The Information Needs of the Iranian People in the COVID-19 Pandemic from the Perspective of Health Professionals: A Qualitative Approach

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Authors
Atighechian G.[1] *PhD,*
Tavakoli N.[2] *PhD,*
Rezaei F.*[3] *PhD*

ABSTRACT

Aims The COVID-19 pandemic led to widespread concern, rumors, and fears in different countries. This study aimed to identify the information needs of the Iranian people regarding the pandemic.

Participants & Methods A qualitative study using a content analysis approach was conducted to collect experts' opinions on identifying the information needs of the Iranian people regarding the COVID-19 virus from March to May 2020. Key informants were purposefully selected from the Ministry of Health and Medical Education, Isfahan and Tehran University of Medical Sciences Hospitals. The saturation point was reached at 19 face-to-face semi-structured interviews. The data were collected using a semi-structured interview. The data collection instrument was the interview guide form. The interviews were analyzed by MAXQDA 12.

Findings The findings were divided into two sections, including channels and sources of information and people's information needs about the COVID-19 virus. In the first part, two main themes and eight categories were identified. Four themes and twenty-three subthemes on information needs regarding the COVID-19 virus were extracted.). Themes related to information needs regarding COVID-19 were as follows: Information regarding an alternative lifestyle due to COVID-19 Pandemic, Information regarding mental health issues, Information regarding sanitation and hygienic requirements, and Information regarding medical issues.

Conclusions The correct information is the key to achieve success in mitigation measures during the COVID-19 pandemic. Identifying people's information needs about COVID-19 will also help governments produce better educational content.

Keywords Information; Health Literacy; Information Services; Pandemics; COVID-19

[1]Health Management and Economics Research Center, Isfahan University of Medical Sciences, Isfahan, Iran
[2]Health Information Technology Research Center, Isfahan University of Medical Sciences, Isfahan, Iran
[3]Social Determinants of Health Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

Correspondence
Address: Department of Health in Disasters and Emergencies, Social Determinants of Health Research Center, School of Management and Medical Information Sciences, Isfahan University of Medical Sciences, Isfahan, Iran. Postal Code: 8174673461.
Phone: +98 (31) 37925193
Fax: +98 (31) 36684799
f.rezaei.ms@gmail.com

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Introduction

The COVID-19 is a disease and a global challenge, and proper response to this growing biological disaster is the priority of all countries [1]. It has also led to widespread concern and misinformation, rumors, and fears among people of different countries [2]. Therefore, developing an up-to-date and online information dashboard with public accessibility is one of the most effective approaches to risk communication. Also, as to people's information needs in epidemics, their opinions must be understood and identified to properly distribute the health information they need to reduce their fears and worries. In this regard, social media can provide effective support. They provide an opportunity to improve people's health by raising their literacy level [3]. Nasir states that discovering health information needs can help identify the required health measures. It also facilitates preventive measures against infectious diseases before, during, and after epidemics and minimizes the dissemination of infectious diseases. Digital technology, such as mobile apps, can send health-related information to people so that they can take care of themselves [4]. In the COVID-19 pandemic, some countries have designed information systems in different areas to meet people's information needs. These systems include basic information on virus spread ways, signs and symptoms, tests, principles of self-care, answers to common questions, and mortality and morbidity rate, as well as categorized information for specific groups (including travelers, health personnel, laboratories, and business people in various fields with the susceptibility to harm) [5].

On the other hand, information should be presented to the public in a classified manner based on the needs of specific groups [6]. Also, it is necessary to provide other specific groups with some general recommendations based on the experiences of other countries and experts. These suggestions include the development of information packages for the mental health needs of the elderly [7], online mental health services [8], psychological support of people with COVID-19, collecting information needs of pregnant women [9], developing prevention guidelines for cancer patients undergoing treatment and immunodeficiency [10], providing guidelines for companions of non-coronary bedridden patients, and increasing public awareness of the measures that government agencies are taking for prevention and preparation. Moreover, countries require information based on their country's needs and culture, general principles for isolating suspicious patients [11], advice on intercity travel, and the need for social participation by all sectors, including the private and industrial sectors of society alongside the health system. Also, the public should be provided with guidelines for preventing the intercity spread of the COVID-19 (Principles of Operation of the Society and the Provinces Affected) [12].

The WHO is leading a campaign to control the spread of the 2019 outbreak of coronavirus disease (COVID-19). However, a global epidemic of misinformation spreading quickly across social media sites and other sources has resulted in a significant public health challenge. "We are not only battling an epidemic; we are battling an infodemic," said Tedros Adhanom Ghebreyesus, Director-General of the WHO, at the Munich Security Conference [13]. As to a virus, early diagnosis and treatment of infected cases and the protection of healthy people is of high concern [2, 14]. However, countries face new challenges in controlling epidemics in the 21st century, including new lifestyle and fast transportation, which cause the global spread of diseases, needs for brand new control tools since traditional tools (e.g., quarantine) are no longer acceptable to populations, ensuring equitable access to care, and "infodemics" [15]. Infodemics is a threat in the face of increasing mainstream use of social media and communications technologies [16].

All in all, the key preventive factor in the COVID-19 outbreak is self-care. Efficient self-care requires specific knowledge that can be transmitted to the public through confidence-based Risk Communication. In Iran, after the first cases of COVID-19, various official and unofficial sources began informing the public. In this regard, much electronic content was produced and distributed in cyberspace and social networks, where many of them did not have a reliable source and transmitted contradictory information to the public. This has caused more confusion among the people and increased questions of the people about this disease. With the advent of new technologies, the value of time has become more apparent than ever. In such an environment, users want to meet their information needs with maximum efficiency and in the least amount of time. It seems necessary to access the desired information resources and meet users' needs while saving their time.

No information needs assessment was performed among the population regarding this disease, and policymakers have been looking for the real needs of the people in this field. Therefore, this study aimed to collect experts' opinions on identifying the information needs of the Iranian people regarding the COVID-19 virus.

Participants and Methods

This qualitative study using content analysis approach was conducted from March to May 2020 on all health professionals and experts, including infectious disease physicians, nurses and head nurses working in infectious diseases unit, university faculty members, policymakers, university administrators and experts, and managers and members of NGOs active in the field of epidemic management in Ministry of Health and Medical Education, Isfahan and Tehran University of Medical Sciences, Hospitals.

The sampling method was initially purposive, and then it changed to a snowball technique. First, 5 participants were selected from the research community. The sampling with maximum diversity was performed to access different opinions about the central phenomenon and the explored concepts, and people with different views were selected. Sampling continued until data saturation. In this study, 19 participants were interviewed (Table 1). Inclusion criteria consisted of professionals, policymakers, managers, and experts with at least five years of work experience. Also, individuals who refused to be interviewed were excluded.

Table 1) Basic characteristics of participants

Variable	Number (%)
Gender	
Male	12 (63.1)
Female	7 (36.8)
Work Experience (year)	
<10	4 (21.1)
10-20	5 (26.3)
>20	10 (52.6)
Level of education	
B.S	1 (5.3)
M.S	4 (21.1)
M.D	2 (10.5)
Ph.D	8 (42.1)
Specialist	4 (21.1)

The data were collected using a semi-structured interview. The data collection instrument was the interview guide form (Table 2).

Table 2) Interview guide for collecting qualitative data related to information needs of the Iranian people regarding the COVID-19 virus

Main questions	Secondary and probing questions
1. What are general information do you think people need about COVID-19?	1.1. What do people need to know about how to live with the disease?
2. What are technical information do you think people need about COVID-19?	1.2. What information should be given to people in the field of medicine? 2.2. What information should be given to people about mental health? 3.2. What information should be given to people about health?
3. What are the sources of information about COVID-19?	1.3. Where do people get the information they need? 2.3. What are the sources of information in cyberspace?

An interview guide was developed based on the objectives of the research. Further, to check the validity of this guide, at first, the interview questions had been discussed among the research team. Later, to check the number and order of the questions in the sample, the interview guide was checked on three non-participants. The time and place of the interview were pre-arranged with the participants, preceded by obtaining their permission through an informed consent form. The interviews were recorded via a voice recorder. Due to the prevalence of COVID-19, some interviews were conducted by phone.

The Isfahan University of Medical Sciences Research Ethics Committee had approved this study. After collecting the data, the audio files of the interviews were written down word by word to extract overt and covert meanings. A step-by-step guide proposed by Braun and Clarke [17] was served to conducting thematic analysis. Accordingly, the following steps were done: (1) two researchers as data coders familiarizing themselves with data by listening to recorded interviews and reading and re-reading transcribed data, immersing themselves in the data. (2) The initial list of ideas behind the information was created, and initial codes were generated from the data. Each code was identified and related to the most basic segment and repeated interesting patterns in this stage. (3) After all the data was initially coded, codes were evaluated to incorporate similar codes into inclusive themes and sub-thems. (4) During three 2-hour sessions with the key members of the research team, the themes were checked and refined. (5) Defining and naming of themes was done at this stage. In addition to paraphrasing the themes, there was a close analysis of overlaps between themes and sub-themes and their relationships with others. Also, the themes and sub-themes were assigned final names. For evaluating the reliability of the study data, four criteria were used in Lincoln and Goba [18], namely credibility, conformability, dependability, and transferability. A responder validation was used to establish credibility (the process whereby the researchers transcribed interviews with the participants and asked them to ensure that there is a good correspondence between their findings and participants' perspectives). Furthermore, contrary concerns in findings were addressed within the study team to identify the reasons to boost credibility. The transferability of our qualitative findings was enhanced through the purposive sampling technique and thick descriptions. An auditing technique was used to ensure the research's dependability, in which the three study's colleagues, accompanied by an external auditor, provided complimentary remarks in the coding process, analyzed interview material, and cross-checked the data we obtained. We did not explicitly allow our values to conduct the research and the conclusions that resulted from it to promote conformability.

MAXQDA Plus 12 software was used to organize qualitative analysis and coding data.

Findings

The findings were divided into two sections, including channels and sources of information and people's information needs about the COVID-19 virus. In the first part, two main themes and eight categories were identified (Table 3). Four themes and twenty-three subthemes on information needs

regarding the COVID-19 virus were extracted (Table 4). Themes related to information needs regarding COVID-19 were as follows: Information regarding an alternative lifestyle due to COVID-19 Pandemic, Information regarding mental health issues, Information regarding sanitation and hygienic requirements, and Information regarding medical issues.

Table 3) Channels and sources of information

Theme & Category	Code
Sources of information	
Scientific Documentation	Approved medical books; Authoritative articles of international publishers; Information sources from Chinese experience
Social network/ media and cyberspace	Procedures to prevent disseminating inaccurate information through Virtual private network; Receiving relevant information through a Virtual government network; reliable active media in cyberspace; Websites; Notifications on WhatsApp, Instagram, and Telegram; Interuniversity intercom; the online official communication channels to answer fundamental questions
Mass media	Founding a national mass media exclusive to COVID19 notifications and broadcast specific recommendations of the Ministry of Health using TV/Radio channels and short message services (SMS) based. International Media
official websites	Websites of the Ministry of Health, Universities of Medical Sciences, and the World Health Organization
Tele based information systems regarding COVID19	Telephone calls: 190, 4030, 3113
Seeking the official source of information	Direct public communication; Educational posters/catalogs; visual education billboards
Distribution channel of information	
Nongovernmental organizations	Community based organizations (CBOs) and Faith based organizations (FBOs)
	Trusted Professionals: Family Physicians / Professionals having scientific evidential Information / Transparent, Honest, and Committed Professionals / Trusted Physicians / Public liaison experts/ Social Psychologists
Governmental organizations	Medical Council of Iran/ Ministry of Health/supreme leader/ President Governor/ Red Crescent / Civil Defense Headquarters; Crisis Committee of Universities / Deputy of Health / Deputy of Health / Faculties and relevant departments / Hospitals and Health Centers

Table 4) Information needs about the COVID-19 virus

Theme & Category	Code
Information regarding an alternative lifestyle due to COVID19 Pandemic	
Sleeping	Avoiding physical and mental fatigue; Avoiding sleepless for hours
Spirituality	Prayers and supplications; Spiritual meditation
Economic problems	Management of bad economic climate caused by COVID19 pandemic; Social, economic, and political impacts of COVID19 pandemic on the future of Iran
Physical, educational, entertaining, sports, and leisure activities	programming game, educational, and entertainment platforms ; programing game, educational, and entertainment platforms; homey entertainment during the quarantine period; planning Leisure time at home Taking some physical exercise at home; Listening to soothing music; Reading a book; watching movie; household chores; Going for a walk and stroll in empty or low crowded places; Taking virtual training courses; Not keeping children at home for long periods; Painting; Reading books for children; Cooking; Team games; planting vegetables
Social and interpersonal relationships	Communicating to friends, public assemblies, relatives, and children; Learning interpersonal and communication skills in family and personal life during the quarantine period
Healthy diet	Not eating outdoor and fast food
Information regarding mental health issues due to COVID19 Pandemic	
Methods of controlling and coping with stress, anxiety, and depression	symptoms of stress disorders; Having daily schedules; balanced seeking information behavior; looking for a reliable source of information; preventing exaggeration of a disastrous situation; not suppressing the fact-finding behaviors; gentle words and sensible behavior; deep and long breathing; Communicate with optimists; Avoiding pessimists; Managing negative emotions; not checking daily statistics; Keeping calm, not have anxiety, and easing groundless fear; visiting a doctor or psychiatrist when there are symptoms of severe anxiety; looking forward to hearing from psychosocial experts; use of counseling services provided by health centers; Focus on the present time; coping with the current situation; Giving positive energy to yourself and others
Stress management in the families	Talking to family about some topics other than COVID19; Creating a lovely relaxed atmosphere in families; filling the days of quarantine with positive emotions; fall about laughing in leisure times; Helping family members and close friends; participation and cooperation between family members in daily routines; not labeling family members when their attention wanders to health tips; not labeling family members as fearful, angry, and anxious persons; Encouraging family members to return to normal life by obeying health tips; Building family member's hopes, giving practical reassurance, and raising awareness about COVID19; not trying to blame each other; learning good ways of dealing with your angry feeling
Stress management in children	not talking about COVID19 in front of children; strengthening the emotional bond between parents and children; Spending time with children; listening to children to express their wordy explanations and worries; Planning for children's leisure time; Taking part in plays with children; Reading books for children; Explaining to children the facts about the COVID19 pandemic in common and understandable language
Relieving public anxiety and further complications	Consulting with scientific experts having reliable information in COVID19 pandemic; The effect of long-term anxiety on the immune system; Anxiety is a natural reaction to stressful situations
Build the public's hopes	Explaining about the positive aspects of COVID19 pandemic coming to families life; writing a clear vision of future development in individual lives; writing individual long-term, medium-term and short-term goals, and plans; Doing backlog tasks and duties; Writing Emotions; Write daily memories during the quarantine period; Not following disappointing news regarding the COVID19 pandemic; Avoiding constantly surfing virtual networks; Having a positive attitude; expressing appreciation and deep gratitude toward God

Continue of Table 4) Information needs about the COVID-19 virus

Theme & Category	Code
Information regarding sanitation and hygienic requirements due to COVID19 Pandemic	
Sanitation of food products	The clean supply of bread and meat; healthy takeaway food; transmission of disease via food; Good nutrition; completely cooked meat and eggs
Masks and gloves	Justifying people for wearing gloves and mask; Types of gloves and mask and their applications; Susceptible groups for wearing masks; Standard ways of taking masks and gloves off
Quarantine Standard Procedures	Quarantine the confirmed cases; Quarantine and tracking the suspected individuals had contact with confirmed cases; Staying at home; obeying social distance instructions
Disinfection	Detergent; Hand hygiene; Disinfectant products; Washing clothes and dishes; Disinfecting cellphones; Clean up the environment; standard preparing of bleaches; Disinfecting fruits, vegetables and nuts; Disinfecting surfaces
Epidemiological knowledge	Factors influencing the epidemic; Possible epidemiological scenarios; Accurate statistics of morbidity and mortality rates; The severity of the COVID19 prevalence; Incidence rate
Self-care prevention methods	Children as the carriers of the COVID19 pandemic; Not attending large crowd and mass gatherings; Pet care; taking safety precautions to prevent the spread of the disease where confirmed cases are under the care of healthy people; protective actions to keep safe eyes, nose, and mouth from COVID19; Individual care; not smoking hookah; not handshaking
Information regarding medical issues due to COVID19 Pandemic	
Therapeutic care	Safety precautions regarding hospitalization; Homecare management; Target health centers after showing severe symptoms; The journey time to health centers; Treatment guidelines and procedures; communicating effectively to affected individuals; ways of dealing effectively with the COVID19 epidemic
Diagnostic tools and pathogenic cycle	Laboratory test; COVID19 molecular diagnostic kit; CTSCAN; CPR
The nature of the COVID19 infection	virus disinfectant substances; The diverse effects of the COVID19 infection on people; methods of clearing up the COVID19 infection; methods of distinguishing influenza from COVID19 infectious disease; complications and disorders due to the COVID19 disease; The source of the infection; incubation period; Early symptoms of infection with the COVID19 virus; Nonclinical symptoms; Clinical signs; The nature of the virus; The recovery rate of confirmed cases; The stability of the virus in the environment; virus transmission ways
Healthcare providers	Health Community Centers; Specialist doctors; General practitioners; Admitting marked hospitals; family doctor; Clinics and outpatient centers
Susceptible individuals and vulnerable groups	People under stress with low levels of immunity; Diabetic patients; Age over 50 years; DNA <40; HIV patients; People with underlying diseases; Transplanted patients; Cancer patients passing Chemotherapy cure period; Patients with immune system failure
Recovery procedures	Homecare precautions after the recovery phase key features of convalescent homes

A) Channels and sources of information

One of the channels for obtaining information about this disease was scientific documentation. Participants believed that information could be received from approved medical books, authoritative published articles, and Chinese experience as the first sources of information.

P12: "The resources needed to obtain the information are valid medical books and published printed articles, and it is better to extract information from them."

Some participants believed that people should get the information they need only from official sources on social media and cyberspace regarding cyberspace and social networks. However, some other participants believed that gaining information from other unofficial sources was acceptable, provided that people can validate the information and distinguish between right and wrong. Another issue emphasized by many participants was the focus on providing accurate information via the mass media. As for the national media, due to the multiplicity of television and radio media, it was agreed on the dedication of a channel to COVID-19.

P16: "I would like to emphasize that in the headline news, the spokesperson of the National Coronavirus Headquarters had better explain this epidemic, but people should know that they should follow the latest news of COVID-19 and the health channel."

As for the websites, although several sites are currently informing about COVID-19, the participants believed that the three sites of the Ministry of Health, the country's universities of medical sciences, and the World Health Organization would be the most reputable sources of information.

P6: "So, it is best to get accurate information from reputable sources such as the World Health Organization's website or the websites of medical universities."

Another information channel was tele-based information systems. In Iran, the answering number "190" was first introduced by the Ministry of Health, and then a special number was dedicated to COVID-19, called the 4030 system. In this regard, each province has launched a separate telephone system. Other official sources, such as direct public communication, educational posters, visual education billboards, and educational catalogs, were also channels of information acquisition.

P16: "I would like to stress that in the headline news, the spokesperson of the National Coronavirus Headquarters had better explain this epidemic, but people should know that they should follow the latest news of COVID-19 and the health channel."

P13: "Contact numbers were announced at the national level, and people can access them without any charge. The 190 system was first introduced, then the 4030 system, and finally provincial telephone numbers were proposed to respond to peoples' information needs."

B) Information needs

Four information needs due to the COVID-19 pandemic were identified, including alternative lifestyle, mental health issues, sanitation and hygienic

requirements, and medical issues.

As to the lifestyle, participants believed that people need different information about sleeping, spirituality, economic problems, physical, educational, entertaining, sports, and leisure activities, social and interpersonal relationships, and healthy diets. Also, since people have been in the home quarantine, the lifestyle has changed, and comprehensive information about the new lifestyle should be available to the public.

P5: "If they are going to stay at home for a month, what should they plan to do? What should people's lifestyle be like? It requires interdisciplinary work, psychologically. Psychologists, educators, or health professionals should design educational programs and games to meet these questions."

Mental health was also identified in five areas, including methods of controlling and coping with stress, anxiety, depression, stress management in the families, stress management in children, relieving public anxiety and further complications, and building the public's hopes up. Participants believed that, due to the long stay of people at home, information need about mental health has increased, and, in turn, they need specialized information.

P4: "It is better to educate people on how to control their crises. The stresses they face; in other words, we need to explain the conditions to them and give them enough training to reduce their stress."

Another theme identified in this study was the need for hygienic information. From the participants' perspective, sanitation of food products, masks and gloves, quarantine standard procedures, disinfection, epidemiological knowledge about the disease, and self-care prevention methods are among the hygienic information that people need. This type of information is essential and plays a vital role in disease prevention. Participants believed that people should have up-to-date information on the factors influencing the epidemic, possible epidemiological scenarios, the exact number of active cases and death toll, the severity of the spread, and the prevalence of the disease. Self-care and preventive measures are also among the most central components of health measures.

P 14: "People must get information about their hygiene and control and management of their condition; what to wash their hands with, what to wash their dishes and clothes with, and how to disinfect their mobile phones. Such stuff should be taught to them."

P19:" They have many questions about the fate of the epidemic and ask experts how it will turn out in the coming weeks, and these are reasonable questions that need to be answered to the best of their knowledge."

Furthermore, information about the nature of the COVID-19 infection, diagnostic tools and pathogenic cycle, therapeutic care, healthcare providers, susceptible individuals, and vulnerable groups, and

recovery procedures should be announced to the public. These factors are technical and require scientific documentation and up-to-date information.

P 1: "What is this virus? How is it transmitted? How is the virus spread? What symptoms should they see? When should people with suspected disease refer at all, or where should they refer? It is better to teach them that they do not need to go to hospitals quickly for any symptoms to avoid creating more problems for themselves. They need to know who is most affected by the virus. How should these people be treated if they get the virus?"

Discussion

The COVID-19 pandemic is growing rapidly in the number of cases, deaths, and affected countries [19]. Regardless of epidemiological scenarios, the Iran outbreak of COVID-19 is still complex [20]. The correct information was the key to success in mitigation measures. Although different countries will need different approaches, focusing on its humanitarian nature and addressing infodemic issues are critical for future global mitigation efforts [21]. Individual awareness had an important role in developing convincing COVID-19 media messages, according to the findings of the Jormand research [22]. Everyone has something to add to these debates, from official news to social networks, generating an infodemic that will be studied long after the COVID-19 passes [23]. Social media is one of the main channels updating the COVID-19 information [24].

The goal of this study was to identify the information people need about COVID-19. The results of this study show that people need different information about this disease. Also, the need for information is one of the most challenging and controversial research subjects in human behavior. This complexity stems from numerous definitions embedded in the basic notions of information and need [25].

The need for quick access to information to support critical public health decisions cannot be disputed; however, implementing these systems requires an understanding of the real public health information needs. The key to the effectiveness of mitigation initiatives was getting the right information.

One of the main needs of the people was the need for information about lifestyle concerning Corona's pandemic. In line with the current study's findings, Hua illustrated that during the coronavirus epidemic, people searched online for information that was most searched for medical, food and beverage information, online education, home sports, business information, and entertainment services. Moreover, lifestyle information needs to be a priority when staying at home [21].

Another theme was the need for medical information about COVID-19 disease.

From the first cases of the disease in Iran, people have been seeking information about the disease and

diagnosing and treating it. Due to the unknown dimensions of the disease, many questions were raised for the people, and, in turn, the gained awareness and knowledge about this disease led them to feel more controlled and have better participation in the processes of prevention, diagnosis, and treatment. Research has also shown that when people get the information they need, their quality of life and the quality of care for their patients increase. Therefore, they expect the treatment team to provide them with medical information [26].

The results of Riahi's study also revealed that individual concerns about access to health information are serious. Also, they proposed a healthy and disease-free life as the main leading issue in health and treatment. Based on the research findings, people are dramatically sensitive to the diseases, and, in turn, they seek information for the treatment and awareness of diseases [27].

Another information needed by people about the disease was health information.

The results of the Odlum study showed that in the early stages of identifying Ebola cases in countries (given the concerns of governments and people about the epidemic of the disease), most of the people's information needs were about the history and symptoms of the disease, epidemic statistics, and its transmission. These factors highlight the need for education to meet the health information needs of the community through social media [3].

The findings also showed that other people's information need is mental health. The government and health authorities should provide accurate health information concerning the epidemic based on evidence to the public through traditional and modern media platforms to diminish the destructive effects of "fake news" spread across social media. Practical tips about the needed public acts during the epidemic, such as hand hygiene and mask-wearing, can be disseminated using simple video clips and cartoons. Moreover, the ways of emotional coping with the fear and uncertainty of the virus, including positive mindset reframing, stress management, and relaxation techniques, could be presented to people in the same ways. Higher satisfaction of the received health information has been observed to be correlated with lower psychological distress.

Furthermore, receiving enough information and placing trust in the government and health authorities for COVID-19 management might potentially diminish anxiety and perceived vulnerability to the virus [26]. Elevated confidence in the measures taken by the government may result in better adherence to the precautionary and preventive measures encouraging the public to cooperate in facing the outbreak. In addition, the government, community leaders, and health institutions play a critical role in maintaining racial harmony that is essential in preventing the discrimination and stigma, which often accompany an outbreak [27]. Also, identification of information need topics for a pandemic as a health crisis can be used to organize related information and support many information factors to enhance their information service practices [28].

Some limitations are worth announcing in this study. One of the main limitations of this study was the lack of access to some participants due to the prevalence of COVID-19. To overcome this limitation, we contacted some of the participants by phone. The second one could be the problem of subjectivity. Nonetheless, our data interpretation may remain subjective, and our findings cannot claim a complete truth. It is recommended for future research that practical approaches are applied to design and produce written information sources or use modern technology (e.g., multimedia training packages) to enhance people's awareness level about COVID-19.

Conclusion

Various strategies can be used to empower people to participate effectively in preventing and treating COVID-19. Using new technologies and cyberspace, and social networks is one of the necessary facilities in this field. Identifying people's information needs about COVID-19 will also help governments produce better educational content. National recommendations for information release in public health emergencies could avoid "infodemic" in the future.

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