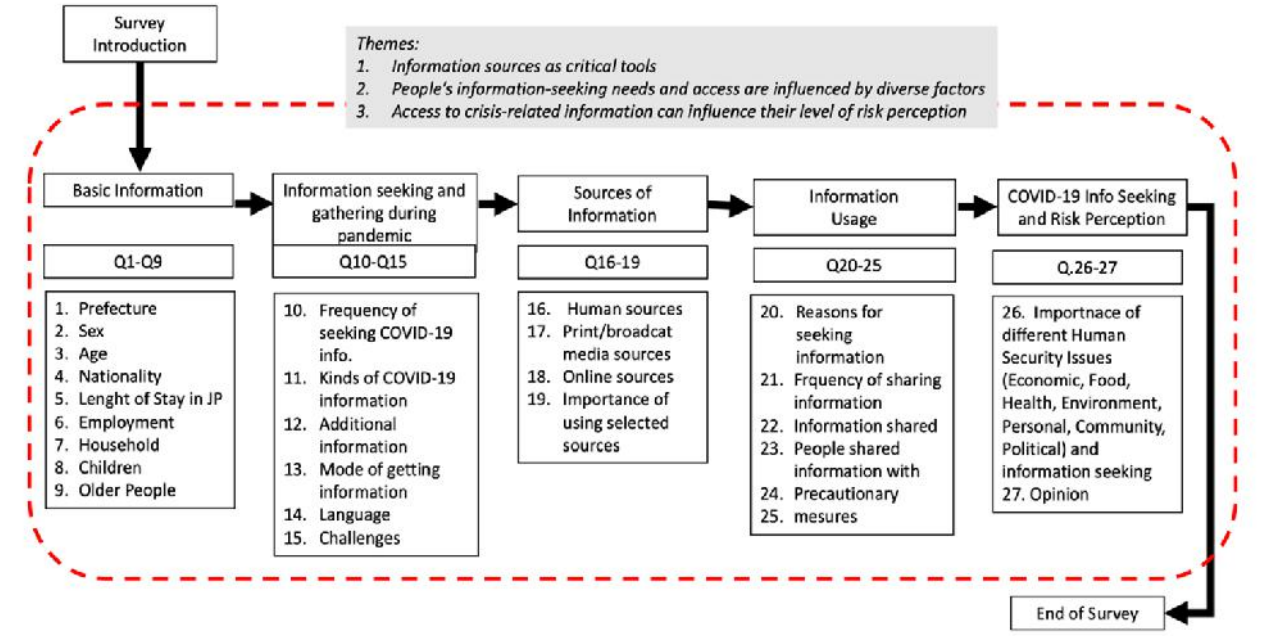


Table 1. Summary of data gathering	
Research Instrument	Anonymous and a voluntary internet-based survey
Target	18 and above residents from Tokyo, Chiba, Kanagawa, and Saitama
Period	November 1- December 31, 2020
Distribution method	Snowball sampling
Survey Platform	SurveyMonkey®
Languages	Japanese, English, Chinese, Korean, Vietnamese, Indonesian, Portuguese, Nepalese, and Spanish.
Responses	259 in total (27 countries)

survey platform from November 1 to December 31, 2020. Table 1 summarizes the details of the study setting and distribution.

Limitations of the study

Given the current restrictions for face-to-face interactions that may further the virus transmission, the survey was optimized for online distribution. Thus, the sample collected from the survey is skewed to those who had unrestricted access to the Internet at that time and who willingly responded to the survey. At this point in the report, the authors emphasize that the survey did not provide any empirical assessment of the population of the four prefectures, nor of Japan.[13] Instead, the data that presents the respondents' preferences and challenges in information seeking and their compliance to COVID-19 protocols supplements the substantial discussion on understanding risk information during this pandemic against the backdrop of human security

4. SUMMARY OF RESPONSES

At the closing of the Online Survey, a total of 259 responses from 27 countries had been received. In terms of the prefectural distribution, 64.86% (168) from Tokyo, followed by Kanagawa (21.62%, 56), Chiba (8.49%, 22), and Saitama (5.02%,13). The female and male participants are fairly distributed, with 134 (51.94%) and 120 (46.51%), respectively. Almost half of the participants (48.45%, 125) are in the 25 to 34-year-old group. Half of the participants identified themselves as Japanese (44.4%); this trend runs parallel with the 40.15% (104) of the participants that had lived in Japan since birth. About 78.38% (203) identified themselves in some form of employment (full-time, self-employed, employed part-time), and the rest are not currently employed (full-time student, retired, homemaker, unemployed, and unable to work). More than two-thirds (69.76%, 180) are living in a single (37.98%, 98) and two-person (31.78%, 82) household. Table 2 summarizes the demographic details of the survey participants. The summaries of the respondents' socio-demographic characteristics and survey results are available in [Appendix C: Complete Survey Results].

Table 2. Socio-demographic characteristics of survey respondents (N=259)		
Details	Frequency	Perc. (%)
Prefectures		
Chiba	22	8.49
Kanagawa	56	21.62
Saitama	13	5.02
Tokyo	168	64.86
Sex		
Female	134	51.94
Male	120	46.51
Prefer not to say	4	1.55
Age		
18-24 years old	25	9.69
25-34 y/o	125	48.45
35-44 y/o	52	20.16
45-54 y/o	27	10.47
55-64 y/o	13	5.04
65+ y/o	16	6.20
Length of stay in Japan		
less than 1 year	4	1.54
1 to less than 3 years	32	12.36
3 to less than 5 years	16	6.18
5 to less than 10 years	43	16.60
more than 10 years	60	23.17
Since birth	104	40.15
Employment Status		
Employed full time	147	56.76
Employed part-time (working students, baito)	45	17.37
Self-employed	11	4.25
Full-time Student	36	13.90
Retired	6	2.32
Homemaker	5	1.93
Unemployed	8	3.09
Unable to work	1	0.39
Household		
One person (1)	98	37.98
Two persons (2)	82	31.78
Three persons (3)	35	13.57
Four or more persons (4+)	43	16.67
Residence		
Japanese national	115	44.4
Foreign resident[14]	131	50.6
Did not say	13	5.0

5. SURVEY RESULTS

a. Information seeking and gathering

The details on information seeking cover the type of information desired and the accompanying frequency and modality of the information access. The primary data sought in this survey is the type of information sought by people during this pandemic. The survey included information needs ranging from general information about COVID-19, the spread of the virus, the availability of resources, updates about the pandemic, and some related procedures. These were detailed in 19 items that the participants could choose from. 233 survey respondents named the kinds of information they sought during this pandemic. The main themes that people looked for included the spread of COVID-19 in Japan (198) and around the world (187), the signs and symptoms of COVID-19 (181), its prevention and control (158), and government advisories related to COVID-19 (146). Figure 3 illustrates the selected COVID-19 information sought.

Frequency suggests the urgency of getting the information as and when needed, while the type of information implies the information relevant to the respondents. The significant time marker considered in this study is the imposition of a state of emergency in April 2020 (SoE1). Before SoE1, the survey respondents had already been looking for COVID-19 related information daily (175,67.6%), with about 115 (44.4%) of them seeking information more than once a day. By the time the SoE1 was enforced, more respondents had claimed to seek information at least once a day (192, 74.1%). Once the SoE1 was lifted, the survey respondents continued to look for COVID-19-related details at least once a day (81, 31.3%) or weekly (82, 31.7%). Table 3 summarizes the distribution of information seeking across the three periods.

In terms of how they get information, the respondents prioritized using the Internet (222), broadcast systems (119), and messaging services

Figure 3. Selected COVID-19 Information Sought

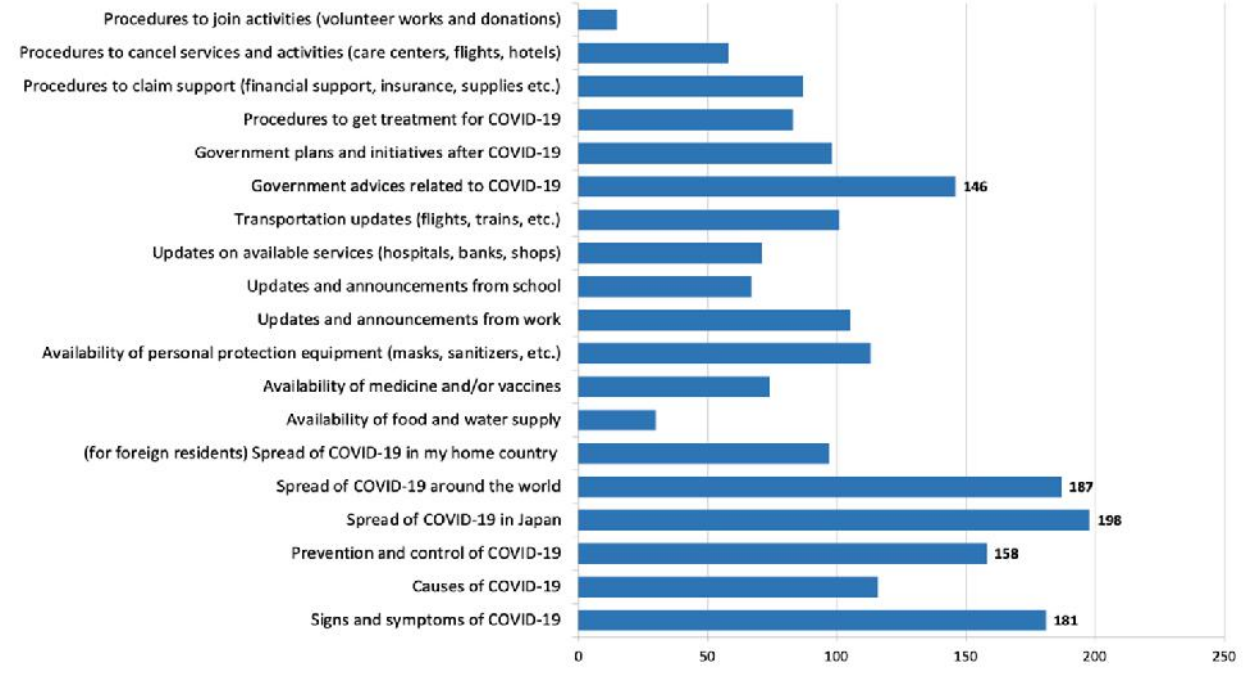


Table 3. Frequency of information seeking in three periods (N=259)

		Jan 2020- April 7, 2020		SoE1 (April 8- May 27,2020)		Post-SoE1 (May 28- Dec 2020)	
Daily	More than once a day	115	44.4%	121	46.7%	58	22.4%
	Once a day	60	23.2%	71	27.4%	81	31.3%
Weekly	More than once a week	41	15.8%	26	10.0%	53	20.5%
	Once a week	11	4.2%	11	4.2%	29	11.2%
	Rarely/Never	6	2.3%	3	1.2%	12	4.6%

(72). The respondents also identified getting information by reading print-based sources like newspapers and scientific articles (See Figure 4). In terms of languages, respondents received/get COVID-19 related information in Japanese (176), and English (156), and in languages (23) such as Chinese, Bahasa Indonesia, Filipino, French, among others. The additional languages are reflective of some of the nationalities of the respondents.

Together with documenting the types of information that people sought during the pandemic, the survey also probed into the challenges in information seeking they encountered (See Figure 5). The respondents' key challenges are lack of clear information (122), the presence of too much conflicting information (98), and having to absorb too much repetitive information from multiple sources (92). In addition, the frequent (too many) updates (64) were also a challenge for the respondents. Other issues included their doubts about the integrity of the information they get and the delays in information being passed on to them.

b. Sources of information

Survey respondents were asked about their sources of information concerning the pandemic. For the survey, sources were classified into

Figure 4. Modality of Information Seeking

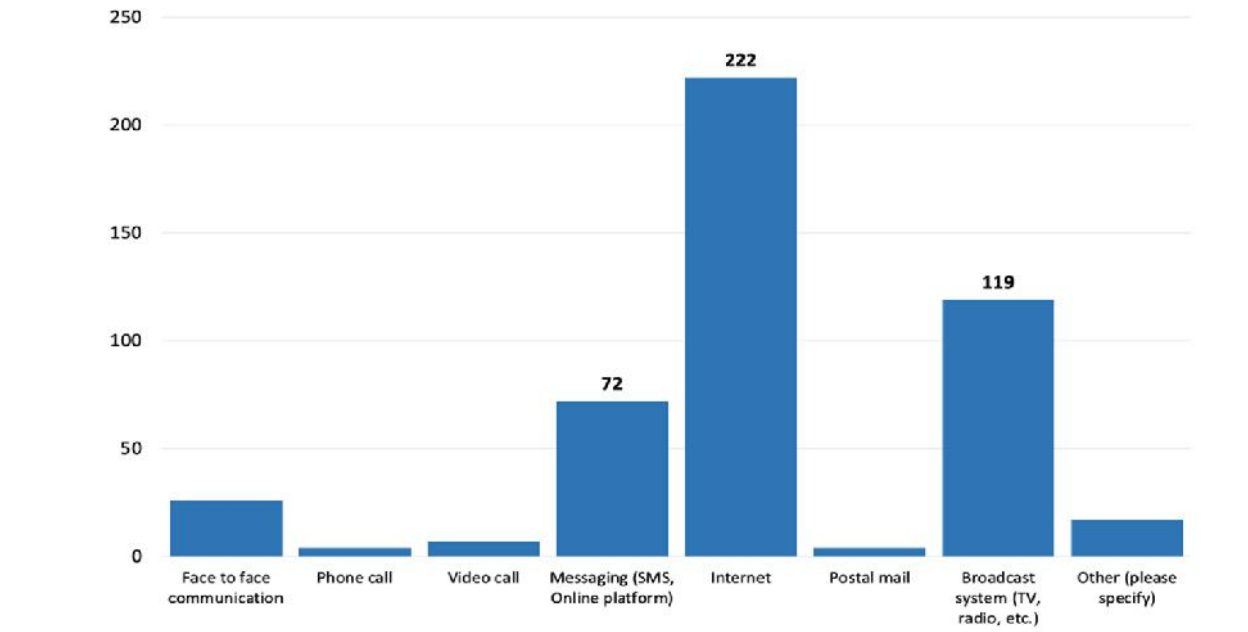
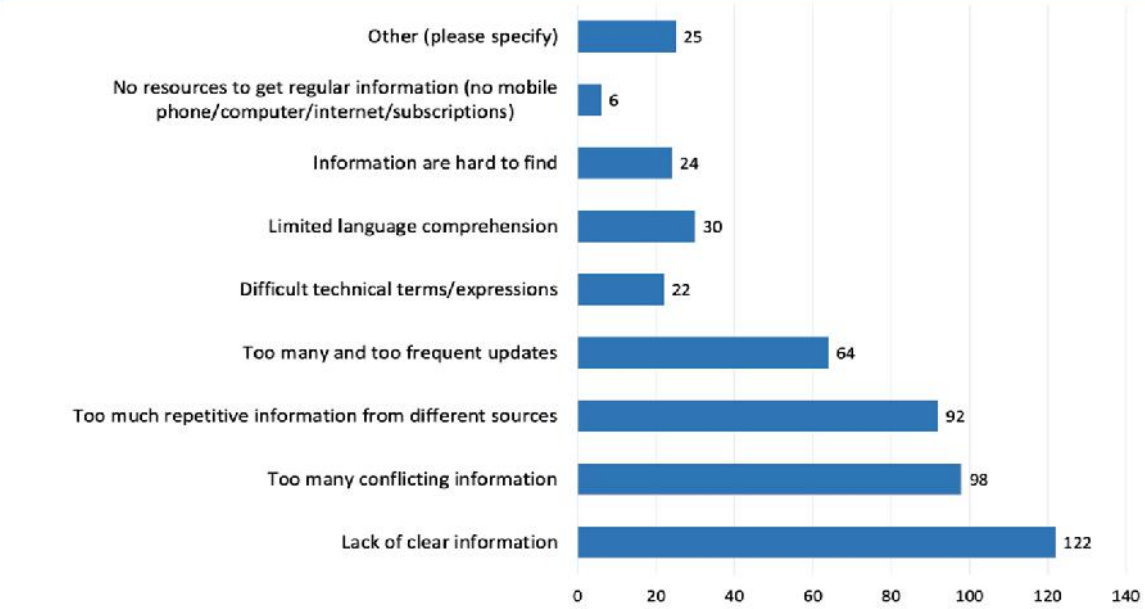


Figure 5. Respondents challenges in information seeking



human sources, traditional media sources, and online sources. Traditional sources include the conventional print and broadcast media and the online sources accommodate the more contemporary forms of information communication (See Table 4). Online sources are the cumulatively preferred sources of information. Among the human sources, medical professionals (164), and government officials, both at the local and national level (130), are the most preferred sources for COVID-19 information. Some of the professionals/experts

Table 4. Information Sources

	Sources	N
Human sources	Family	45
	Friends	38
	Colleagues (Classmates and/or Co-workers)	40
	Government officials (local and/or national)	130
	Medical doctor and/or personnel	164
	People from the same club/group	14
	People from your social media network	30
Traditional media	Television	131
	Radio	24
	Newspaper, magazines, flyers	115
	Posters/ Community board	14
Online sources	School or Work Intranet	44
	News websites (NHK, CNN, etc.)	151
	Social network sites (Facebook, Twitter)	31
	Messaging services (Line, Whatsapp)	22
	Prefecture/ City government websites	96
	Ministry of Health, Labor and Welfare (MHLW) website	129
	International organizations (WHO, IOM, etc.)	131
	(for foreign residents) news websites from your home country	65

specifically identified included epidemiologists, immunologists, psychologists, economists, and data analysts. From the traditional sources, 131 respondents get their information from television, and 115 rely on print such as

newspapers, magazines, and flyers. As mentioned, online sources are the most preferred sources of information, particularly from online news websites (local and international), international organizations websites (e.g., WHO, IOM, etc.), and Japan's Health Ministry prefectural offices websites. Official COVID-19 social media

accounts, online medical personnel platforms, researchers, and related journal articles are the more specific online sources. Of the 115 who identified as foreign residents, 65 (56.5%) referred to news sites from their home countries.

c. Reasons for seeking COVID-19 information

People seek information and use it for the different purposes that fit with its context and their needs. There are various rationales as to why they seek information from particular sources. Table 5 shows that the respondents have varied reasons for choosing the different sources of information. The respondents rated their trust in sources as the most crucial reason to seek information from their preferred sources (mean score 3.14), followed by the accessibility of the information (mean score 3.00), and the availability of sufficient information (mean score 2.88).

The reason for using these sources of information is to support the actual purpose of looking for information related to the COVID-19 pandemic. To support the study's theme, survey participants were asked about the importance of varied issues aligned with human security dimensions in their information seeking about COVID-19. As shown in Table 6, the respondents placed the highest priority on their health as the reason for seeking information during this pandemic (mean score 3.19). The

Table 5. Level of importance on the reasons for seeking COVID-19 information

I seek/ get information from these sources because...	N	Mean Score (1-4)	SD
I trust these sources.	226	3.14	1.01
People I know trust these sources.	223	1.87	1.18
The information is sufficient.	226	2.88	0.98
They are accessible.	225	3.00	1.00
They are inexpensive/free.	225	2.68	1.26

Table 6. Purpose of seeking COVID-19 information

I seek information about COVID-19 because...	N	Mean Score (1-4)	SD
I am concerned about my source of income (ex; job, business).	221	2.61	1.23
I am concerned about the availability of food and water supply.	221	2.14	1.24
I am concerned about my health.	223	3.19	1.03
I am concerned about its impact on the environment (ex: medical waste etc.).	221	2.15	1.16
I am concerned about my personal matters (ex: education, family, visa status).	220	3.02	1.12
I am concerned about my neighborhood/community.	220	2.35	1.22
I am concerned about the political situation/condition (in Japan and/or my country).	220	2.60	1.14

Table 7. Safety Protocols during the Pandemic (N=259)	
Safety Measures	**N**
Staying at home	134
Working from home	140
Wearing masks when going to public places	218
Regular washing of hands	205
Cleaning/disinfecting things I touch	144
Avoiding closed spaces	169
Avoiding crowded places	180
Avoiding close-contact settings	164
Improving air circulation (opening doors and windows)	172
Other (please specify)	12

health concern is followed by their concern for personal issues such as education, family, and visa status for foreign residents (mean score 3.02). These were followed in importance by their economic situation (mean score 2.61), the concern for the political situation/condition in Japan and/or their home country (mean score 2.60), and the consideration for their neighborhood/community (mean score 2.35). Finally, the survey respondents rated concerns about food and water supply (mean score 2.14) and the pandemic's impact on the environment (mean score 2.15) of minimum importance.

d. The practice of safety protocols during the pandemic

The respondents were asked if they follow the recommended COVID-19 safety measures. Of the 224 responses, 217 affirmed compliances to safety protocols and only 7 responded otherwise. From the list of commonly prescribed preventive measures, wearing masks (218), regular washing of hands (205), and improving air circulation in confined spaces (172) were prioritized. In addition, Japan's Ministry of Health, Labour and Welfare (MHLW) encouraged "The Three Cs," and about three-fourths of the participants confirmed avoiding closed spaces (169), crowded places (180), and close contact settings (164) (See Table 7). Respondents also named other safety measures observed, including regular disinfection, online shopping, boosting the immune system, and keeping in touch with the family.

6. DISCUSSION

In an effort to understand the importance of risk information, particularly during this COVID-19 pandemic, the following short discussions weave together relevant points to comprehend how information access is an essential human security issue.

a. Trends in information seeking resources

Individuals seek a variety of information for informed decision-making. For example, during a crisis, accessing information from various sources is crucial for people to keep them informed about current events from different perspectives. However, information overload from multiple sources can also cause negative

During a disaster or a public health emergency, like COVID-19, information sources assist individuals in making sense of the situation, learning about preventive measure practices, and reducing the anxiety induced by the uncertain situation (Chao et al. 2020).

psychological and behavioral responses (Soroya et al. 2021).

During the COVID-19 pandemic, people frequently and constantly check different information sources to try to understand the coronavirus. To cope with uncertainty and fear of the disease, people started searching for more COVID-19-related information, such as lists of symptoms and precautionary measures (Bento et al. 2020). Depending on each environment, people choose and use different sources to understand the virus (see Figure 4). The Internet, broadcast systems (TV and radio), and messaging services (SMS and online platform) are prominent among these sources. During a disaster or a public health emergency, like COVID-19, information sources assist individuals in making sense of the situation, learning about preventive measure practices, and reducing the anxiety induced by the uncertain situation (Chao et al. 2020). However, while helpful, multiple information sources can create new problems. This situation occurs when a lot of information is available from multiple sources, which enhances stress, tiredness, and even discontinuation of the use of information sources in recent studies (Nawaz et al. 2018; Lee et al. 2016).In addition, information from these sources may increase fear and doubt, especially when individuals cannot distinguish between real and fake news. This causes greater uncertainty and adverse effects on mental health.

The various forms of online, human, and traditional sources have their strengths and weaknesses that contribute to acquiring and disseminating crisis information. Below are some explanations on how these sources impact on people's security.

Online sources. The survey shows that online sources are the most commonly used source among the participants to seek information for COVID-19 (see Figure 4 and Table 4). In replacing face-to-face communication during the pandemic, more people started using new digital communication methods for various purposes, for example, holding an online meeting or talking with people living far away over a video call (Nguyen et al. 2020). As people are required to maintain physical distancing for an extended period to prevent transmission of the virus, they are more socially isolated. Such isolation reduces physical opportunities to fulfil their informational and psychosocial needs (Woong et al. 2021). Digital communication tools are helpful to both connect people with the correct information and to empower them to cope with their isolation. Compared to the time during SARS in 2003, people today have more access to the Internet and can keep connected with their social networks and the world even when they are physically isolated (Woong et al. 2021).

In terms of mental health and information seeking, Legg and colleagues (2015) explained that well-informed patients with trusted physicians are less anxious because they feel a sense of control and can clarify information they received from physicians. Contrarily, Woong et al. (2021) pointed out the negative impacts on people who receive from multiple unreliable sources, which can add confusion and enhance people's stress. Based on the survey results shown in Table 5, most people choose sources to seek COVID-19 information because they trust them. The survey participants put more value on trustworthy information than on the quantity of information.

Although online sources can give people more opportunities to stay informed and connected with other people, these sources also cause confusion, stress, and anxiety. These conditions can be attributed to too much and too frequent information, too much conflicting information, and lack of clarity related to the reliability of information (see Figure 5).

Human sources. Our survey participants are likely to seek information from government officials, medical doctors, and personnel (see Table 4). One of the reasons why they choose these resources is to decrease their anxiety about their health. Majority of the survey participants seek information about COVID-19 because they are concerned about their health (see Table 6). This is the highest number of reasons for seeking information in our survey result. Because there is a lot of information about safety protocols in various media, people need to choose what/who they trust to follow the information to protect themselves from infectious diseases. People choose medical doctors or personnel as human sources because they think they are more trusted sources to help get the right information (Bogart et al. 2021). As Legg et al. (2015) explain, the role of physicians has a significant impact on how patients act to cure their illness, and many people follow protective measures from health professionals such as avoiding human interaction and improving air circulation (see Table 7) to protect themselves. In our survey, some comments specify a medical doctor who shares information about covid in their blog. Besides other sources, people have more access to reliable human sources to choose valid information for their health from too much or too frequent information.

Traditional sources. Among traditional sources, over 100 survey respondents use television, newspaper, magazines, and flyers. International Telecommunication Union – Radiocommunication (ITU-R) (2017) explains that broadcasting is the primary source of critical information to the public in disasters and emergencies. Because of shifting lifestyles in the quarantine period, more people stay at home by working from home or taking online classes, and the average time of viewing TV increased. In response to this, many TV programs share news and intonation about the coronavirus. Although this can reach most people, including those who do not use the Internet, it causes confusion and doubt. Comments from the survey respondents demonstrated how the discussion of the political responses to COVID-19 and safety protocols from commentators in news programs leads to confusion and increased uncertainty about the information's reliability. It is hard to distinguish commentators who can be trusted or who are experts on this topic. There is also the critical point from one of the comments of survey participants that those who can impact most people's beliefs should more carefully share their opinions about COVID-19 since they may be taken as reliable information by their supporters.

Access to information during a crisis is crucial for all individuals to keep informed about the situation, protect themselves and feel secure. During the COVID-19 pandemic, people have had more options in the sources of information because of the development of technology, and this has both advantages and disadvantages. Although information overload from multiple - and at times unreliable sources can create more confusion and anxiety, the information particularly from government officials, medical

Although information overload from multiple - and at times unreliable sources can create more confusion and anxiety, the information particularly from government officials, medical doctors and personnel empowers people to cope with their psychological and behavioral concerns.

doctors and personnel empower people to cope with their psychological and behavioral concerns. Hence, accessible and reliable information from different sources are keys to decision making in respond to individuals' needs and situations during the health crisis.

For foreign residents, the need for awareness of the current status in their home country is also essential. Along with ensuring their safety, their concern extends to their connections in their home country. Thus, their need for trusted and reliable sources is necessary.

b. Socio-demographic characteristics as a driver of information needs and access

The 2019 novel Coronavirus has been spreading across borders worldwide, and the spread of infection has become a risk to everyone. This section presents how people's varied socio-demographic traits contribute to their protection and empowerment. This particular discussion expounds on the strengths and challenges in information seeking between Japanese and non-Japanese survey respondents. [15] Past studies showed that nationality matters in disasters and made calls for the inclusion of non-Japanese residents in disaster risk reduction and response (Kawasaki et al. 2012; Hada 2020;). During the COVID-19 pandemic, it is reported that foreign residents had unique needs and challenges, for example, information (language) availability, residence status, and impact of the pandemic on their home countries (HRWG 2020; Our SDGs 2020). Hence, this demands an understanding of how specific issues such as language, information accuracy, and information use relate to people's residence status in a country.

Language and information access. Language, in times of crisis, plays one of the most critical roles in information transmission. The respondents chose and identified Japanese and English as their preferred languages for COVID-19-related information based on the survey results. In addition, other languages were also identified in this survey, such as Chinese, Bahasa Indonesia, Filipino/Tagalog, French, German, Vietnamese, Spanish, Korean, Portuguese, French, Italian, and Thai. As stated in the survey result, these languages mirror the languages in the respondents' home country. Therefore, it was confirmed that the language becomes a barrier to access to Information if it is available only in Japanese in Japan (Aoki et al. 2019).

For those with limited Japanese proficiency, access to vital information is challenging. However, with the global nature of COVID-19, general protection information can be accessed through the Internet in multiple languages. Similarly, Kawasaki and his colleagues (2012) explain that many online free translation services allow non-Japanese speaking people to grasp the government's response and the domestic news reports in English as secondary information to some extent. More so, foreign residents acquire information about their home country in their own language. In addition, it is possible to use the available information sources in their country of origin as an additional source of information online. Specifically, the Internet has become a part of life infrastructure that enables people to obtain information about domestic and foreign protection in the global pandemic.

Accuracy of Information. Based on the survey, there are also differences in the way Japanese and non-Japanese residents access information. While both capitalize on the Internet, non-Japanese survey respondents mainly obtained information through messages via SMS and SNS. In contrast, nearly twice as many Japanese respondents relied on the broadcast system. This shows that Japanese people seek information mainly from traditional sources that provide general information, and foreign residents prefer

messaging applications to gain more specific information.

The disparity in people's residence in a country reflected the differentiated challenges in information access during the crisis. Foreigners who use SNS had issues related to duplicating information from different sources. As Simon and colleagues (2015) raised, although the advantages of using SNS during emergencies were confirmed, the issues of disinformation and inaccuracy have remained challenging. It is vital to be aware that there is always a "selection bias" in the information people receive via SNS. On the other hand, Japanese respondents perceived the lack of clear information as a challenge that may raise their high expectations beyond the public broadcasting capabilities. In terms of information accuracy, Kawasaki et al. (2010) suggested that it is necessary to have a system that allows people to successfully supplement information independently by multiple sources of information.

As a typical example, localized information like the pandemic situation in their home country is a specific type of information difficult to obtain in a packaged form of information and yet is relatively in demand by foreigners. In this sense, a unique network dedicated to a specific matter also becomes a significant advantage in fulfilling their particular information needs. As Spence's study (2007) showed, minority groups in a society tend to see the importance of addressing psychological concerns and safety. For foreign residents, the need for awareness of the current status in their home country is also essential. Along with ensuring their safety, their concern extends to their connections in their home country. Thus, their need for trusted and reliable sources is necessary.

Information used for protection and empowerment. Beyond the purpose of acquiring information for personal use, sharing the information may contribute to other people's better judgment about their actions under crisis. The survey revealed that while the Japanese respondents mainly shared general information with their family members, the non-Japanese shared the spread of COVID-19 and updates from the government with friends actively via SNS. The results of this survey suggest that the pandemic situation in the home country and the ability to return to the home country is a matter of concern. Therefore, it is conceivable that digital information-sharing groups were formed with their co-national friends to exchange information on this matter.

It is well known that such spontaneous information sharing mechanisms are often created, but how can they function effectively? A straightforward answer is that "with enough people working together, any errors by one individual can easily be corrected by another" (Zook et al. 2010). As shown by Simon et al. (2015), this self-validation of information has an advantage in verifying disinformation and rumors with immediate correction among group members. This self-validation is a crucial feature to cope with the challenges of SNS in duplication and authenticity of the information as a tool for information sharing, although operationalization of this mechanism requires a high level of active management (Taylor et al. 2012). This kind of self-organization in crisis communication should be a subject for future research.

Information sharing is essential to make sound and good judgments about a crisis. Kawasaki's (2011) study on the 2011 GEJE showed that the "requests from family and relatives" had the most significant impact on the decision-making process for evacuation among foreigners. Families and relatives residing outside of Japan urge their families to evacuate and leave the country mainly based on information about the crisis in Japan sent out by foreign media. The disparity in the nature of the crises (the GEJE

and the COVID-19) may have differentiated "requests" from their families. However, this shows that the information they share keeps their networks abreast with the situation and contributes to how others perceive the crisis and the extent of the risk.

c. Risk perception and information seeking during the pandemic

Comparable to disaster risk, health emergencies are a function of hazard, exposure, vulnerability, and capacity. It can potentially result in losses in varied forms. It is essential to consider the varied social and economic contexts in which disaster risks occur. People do not necessarily share the same perceptions of risk and their underlying risk factors (United Nations General Assembly 2016). The coronavirus equates to the hazard that exposes everyone of the various vulnerabilities and capacities, and this is the source of differentiated risk perceptions. Although the local public commonly experience natural hazards and disasters, risk perception of a disaster varies by the individual's psychological frame and/or previous experiences and reflects specific individual values (Kim and Madison 2020). At the personal level, insecurities may change subject to what is perceived as a threat to their freedom and survival, and these matter in their information seeking during crises.

Human insecurity comprises many different threats beyond military or traditional security risks, including economic, food, health, environmental, personal, community, and political security (Tadjbakhsh and Chenoy 2007). The study seeks to understand how participants rationalize their COVID-19 related information gathering in the context of various human security concerns. The majority of respondents expressed their primary concerns for health and personal matters as the most important reasons to seek information about COVID-19 (see Table 6). After the health security issues, apprehension for personal matters correlates to personal security. The latter form of security threat is attributed beyond criminality to individual perceptions and fears that can contribute to personal levels of insecurity (ibid.). Personal concerns include the anxiety for everyday situations; and are not limited to themselves but for their [familial] extensions. For example, education for themselves or their children has been compromised by the pandemic, raising financial and logistical challenges.[16] For foreign nationals in Japan, the assurance of their residence status (as residents, refugees, or undocumented migrants) has been a subject of concern (Human Rights Working Group 2020).[17] While each threat to human security can be separately categorized, it is essential to emphasize that these categories overlap and are intertwined, thus rendering a situation a complex challenge for each community or group. Inevitably, the capacity to be risk-informed of these various insecurities can determine the course of action taken during crises/emergencies.

Risk perception draws together issues and concerns that matter to the individual, including those contributing to their insecurities. Some studies present this correlation of individual risk perception as determinants to people's action or inaction during pandemics or disasters (e.g., Kim and Madison 2020; Rubin et al. 2009; Walter et al. 2012). Risk-related information becomes the necessary intermediary between people's perceived insecurities and the action they take after that. As Hansson and colleagues (2020) detailed when discussing communication and disaster vulnerability, it is this meaning-making from gathered information about a hazard that helps people make sense of the situation and potentially take steps to minimize risks. The various human insecurities contribute to how people perceive risks and how they behave to address the challenge and improve their conditions and behaviors. Thus, risk information becomes a salient element that adds to a better

Risk information becomes a salient element that adds to a better understanding of the pandemic and the decisions made after that. Hence, access to accurate and trustworthy information may not be directly a source of insecurity; however, it is an essential determinant of people's risk perception.

understanding of the pandemic and the decisions made after that. Hence, access to accurate and trustworthy information may not be directly a source of insecurity; however, it is an essential determinant of people's risk perception.

How people see the risks associated with information security determines what decisions they will make regarding the actions they will take (or not take) in conjunction with whatever risk security measures their particular organization has put in place (Pattinson and Anderson 2005). Trusted information sources serve as the channels for protection from uncertainty. The concept of trust entails the assumption of risks that make it impossible to gain certainty (Hertzum et al. 2002). It involves assessing the information seeker that the source is truthful and unbiased, thereby confidently interpreting the message. Protection strategies, in this context, suggest equitable access to information from trustworthy sources that can rationalize the course of action taken. When health risks are uncertain, as likely will be the case during a pandemic, people need information about what is known and unknown as well as interim guidance to formulate decisions to help protect their health and the health of others (Reynolds 2006 as cited in Reynolds and Quinn 2008). From the survey participants, medical professionals (doctors and personnel) were the preferred primary sources of COVID-19 related information, along with official websites of relevant international and local agencies. News-related sources in different formats such as broadcast (TV), print (newspaper), and online (news websites) were also named as leading sources of information. In total, these preferences suggest the need for accurate facts from reliable sources. This, along with the accurate interpretation of information, can help people assess the risk for themselves and others and act appropriately.

Equally, trust in information sources aids in empowering individuals. The development of the capabilities of individuals and communities to make informed choices and to act on their behalf is definitive of empowerment (Office for the Coordination of Humanitarian Affairs 2009). Trust in information sources serves as a pivotal factor in people's response and adaptation of recommended actions. This reflects what the majority of the respondents confirmed following the prescribed safety protocols. A recent study on Japanese behavioral changes during the early phase of the pandemic showed that despite the absence of an enforced ban on mass gathering or traveling beyond the home region, a large portion of Japanese citizens seemed to implement proper prevention measures on their own even before the end of March 2020 (Muto et al. 2020). Similarly, most survey respondents follow preventive actions, including social distancing, handwashing, coughing etiquette, and ways to strengthen immunity.

Paton and colleagues (2008) capture well this relation between trust and empowerment. When people do not perceive themselves as empowered, they are less likely to trust agency sources [information sources], which reduces the

By having access to accurate and context-appropriate information, people become protected from these threats, consequently empowered to enact measures to reduce their vulnerability and increase resilience.

likelihood of them preparing for a disaster. Instead, people commence addressing threats by fully understanding how they are vulnerable and what makes them insecure. By having access to accurate and context-appropriate information, people become protected from these threats, consequently empowered to enact measures to reduce their vulnerability and increase resilience.

7. CONCLUSIONS

Over the years, the means and sources of information develop and increase, yet the disparity in access to crisis-related information continues. The COVID-19 pandemic transcends the advantages of development. A developed country like Japan experiences vulnerabilities and various groups and communities have varying insecurities, even with good information access. The quality and accuracy of risk information are essential resources during a crisis, as its form, presence or absence, and quality contribute to people's security in confronting the crisis.

A human security perspective in understanding the importance of risk information situates vulnerable groups at the core, exploring how their information needs and access opportunities comprise their protection and empowerment during a crisis. This nexus of human security and risk information was found to be important in these discussions: (a) information sources are critical tools in making informed decisions during a crisis, (b) information-seeking needs and access are influenced by diverse factors such as socio-demographic characteristics, and (c) access to crisis-related information can influence their level of risk perception.

A human security perspective in understanding the importance of risk information situates vulnerable groups at the core, exploring how their information needs and access opportunities comprise their protection and empowerment during a crisis.

The presence of new and developed information tools are emerging elements that can increase people's security. However, the variability in access to new modalities and mediums can also widen the gaps among people. This concern goes beyond inequality in the quantity of information sources available, extending to the difference in the quality of information accessed and received. This is evident in the challenges that the respondents shared in the survey, as they sought to be informed during this pandemic.

This diversity in tools and mediums to gain accurate crisis information is matched by the context-specific information needed by people. This specific need is based on people's combined characteristics such as age, sex, and other socio-demographic traits that may increase their vulnerability to the crisis. During this COVID-19 pandemic, mobility has been subjected to certain levels of insecurity. Foreign residents in Japan seek information, not just to be informed about the current situation locally but also to learn more about the pandemic situation in their home country. With the global spread of this infectious disease, people have multiple sources of information in different languages. However, localized information continues to be a challenge for foreign residents. Nevertheless, despite delays, efforts have been made to create more inclusive risk communication in local communities.

The less knowledge and understanding of a crisis people have creates uncertainty that contributes to how they gauge the risk and respond to it. This affirms that access to crisis information matters to people's risk perception. In the year-long development of the pandemic and the resulting global spread of COVID-19, the certainty that it is a large-scale crisis was confirmed. This has been evident in the various safety protocols issued by governments and international bodies, encouraging people to protect themselves. Knowing the crisis and the broader understanding of how to respond to the pandemic lessens uncertainty and improves people's decision-making.

Access to risk information is pertinent across all the various stages of a crisis. Despite being constrained and challenged by the pandemic, communities can offset this inequality in access to crisis information. For example, early into the pandemic, the need to inform people of health and sanitation awareness is paramount. The dissemination of information for proper hand washing, proper wearing of masks, and other preventive measures are valid needs regardless of a country's level of development during the pandemic. Communities can support effective risk communication by providing sufficient information suited to the context of people's information access and use, capitalizing on the advantages of the digital transformation that is taking place globally.

Access to risk information is an essential element in ensuring human security; people are protected and empowered by reducing fear, wants, and vulnerabilities to present and future risks. The government and international agencies provide information and makes available the answers to people's varied concerns. Likewise, the information people receive and access empowers them to make informed decisions, including following protocols and considering vaccination. At this stage of combatting the pandemic, the need to curb the spread of the virus primarily focuses on the development, manufacture, and equitable distribution of COVID-19 vaccines. However, at the individual level, the decision to get vaccinated requires further understanding of the crisis and its treatment. Thus, it is imperative that a person needs to be fully informed of the advantages of getting vaccinated, not just for themselves but for everyone.

Access to risk information is an essential element in ensuring human security; people are protected and empowered by reducing fear, wants, and vulnerabilities to present and future risks.

This study looked into information access for residents in four interconnected prefectures in Japan during the first year of the COVID-19 pandemic. It presented a review of the information needs and challenges of people during this health emergency. While the respondents do not represent the entirety of the population in these four prefectures, nor in Japan, it shows that information access is a human security concern.

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[1] Tokyo and the neighboring prefectures of Chiba, Kanagawa, and Saitama cover the Greater Tokyo Area. These areas are collectively referred as *Itto Sanken* (One metropolis, and three prefectures).

[2] The numbers on new cases in Tokyo are from the Tokyo Metropolitan Government Website (https://stopcovid19.metro.tokyo.lg.jp/en), while Japan-wide numbers are from Nippon.com (August 2020: https://www.nippon.com/en/japan-data/h00890/, and December 2020: https://www.nippon.com/en/japan-data/h00657/)

[3] See: https://www.who.int/publications/m/item/covid-19-public-health-emergency-of-international-concern-(pheic)-global-research-and-innovation-forum

[4] The study excludes the details of the coronavirus infection from the Diamond Princess Cruises in the timeline of COVID-19 cases in Japan. While the cruise ship docked in Yokohama, Japan on Feb.3, 2020; the Japanese government prohibited the immediate disembarkation of its passengers and instead adopted the Anchorage Quarantine Approach, sending Quarantine officers to the ship (Jimi and Hashimoto 2020). Hence, the cases in the cruise ship are not part of Japan's confirmed COVID-19 cases.

[5] See: https://www.japantimes.co.jp/news/2020/02/27/national/hokkaido-coronavirus-school/ (Accessed, February 2021)

[6] See: https://www.japan.travel/en/coronavirus/ (Accessed, February 2021)

[7] For the purpose of this paper, the State of Emergency declared in April 2020 is alternately referred to as "SoE1", while the State Emergency declared in January 2021 is defined as "SoE2."

[8] See: 新型コロナウイルス感染症により 消費行動に大きな影響が見られた主な品目など総務省統計局.https://www.stat.go.jp/data/kakei/sokuhou/tsuki/pdf/fies_rf1.pdf)

[9] During SoE1, COVID-19 cases peaked at 11,443 (April 28) and declined to 1,967 cases on May 26, 2020. https://www.worldometers.info/coronavirus/country/japan/

[10] Source: https://www.stat.go.jp/data/roudou/rireki/gaiyou.html#ft_tsuki

[11] See: https://www.worldometers.info/coronavirus/country/japan/

[12] The choice in survey languages was based on a review of the recent Japan Statistical Yearbook, particularly the population by nationality in the four prefectures.

[13] See: " 'How many cases do I need?': On science and the logic of case selection in field-based research" (Small 2009).

[14] To quantify the number of foreign respondents, the research team accounted for the responses to the question on "Nationality".

[15] See Appendix D: Disaggregated Survey Results Between Japanese and Non-Japanese Participants for reference.

[16] See: "Japanese Women Took on the Burden During COVID-19 School Closures." *Nippon.com,* July 22, 2020. (https://www.nippon.com/en/japan-data/h00770/)

[17] See: "Japan faces balancing act over virus clusters among foreign nationals." *Japan Times,* November 22, 2020. https://www.japantimes.co.jp/news/2020/11/22/national/social-issues/coronavirus-clusters-foreign-nationals-japan-discrimination/

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