

Access this article online
Quick Response Code:

Website: www.jehp.net
DOI: 10.4103/jehp.jehp_1352_20

Identifying the roles of medical librarians in COVID-19 crisis in Iran

Zahra Kazempour, Mohammad Reza Soleymani¹,
Nayere Sadat Soleimanzade Najafi², Hasan Ashrafi-rizi¹

Abstract:

BACKGROUND: The best mechanisms for medical librarians to be more involved in health, especially during crisis condition, and to expand their roles are using experiences of other individuals and performing new activities. This study aimed to identify the roles of medical librarians in the COVID-19 crisis in Iran.

MATERIALS AND METHODS: This research was done by a qualitative content analysis method. Research participants in the first phase included whole scientific papers (19 documents) which had been published by medical librarians related to the COVID-19 issue and in the second phase 10 medical librarians involved in the COVID-19 who were interviewed and continued until data saturation. Data were collected through each interview, and data analysis was performed using content analysis method. Then, obtained information of the first and second phases was merged together, and codes, subcategories as well as main categories were formed.

RESULTS: According to the results, 7 main categories and 24 subcategories regarding the roles of librarians in COVID-19 crisis were identified. The main categories include hygiene services promotion, development of health information-seeking skills, health research services, interaction-level development, evidence-based policy development, information dissemination services promotion, and management services development. Furthermore, regarding barriers to the role of medical librarians in the COVID-19 crisis in Iran, four subcategories were identified that are medical librarian-related barriers, organization-related barriers, profession-related barriers, and context of society (country conditions)-related barriers.

CONCLUSION: Medical librarians relatively have been able to provide effective health information services to managers, health-care specialists, and the general public in a variety of health fields.

Keywords:

COVID-19, crisis management, medical librarians

Introduction

Humans have always faced a variety of crises at different times. In the face of the crisis, various organizations and groups have tried to take appropriate actions to minimize the extent of the damage due to crisis. "Crisis means disorder in life that disrupts the balance between needs and resources."^[1] In other words, crisis is a process that results from a series of natural and unnatural factors that endanger human lives or endanger the safety of communities

or assets and cannot be dealt with solely through crisis headquarters services, and it needs serious accountability or coordination from other organizations as well.^[2] One of these organizations is libraries. Libraries as the scientific, cultural, and social institutions of each country which have a central role in providing information can play an effective role in crisis management and dealing with natural disaster. It should be noted that either the library itself is in crisis or there is a crisis in society. In each case, libraries, especially health libraries, should play different roles. Mansour summarized the role of libraries in crisis management in

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Kazempour Z, Soleymani MR, Najafi NS, Ashrafi-rizi H. Identifying the roles of medical librarians in COVID-19 crisis in Iran. *J Edu Health Promot* 2021;10:226.

Department of Library and Information Science, Faculty of Media, Payame Noor University, Tehran, Iran, ¹Department of Medical Library and Information Science, Health Information Technology Research Center, Isfahan University of Medical Sciences, Isfahan, Iran, ²Department of Knowledge and Information Science, University of Isfahan, Isfahan, Iran

Address for correspondence:

Prof. Hasan Ashrafi-rizi,
Department of Medical Library and Information Science, Health Information Technology Research Center, Isfahan University of Medical Sciences, Isfahan, Iran.
E-mail: hassanashrafi@mng.mui.ac.ir

Received: 06-10-2020

Accepted: 29-11-2020

Published: 30-06-2021

three sections: human resource, information resources, and information services.^[3] Medical librarians can also benefit from Information and Communication Technologies (ICT) to improve their services more effectively, and they take steps in dealing effectively with crises.^[4,5] In the other words, health libraries, like other social institutions, are able to provide great assistance to the community in times of crisis. Society also needs to change its view toward libraries as book warehouses to social institutions. Libraries should keep a record of all disasters that happen with their frequency and consequences and provide them in times of crisis based on the type of information needed.^[6] Thus, beyond the role of collecting and organizing knowledge for effective use, libraries have new social roles such as playing a role in times of crisis. One of the crises that affect political, economic, and social aspects of a society is the epidemic and the pandemic of diseases. Facing diseases as a crisis need to valid and update information about various dimensions of diseases such as prevention, diagnosis, treatment, rehabilitation, also treatment centers, questioning centers, statistics centers, and prevalence rates is important. At this time, the general public as well as health-care specialists need appropriate information. In this regard, medical librarians are one of the best organizations that can provide instant and reliable information for these groups by the benefit of their professional knowledge and ICT. Health libraries by recognizing the subgroups of the information society and providing valid health information services will be able to greatly reduce community anxiety, in addition to awareness. COVID-19 is one of these crises where the role of health libraries in managing various aspects of society is important. In general, the role of medical librarians in crises can be described in three areas: providing services to health-care specialists, providing services to health practitioners and policymakers, as well as providing health information services to the public; what activity the medical librarians in Iran have done in these three areas will be the subject of this article.

Therefore, it can be acknowledged that health libraries are not only a source of trusted information during the crisis but also are a service hub which can provide valuable services to different individuals and small and nonprofit businesses.^[7] It should have in mind that based on the findings of Chizwina *et al.*, the library information services can be divided into three categories: information, educational, and communicative. Of course, based on their findings, the teaching and learning (educational) aspect usually has the lowest portion and information and communicative have the most portion in the library information services.^[8] The increasing number of times library use in times of crisis indicates the role and importance of access to information and information services and the role of libraries as a safe place.^[8] When

a person visits a library, he may see anything other than information resource circulation services, information desk, or shelves. The role of libraries as contributors to disaster planning, response, and recovery is often ignored.^[6] According to Winston and Quinn (2005), libraries, especially health libraries, play an important role in times of emergency and social change.^[9] Hence, the role and position of health librarians in times of crisis must also be well accepted by society and politicians. In 2013, the American Library Association encouraged government agencies at all levels to support the role of libraries in emergencies and to engage libraries in political action.^[10] The effective operation of libraries and librarians in times of crisis has prerequisites. For example, organizations that are able to disseminate high-level guidelines and recommend them should be involved in order to exploit the full potential of libraries in disaster planning. Librarians must also play a role in crises in order to demonstrate their professional mission.^[11]

During the crisis, whether due to an epidemic like the 2009 H1N1 virus, bioterrorism threats or natural disasters, or the COVID-19 in 2020, people are looking for answers to questions about the nature of threats and how to react to them. Health libraries should use their position as the primary source of reliable information by providing quick and easy access for people who need valid information on what to do in an emergency.^[12] For example, at the time of the H1N1 outbreak, some libraries put a link of information related to the disease or link of the Centers for Disease Control and Prevention inside their pages.^[13] At the time of the COVID-19 crisis, the use of technologies in order to serve libraries is also significant. Libraries that have digital facilities in addition to physical collections can respond well to their users and equipped them with electronic information resources. Health libraries can put the latest news and valid information about the disease and also relevant organizations' link on their websites. They also can select, organize, and provide disease-related information sources regarding information needs of their target groups besides their existing collections. According to communicating ways to their users (e-mail, SMS, social networks, etc.), they can meet their users' information needs. Therefore, health libraries in general are important centers for health-related information and play a larger social role in the aftermath of a disaster and provide the accessibility of the general public, health-care specialists, and practitioners to information needed. This is an important role for health libraries which they must embrace this challenge.^[14] COVID-19 crisis is one of these cases. Since the beginning of the COVID-19 in Iran, many libraries, especially health libraries, have been involved in helping different groups (the general public, health-care specialists, and health practitioners).

Now, those valuable services of medical librarians must be identified and documented. In addition, these roles contribute significantly to future planning and policymaking. Therefore, the purpose of the present study was to identify the role of medical librarians in the coronavirus crisis (COVID-19) in Iran.

Materials and Methods

The research approach is qualitative and the research method is content analysis and the type of study is applied study. In this study, qualitative approach as used because interaction between medical librarians and users has occurred in a specific context and situation (COVID-19 crisis) and the issue has particular complexity and using quantitative methods in this issue can't discover hidden aspects. Therefore, a qualitative approach will help to deeper and more accurate perception. While the topics covered in this study can be the experiences of different individuals and groups of medical librarians, so these experiences will be valuable and real.

This study consisted of two phases:

First phase

In this phase, in order to identify the content related to this paper topic, a comprehensive search was done. In fact, researchers only sought to identify the roles of Iranian medical librarians in COVID-19 crisis, so only Iranian scientific works in Persian and English were searched and reviewed. These searches were conducted in databases such as Web of Science, PubMed, Scopus, Magiran, SID, and also specialized journals of medical librarians, newspapers, libraries websites, local publications, published lectures, libraries reports, social media, and electronic discussion groups. The search strategy was based on the structure of that information system. Each document that referred to these roles and experiences was selected and then evaluated by 2 authors of this article and then the necessary analyzes were performed on them. After identifying the resources and the degree of their relevance to the medical librarian's experiences about the COVID-19, a number was assigned to each document. Finally, 19 documents were analyzed. In fact, type of medical librarians' activities in the COVID-19 crisis as well as various barriers to provide information services to the general public and health professionals in crisis situations were questions for researchers. In brief, these roles and experiences were based on scientific works published by Iranian medical librarians at the beginning of the crisis.

Second phase

In this phase, research participants include medical librarians (students, faculty members, or staff librarians)

in Iran who provide health information services to health-care specialists and practitioners or the general public during the COVID-19 crisis. Sampling method was purposeful and snowball sampling was also used in order to identify the participants. The data collection tool was a semi-structured interview. Semi-structured interview is an interview in which the main questions are preidentified and all participants are asked the same questions, and based on the participants' answers, the researcher raises new questions. In fact, the purpose of this type of interview is open-ended conversation which allows the interviewee to express his/her opinions and feel more freely.^[15] The interview guide was formulated based on the research team members' opinions. In fact, the two main questions of interview guide included: (1) What was your role and activity as a medical librarian in the COVID-19 crisis in Iran? (2) What were the barriers to perform your activity and your role as a medical librarian in the COVID-19 crisis in Iran? The place and time of the interview were coordinated based on participants' opinion. Since access to participants was not possible because of restrictions due to health issue observance, therefore they were interviewed through social media such as WhatsApp as well as sending and receiving responses to interview questions through E-mail. Participants could be excluded from the interview at any stage of the interview, and they were informed about the reasons for conducting the research and the confidentiality of the information at the beginning of each interview. The informed consent also was obtained from participants about volunteering in the research. Interviews continued until data saturation. Finally, 10 participants answered the interview questions. Data were implemented after doing each interview, and data analysis was performed using content analysis method. In fact, obtained data from the interviews were analyzed in a thematic manner and the data were analyzed continuously and simultaneously with data collection. The interviews were initially implemented. Then, the interview transcripts were re-read several times in order to gain a general understanding of the content of the interviews and the researcher's immersion in the data. Next, sentences and paragraphs which contain concepts related to the research topic were selected as semantic units, and the initial codes were extracted by converting semantic units into more abstract terms. After reviewing the initial codes and merging similar codes, the categorization of the related codes was performed (subcategories forming). Finally, by revision of the codes and subcategories, the concept and content behind the data were extracted as the main category. After that, according to the hidden concept in the main category, an appropriate definition was given for each of them. In fact, the information of the first and second phases was merged and the codes, subcategories as well as the main categories were formed. The Lincoln

and Guba quadripartite criteria include transferability, dependability, credibility, and confirmability, which were used in order to validate the data.^[15] To transferability, the researchers besides understood different aspects of the topic deeply and consider different perspectives and exchanged views with their peer debriefing. In order to dependability, the researchers tried to provide more insights into other researchers by giving details so that other researchers could make accurate judgments about data dependability. An auditing trail was also used to ensure credibility; therefore, details of data collection and decision-making, interpretation, and analysis were provided. In addition, the interview guide and documentation were provided for possible review. For confirmability, the researcher notes during the interview were presented so that evaluators could compare the documentation and findings. Needed documentation for confirmability auditing also was provided. This research was supported by Vice-Chancellery for Research and Technology, Isfahan University of Medical Sciences, Isfahan, Iran (Approval ID: IR.MUI.RESEARCH.REC.1399.046).

Results

As mentioned in the method, participants in the first phase include reporting actions of medical librarians in specialized journals, newspapers, libraries' websites, local publications, published lectures, libraries reports, social media, and electronic discussion groups about COVID-19 crisis. Therefore, after identifying the resources and the degree of their relevance to the medical librarian's experiences about the COVID-19, finally 19 documents (number 1–19) were analyzed in a thematic manner. Demographic informations of participants in the second phase consisting of 10 medical librarians (number 20–29) are as follows:

Findings regarding the identification of the roles of medical librarians in the COVID-19 crisis in Iran resulted in 7 main categories and 24 subcategories:

1. Hygiene services promotion: The set of actions taken by medical librarians as well as library users in order to enhance health care in the library is called health services promotion. In fact, personal hygiene observance by medical librarians, library health issues observance, and users' hygiene observance are among the subcategories of this main category. Participants stated that personal hygiene observance as well as library cleaning and disinfection of library equipment had been taken into consideration to medical librarians in the COVID-19 crisis [Table 1]
2. Development of health information-seeking skills: The set of activities which medical librarians do to help people increase basic health knowledge as well as health-care specialists to enhance specialized

knowledge is called health knowledge development. This category include four subcategories as below: information literacy training, clinical information literacy training, health media literacy training, and health literacy training. Participants stated that identification methods of valid and invalid information, health information retrieval, and educating people about how to take medication were among the roles of medical librarians in COVID-19 crisis [Table 1]

3. Health research services: Health research services consist of a set of services that medical librarians provide to health-care specialists in their research and in assisting other medical librarians in COVID-19 crisis. However, some medical librarians began to research in this scope consistent with the professional activities and considered it as one of their professional duties. This category includes four subcategories that are as follows: conducting individual research, assisting other researchers in the research process, conducting scientometric analysis, and disseminating the latest scientific findings to researchers. Participants stated that medical librarians should not only conduct research themselves but should also assist other researchers in conducting research, in particular searching for and evaluating information sources. Besides that, they must identify new research about COVID-19 continuously and have proper analysis in their publication trends. People and health-care specialists need the latest scientific findings tailored to their circumstances [Table 1]
4. Interaction-level development: Interaction-level development is a set of medical librarians' efforts to improve the interaction level of medical librarians with different sections of society. Developing interprofessional interactions, enhancing transprofessional collaboration levels, further interact with crisis-related organizations and identifying interactions methods with users, as well as the characteristics of information resources are five subcategories of this main category. Some participants believed that serious collaborations with experts in the field, the general public, the parent organization, as well as other organizations involved in the COVID-19 crisis and preparing information resources tailored to the needs of users have been the responsibility of medical librarians in these critical situations and some medical librarians took this seriously [Table 1]
5. Evidence-based policy development: Any type of policymaking in health libraries based on credible scientific evidence and in order to promote decision-making is called evidence-based policy development. Three subcategories of this main category are as follows: reviewing course content, formulating new rules for libraries, and identifying

Table 1: Identifying the roles of medical librarians in COVID-19 crisis in Iran

Main categories	Subcategories	Codes
Hygiene services promotion	Personal hygiene observation	Handwashing regularly (P8), using disposable gloves (P8), using disinfectant gel (P8), absence of librarian in library in case of cold (P8), touch books with gloves (P8), pay attention to all health issues in crisis (P25)
	Library hygiene observation	Increasing the distance between study tables (P8), change library layout (P8), disinfecting different levels of the library (P8, P14), installation of health declaration in library (P8, P14), disinfecting books (P8), disinfection of library equipment (P8)
Development of health information-seeking skills	Hygiene observation by users	Absence of users in library in case of suspicious symptoms (P8), making users sensitive to hygiene observance (P8, P14), washing hands regularly (P8, P17)
	Information literacy training	Help people to identify valid and invalid information (P5, P10, P18, P20, P21, P22, P28, P29), teaching people to search valid information (P5, P12), help people to identify suspicious and invalid information (P18), help to increase people's general skills (P10), business information assessment training (P10), identification and introduction of reliable sources (P10), help people to increase their knowledge about information pollution (P10), verifying the accuracy of information resources by the help of relevant experts (P10, P12)
	Clinical information literacy training	Training medical staff in updating their clinical information (P4), assisting to do accurate search in evidence-based databases (P4, P27, P28, P29), introducing evidence-based medicine databases (P12), how to set up a clinical question (P4)
	Media literacy training	How to identify fake news (P5, P10, P18, P28), introducing people to misinformation and disinformation in the media (P10, P18, P23), sensitizing people to media messages (P18), introducing valid websites and social media (P27), help to reduce the prevalence of invalid information (P28)
Health research services	Health literacy training	Health issue education (P4), health information resource assessment training (P4), health resource search training (P4), valid platforms for receiving health information such as hospitals, clinics (P21, P22, P24), how to take medication (P4), how to help promote medical knowledge (P4), teaching evidence-based concern reduction (P29)
	Conducting individual research	Prioritizing COVID-19 related topics (P4), identification of information types in times of crisis (P10), conducting interdisciplinary research (P10), addressing new issues related to the COVID-19 (P12, P23), research on public mistrust toward the media (P18), writing notes on the role of librarians in crisis (P20, P23)
	Assisting other researchers in research process	Helping to health researchers in finding new scientific evidence (P4, P11, P12, P25), assisting researcher in using the reference manager software (P4), help researcher in conducting systematic reviews (P4), editing other researchers' scientific papers (P21), formulating the literature review for other researchers (P25), encouraging other researchers to research (P4, P23, P25), formulating the health and therapeutic protocols (P29)
	Performing scientometric analysis	Continuous review of scientific works in databases (P4), evaluation of countries' scientific output (P4), drawing the scientific map of countries (P4)
Interaction-level development	Dissemination of the latest scientific findings	Providing health-care specialists access to clinical information (P4, P10), dissemination of the latest scientific findings among the people (P4, P10, P12)
	Developing interprofessional interactions	Greater involvement of hospital librarians (P4), helping to operate medical librarians in crisis professionally (P10), assistance in developing the COVID-19 database (P11), cooperation between health libraries (P4), providing access to information for crisis management team quickly in order to reduce their activity (P24), forming a telegram group of PhD students in order to consult (P26), close contact between faculty members and occupied librarians (P23), gaining the medical librarians experience around the world (P29), collaborating with student teams (P29)
	Upgrading the level of extraprofessional cooperation	Collaboration with disaster health departments (P4), collaboration with medical and nursing groups (P4, P20, P26), more collaboration with public libraries (P4), assisting the COVID-19 special working Group in the university (P21, P26), assisting in formulating health guidelines in university (P21), getting feedback from health-care specialists (P27)
	Interacting more with crisis-related organizations	Cooperation with the COVID-19 crisis management headquarters (P3), collaborate with the patients' rehabilitation-related institutions (P3), collaboration with media (P4), more communication with reference groups (P10), collaborating with scientific associations and NGO (P11), send a note to other organizations for cooperation (P23), collaboration with the university COVID-19 headquarters (P27, P28, P29), generating healthy content for organizations involved in COVID-19 (P29)

Contd...

Table 1: Contd...

Main categories	Subcategories	Codes
Evidence-based policy development	Identify ways to communicate with users	Unveiling new books virtually (P1), telephone communication to answer users' questions (P2), virtual reference amplification (P2, P13), digital health information consulting services (P4), nonpersonal loan book (P6), nonpersonal book renewal (P13), 24-h virtual reference service (P13), virtual communication between medical librarians and users (P16), virtual sessions for users (P13), activate the "ask a librarian" option on the library website (P13), using the university website to get people's questions (P20), using social media to get people's questions (P20)
	Information resource features	Provide easy to read content (P4), media tailoring to users' needs (P4), considering the needs of the disabled individuals (P9), formulating simple content for people, illiterate, children and etc., (P21), comprehensible translation of health contents (P24, P26, P27, P28, P29), extracting key and short tips (P25), categorization of obtained health content (P25), gathering valid content (P26), preparing understandable abstracts (P29)
	Review course content	Holding courses for medical librarians (P4, P22), holding workshops for medical librarians (P4), offering the curriculum revision (P4), suggesting to set up mobile health libraries (P4), suggesting for disasters librarians specialty (P4), finding useful content for teaching as a faculty member (P23), paying attention to the crisis management approach in the curriculum (P24)
	Formulating new rules for libraries	Planning to upgrade free access to valid information (P5), how to protect librarians and users against accidents (P8), forecasting equipment for the library in times of crisis (P8), further training of medical librarians in clinical practice (P24), paying more attention to crisis information dissemination by libraries (P24)
	Identifying new ways of disseminating crisis-specific information	Using web capabilities for knowledge sharing (P12, P24), creating library social media (P12), suggest to launch national platform for information dissemination during crisis (P18), using artificial intelligence in the dissemination of information (P20), Sending mobile SMS to users (P18, P27)
Information dissemination services promotion	Identifying audience needs	Identifying people's knowledge gap (P3), identifying information people need through the media (P4), gaining information from crisis management team corporative meetings (P27), entertaining content (P3), content related to stress and anxiety reduction (P29), gaining information from university COVID-19 headquarters (P27, P28)
	Selecting the best content	Choosing valid health guidelines (P20, P27), valid audio and video files (P20), valid photos and infographics (P27), selection of the latest scientific evidence for health-care specialists (P4, P12, P27, P28, P29)
	Responding to users' information demands	Demand for health audio and video files (P3, P29), demand for receiving entertaining content demand (P3), short story demand (P3), request for motivational SMS (P3), demanding valid scientific evidence from physicians and nurses (P4), request for free information resources (P16), demand for diversification of library services (P18), the demand to create a platform for sharing users' experiences with each other (P16, P27), request to introduce of valid books and websites (P3, P22, P23), receive health short messages (P4, P22), request for library news (P3), demand for speed release of health content from the library (P4)
Management services development	Deciding on library users	Providing virtual meetings with users (P4), forgiving the of late book loan (P2), delaying the returning of books (P2), informing users about future library programs in crisis (P2, P4)
	Deciding on library activities	Deciding whether to reduce library activity or close the library (P3), creating links between the library and other institutions involved in the crisis (P4), methods of library health observance (P8), new ways of providing library services (P12, P18), providing the infrastructure for using new information and communication technologies (P4, P12, P18, P24)

new ways to disseminate crisis-specific information. Some contributors argue that any kind of medical librarian policymaking and their actions in libraries must be based sufficient scientific evidence. For example, identifying audience needs, new methods of information dissemination, and library rules formulating must be accompanied by scientific and administrative background [Table 2]

6. Information dissemination services promotion: The set of action taken by medical librarians to make library services easily accessible to the public as well as health-care specialists is called information dissemination services promotion. Identifying

audience needs, selecting the best content, and responding to users' information demands are subcategories of this category. Some contributors have argued that librarians must identify audience health information needs as well as select the best sources of information. They must respond to audience information needs by information format (article, book, message, etc.) appropriate with their needs.

7. Management services development: The set of programs and actions of medical librarians and library managers in order to promote and fulfill the library's goals in the COVID-19 crisis is called the management services development. This category

consist of two subcategories as below: making decision on users as well as making decision on library activities. Some contributors stated that the library should make rational and quick decision on library health, librarians, users, types of services in new situation (in-person or virtual), meetings, delay in returning books, book loan, etc. [Table 2].

In this study, the barriers of medical librarians' activities were analyzed. Finding about medical librarians' role in the COVID-19 crisis in Iran showed four types of barriers (subcategories):

1. Medical librarian-related barriers: The set of barriers which make medical librarians lose the motivation and willingness to help other professionals in the COVID-19 crisis. Lack of individual willingness, inadequate professional skills and knowledge, and the negative energies emitted by some medical librarians were considered as the main reasons for their inability of involvement in the COVID-19 crisis by some participants [Table 3]
2. Organization-related barriers: The set of organization barriers which make medical librarians does not have enough motivation to help other professionals in COVID-19 crisis. Lack of needed information technology, lack of clear policy for crisis in the organization, COVID-19 headquarters disinclination

in using medical librarians, university officials ignorance regarding the spontaneous move of medical librarians, low speed of the Internet, the filtering of some social media, the parallelism of activities, the lack of a reliable crisis database in COVID-19 crisis, the lack of coordination between the groups involved in the crisis, and the prolongation of workgroup planning are the main reasons for the COVID-19 crisis [Table 3]

3. Profession-related barriers: A set of professional barriers that make medical librarians do not have motivation and effective activity to help other professionals in the COVID-19 crisis. Some participants considered the passivity of some medical library and information sciences (MLIS) department and unwillingness of some medical libraries in order to cooperate as one of the main reasons of their inability to performing activity in the COVID-19 crisis [Table 3]
4. Context of society (country condition)-related barriers: A set of country condition-related barriers that prevent medical librarians have effective activity in helping other professionals in COVID-19 crisis. Some reasons for performing effective activity that were described by participants are as follows: increasing the price of applications software, not taking the risk of COVID-19 seriously by some people,

Table 2: Participants demographic information

Number	Sexuality	Age	Employment status	Employment history (years)	Education degree
20	Male	40	Faculty member	14	PhD
21	Female	28	Student	1	PhD student
22	Male	29	Employed	1	Master of degree
23	Male	52	Faculty member	22	PhD
24	Female	32	Student	3	PhD student
25	Female	-	Employed	10	Master of degree
26	Female	31	Student	8	PhD student
27	Male	42	Faculty member	8	PhD
28	Male	32	Employed	1	Master of degree
29	Female	37	Faculty member	14	PhD

Table 3: Identifying barriers to the active role of medical librarians in COVID-19 crisis in Iran

Main category	Subcategory	Codes
Barriers to librarians' active role in crisis	Medical librarian-related barriers	Being inactive some medical librarians (P20), insufficient readiness of medical librarians to deal with crises (P23), passive behavior of some medical librarians (P23, P24, P28), insufficient training of librarians in the use of databases (P28), negative energy among medical librarians in workgroups (P29)
	Organization-related barriers	Lack of Information technology needed (P20), lack of a clear policy for the crisis in the organization (P21, P23, P26), COVID-19 headquarters' reluctance to use medical librarians (P21, P24), university officials disregard medical librarians' self-effacing move (P21), low speed of Internet (P23), some social media filtering (P28), activity parallelism (P26), the lack of a valid crisis database (P26), inadequate coordination between groups involved in the crisis (P27), the prolongation of workgroup planning (P29)
	Profession-related barriers	Passivity of some medical library and information sciences department (P21), lack of tendency of some medical libraries in order to cooperate (P23, P24)
	Context of society (country condition)-related barriers	Increasing the price of applications software (P23), not taking the risk of COVID-19 seriously by some people (P23), too much attention of people in rumors and false news (P23), time constraints for any productive activity (P24), lack of access to people (P26), lack of disinfectants for library disinfection

too much attention of people in rumors and false news, time constraints for any productive activity, lack of access to people, and lack of disinfectants for library disinfection [Table 3].

Discussion

Health-care specialists do not have enough time to search for their needed information, especially in times of crisis, and they need the help of medical librarians to meet their information needs. COVID-19 crisis, because of its different dimensions and being unknown, necessitated the use of the latest information. On the other hand, the general public also needed valid information appropriate with their needs; as the level of public health knowledge increased, while maintaining the public's health, it reduced their refer to physicians and hospitals. Therefore, both health-care specialists and the general public need information on the COVID-19 crisis. Iran was also one of those countries that have been involved since the beginning of the COVID-19 outbreak and its prevalence was relatively high. Accordingly, the medical librarians' role in the management of the COVID-19 crisis in Iran was crucial. Therefore, medical librarians have begun actions since the beginning of this crisis, which these roles are reflected in this article. The purpose of this study was to identify the role of medical librarians in COVID-19 crisis in Iran. The obtained finding from analysis resulted in the creation of 24 subcategories and 7 main categories.

Findings regarding the identification of medical librarians' role in the COVID-19 crisis in Iran led to the following main categories:

Hygiene services promotion

Health issue was one of the first important issues that medical librarians considered about themselves, users, and library in COVID-19 crisis. Personal hygiene observance, as well as cleaning and disinfection of library equipment, had been considered by medical librarians in the COVID-19 crisis. Libraries are naturally polluted due to high traffic. The COVID-19 crisis has been an additional cause, and therefore, it is important to pay attention to library's health. Some researches has emphasized the cleanliness of libraries and archives from contamination,^[16,17] because contamination can easily spread to others. COVID-19 should be considered by medical librarians because of the speed of its transmission and spread^[18,19] and regularly disinfected library according to a specific protocol and prioritized personal hygiene observance in their daily activities.

Development of health information-seeking skills

Helping people to increase basic health knowledge as well as health-care specialists to increase specialized

knowledge was another role which was performed by medical librarians in COVID-19 crisis. In fact, they educate information literacy, clinical information literacy, health media literacy, and health literacy as needed. Medical librarians helped people to identify valid information from invalid, health information search methods, and how to take medication education. Some researches emphasized medical librarians' duty in enhancing people's literacy.^[20,21] Medical librarians help health-care specialists to find clinical information, formulate of a clinical question, and update clinical information in COVID-19 crisis. Featherstone also pointed medical librarians' role out in providing information services for emergency managers in time of crisis such as flood, earth quick, and so on.^[22] Featherstone *et al.* consider the role of medical librarian important and crucial in disaster planning, preparedness, response, and recovery.^[23] The Australian Library and Information Association also advises librarians to prepare themselves for disasters and timely response to information needs.^[24] Ashrafi-Rizi *et al.* also consider the collaboration between family physicians and medical librarians in a variety of areas including clinical information literacy.^[25] Since access to clinical information is one of the essentials of health-care specialists' scientific and professional fluency, they should be able to benefit from the latest scientific findings^[26-29] and clinical information literacy education becomes a necessity for them. Some studies also mentioned the lack of time and the inability of health-care specialists to find their needed information.^[30,31] In fact, scientific and professional fluency helps to utilize the best evidence in order to make accurate clinical decisions.

Health research services

Medical librarians in the COVID-19 crisis provided research services to health-care specialists and other medical librarians in conducting research. Furthermore, some medical librarians began to investigate about COVID-19 crisis in line with their professional work and considered it as one of their professional duties. In fact, medical librarians did individual research and assisted other researchers in the research process, including searching and evaluating information sources. Besides that, they were conducting scientometric analyzes as well as disseminating the latest scientific findings to other researchers. In fact, they had to constantly identify new research related to the COVID-19 and perform proper analysis on their publication process. It must be acknowledged that both people and health-care specialists require the latest scientific findings appropriate with their circumstances in crisis situations. Ashrafi-Rizi *et al.*^[32] and Demas and Ludwig^[33] point to the role of medical librarians in health research. Assisting other researchers in conducting systematic reviews, searching for research backgrounds, editing scholarly articles from other researcher, contributing to submitting the research

papers, and evaluating information resources can be part of medical librarians' research services in crises.

Interaction-level development

Medical librarians have relatively active interaction with other medical librarians and health-related organizations in COVID-19 crisis. Developing interprofessional interactions, enhancing transprofessional collaboration, more interaction with crisis-related organizations, identifying ways to communicate with users, and identifying information resources features were the medical librarians' roles in the COVID-19 crisis. Medical librarians need to interact appropriately with other individuals and organizations. They must introduce their essential functions and roles to other professions. Anwar and Ullah believe that strong communication skills with other people are essential for medical librarians' activity.^[34]

Evidence-based policy development

Polymaking in health libraries should be based on reliable scientific evidence and with the aim of promoting decision-making. Reviewing course content, formulating new rules for libraries, and identifying new ways of disseminating information were examples of evidence-based polymaking specific in the COVID-19 crisis which in some cases they use of this opportunity. Medical librarians believe that identifying the type of audience needs, new methods of disseminating information, as well as formulating library rules should be accompanied by scientific and administrative background to make the necessary impact and that decisions be accurate and responsive. Zare Gawgani believes that activities of librarians and libraries are invalid without evidence^[35] and Yaeger and Kelly recommend that medical librarians should use the best evidence in decision-making and in helping health-care specialists.^[36]

Information dissemination services promotion

Medical librarians sought to make library services easily accessible to the general public as well as health-care specialists during COVID-19 crisis. Identifying the audience's needs, selecting the best content, and responding to users' information demands were the other medical librarian services in the COVID-19 crisis. Medical librarians, in addition to identifying the audiences' health information needs and selecting the best information sources, should consider appropriate information format (article, book, message, etc.) to disseminate information to the audience. Uzohue and Abdulazeez Yaya refer to medical librarian's awareness services in supporting the health-care specialist and researchers.^[37] However, in the development of health information dissemination services, the use of ICT capabilities is inevitable.^[38-40] Social media as well as

web-based features help to influence health information dissemination services.

Management services development

Medical librarians, and in particular the director of health libraries, needed to revise their policies and activities in order to promote and fulfill the library's goals in the COVID-19 crisis. Medical librarians in Iran had to make rational and quick decision about the health of libraries, librarians and users, the type of services provided in new conditions (in-person or virtual), in-person or virtual meetings, delay in return of books, book loan, closing or restricting library activities, and so on. Medical librarians should design an emergency management plan for different crises^[41] so that they can function properly when needed. Hospital librarians have also received training in times of crisis.^[42] It seems that the MLIS discipline should be trained students as "disaster librarians," "disaster information professionals," or "disaster clinical librarians" because disasters are a broad area and require specialized expertise.

In addition, the barriers of activity performance of medical librarians were also analyzed. Findings concerning the identification of barriers in performing medical librarians' role in the COVID-19 crisis in Iran showed four types of (subcategories) barriers including:

Medical librarian-related barriers

Some medical librarians in the COVID-19 crisis have stated that they do not have enough motivation and tendency to help other professionals. Individual unwillingness, inadequacy of specialized knowledge, and negative energy from other medical librarians were some of the reasons that medical librarians mentioned as their inability operate effectively in the COVID-19 crisis. Some researchers also consider lack of motivation of medical librarians as an important factor in job dissatisfaction and inactivity for the library.^[43,44] On the other hand, continuing education for medical librarians should be a priority for scientific associations as well as MLIS department, because lack of skills and knowledge can be a major barrier to the serious presence of medical librarians in the health context, including crises. It is pointed out, for example, that the role of medical librarians in the reference and information services is crucial in times of crisis^[45] and these types of services require sufficient training. Some of the barriers associated with medical librarians seem to be overcome by reinforcing internal motivation and partial with appropriate polymaking by managers, especially education and encouragement.

Organization-related barriers

Some medical librarians were insufficiently motivated to assist other professionals in the COVID-19 crisis,

based on their perceptions of the lack of needed information technology, lack of a specific crisis policy in the organization, COVID-19 headquarters' reluctance to use of medical librarians, university officials ignore medical librarians' self-effacing move, the low speed of the Internet, the filtering of some social media, the parallelism of activities, the lack of a reliable crisis database, the lack of coordination between the groups involved in the crisis, and prolonging workgroup planning. These problems appear to be due to the lack of a clear policy in Iran and consequently in libraries in the face of crises; therefore, both the authorities and the medical librarians are confused in crisis. Matthews and Eden to address crisis issues point out the necessity of adequate equipment and technology in libraries.^[46]

Profession-related barriers

Medical librarians described barriers from practitioners in dealing with the COVID-19 crisis. They stated that the passivity of some MLIS departments and the reluctance of some medical libraries in order to cooperate in performing activities in COVID-19 crisis were the main reasons that should be addressed seriously.

Context of society (country condition)-related barriers

Iran is under sanctions and has more or less shown its vulnerability to health during the COVID-19 crisis. These problems diminished the motivation to help others; for example, increasing the price of applications software, not taking the risk of COVID-19 seriously by some people, too much attention of people in rumors and bad news, time constraints for any productive activity, lack of access to people, and lack of disinfectants for library disinfection due to specific condition of country. Some texts also mentioned the impact of sanctions on the health service.^[47,48] Too much public attention to gossip and false news can also be part of the effects of the boycott. In addition, there is a need for coherent education and culture on the ability of people to identify fake news and valid information. Finally, it should be noted that medical librarians must address many of the limitations with the necessary caution and use of existing facilities to develop library services in the best way. In addition, justice-seeking countries are taking effective steps to remove sanctions in support of the Iranian people.

Research limitations

Although the second phase of the study should be conducted verbal with the interviewees, due to the COVID-19 crisis and home quarantine, it was not possible to interview them in person, so interviews were conducted using technologies including social media (such as WhatsApp and so on) and E-mail. However, since the COVID-19 crisis had not been a long time when this research was formed, some new documents may have been published by medical

librarians in Iran or medical librarians may begin new activities to help the crisis; these documents could not be used in this study. At the same time, the scarcity of similar articles that referred to the role of medical librarians in crises caused that less happens the necessary richness in the explanation of the "problem statement" as well as the "discussion part." However, the authors try to use similar articles to better explain the problem as well as the findings.

Conclusion

Health-care specialists as well as the general public need high-quality, update, and reliable information in crisis time in order to maintain their health and others. The COVID-19 crisis, apart from the serious damage that has for countries, caused almost all academic disciplines to think about revising their curriculum content and activities. This crisis was significant because all human activity was severely affected. Medical librarians are also more or less involved in providing health information services to others in Iran. This study also points to the role of medical librarians in the COVID-19 crisis and what barriers exist for medical librarians' performance.^[49,50] The findings indicate that medical librarians in Iran performed such activities as much as they could (under sanctions against Iran) including health services promotion, development of health information-seeking skills, health research services, interaction-level development, evidence-based policy development, information dissemination services promotion, and management services development. However, they also encountered barriers such as medical librarian-related barriers, organization-related barriers, profession-related barriers, and context of society (country conditions)-related barriers. Despite these barriers, it seems that Iranian medical librarians have been able to fulfill their mission which is equipped everyone with the right health information at the right time and at the right audience during COVID-19. By quick access of health-care specialists to valid clinical information in a crisis situation, they can help to prevent, treat, diagnose, and rehabilitate patients and their families. People are also expected to receive information from reliable media, including health libraries, during the crisis, and libraries must have educational programs (Of course more electronic). These information demands were relatively fulfilled by medical librarians in Iran. However, it should be said that authorities involved in the field of MLIS in Iran should review their content and activities and have appropriate policy and planning to suit different situations, including crises.

Training of "disaster librarians," "disaster information professionals," or "disaster clinical librarian" as part of the field of MLIS should be a priority in educational

programs, especially that Iran is susceptible to many accidents such as flood, earthquake, drought, and so on. Furthermore, the strengths and weaknesses of medical librarians' activities in the current crisis should be scientifically assessed and take appropriate action for the future in line with the results. Besides that, appropriate policymaking and planning is required to fulfill these roles in libraries, MLIS departments, and the Iranian Medical Library and Information Association. In addition, medical librarians in Iran also use the experiences and achievements of other countries desirably. Using the experience of this crisis, as well as policymaking and planning for the future, can help develop and highlight new roles for medical librarians in the health context. Finally, it should be noted that these actions and the role of medical librarians have occurred in a situation where Iran is under a sanction situation, and certainly under normal circumstances, these medical librarian services will be more effective.

As we know in qualitative research, the results need to be generalized more carefully and especially that the context is very effective. This research has been done in the context of Iran, and there is a big difference between Iran and many other countries in various dimensions, including economic, social, and cultural status; therefore, other researchers should be more careful in generalizing the results. However, the results of this study can be used as an introduction to other researches and as a model for medical librarians in other countries.

Acknowledgments

We would like to thank all participants in interview process and staffs of Vice Chancellery for Research and Technology, Isfahan University of Medical Sciences, Isfahan, Iran.

Financial support and sponsorship

This research resulted in a research project that was supported by Vice Chancellery for Research and Technology, Isfahan University of Medical Sciences, Isfahan, Iran.

Conflicts of interest

There are no conflicts of interest.

References

1. State Management Education Center. Manual of Disaster Management. Tehran: State Management Education Center; 2014.
2. Zakaeei-fateh J. Non-operating defense and crisis management considerations in locating emergency medical services in crisis situations. The 15th Conference of Civil Students of the Nation. Tehran, Iran; 2017.
3. Mansour E. The potential role of university libraries' manpower, collections, services, facilities and activities in promoting national security in times of crises in Upper Egypt. *Library Manag* 2017; 38(4/5):182-202.
4. Mohammadesmaeili S, Nasehi Scouei M. Libraries and Natural Disasters (a Case Study of Medical University Libraries Affiliated to Ministry of Health and Medical Education of Iran, tehran); 2015.
5. Ashrafi-Rzi H, Kazempour Z. Designing of clinical information update system for clinicians on COVID-19: A commentary. *J Educ Health Promot* 2020;9:104.
6. Alajmi B. When the Nation is in Crisis: Libraries Respond. *Library Management*; 2016.
7. The New Jersey State Library. The Librarians Disaster Planning and Community Resilience Guidebook: Librarians Fulfilling Their Role as Information First Responders. USA: The New Jersey State Library; 2016.
8. Chizwina S, Rabatseta B, Bangani S, Moyo M. A University Library's Use of Social Media During a Time of Crisis. *Library Review*; 2017.
9. Winston MD, Quinn S. Library Leadership in Times of Crisis and Change. *New Library World*; 2005.
10. Linder-Zarankin M. A Latent Resilience Capacity: Individual and Organizational Factors Associated with Public Library Managers' Willingness to Engage in Post-Disaster Response and Recovery: Virginia Tech; 2017.
11. Young E. The Role of Public Libraries in Disasters. *Instructions for Submissions*; 2018. p. 31.
12. Ashrafi-Rizi H, Kazaempour Z. The challenges of information services related to the COVID-19 crisis. *J Mil Med* 2020;22:207-9.
13. Zach L. What do I do in an emergency? The role of public libraries in providing information during times of crisis. *Sci Technol Lib* 2011;30:404-13.
14. Stricker M. Ports in a storm: The role of the public library in times of crisis. *Collaborat Lib* 2019;11:4.
15. Hariri N. Principles and Methods of Qualitative Research. Tehran: Islamic Azad University, Science and Research Branch of Tehran; 2016.
16. Pasquarella C, Saccani E, Sansebastiano GE, Ugolotti M, Pasquariello G, Albertini R, et al. Proposal for a biological environmental monitoring approach to be used in libraries and archives. *Ann Agric Environ Med* 2012;19:209-12.
17. Pietro GD, Ligterink F, Porck H, de Bruin G. Chemical air filtration in archives and libraries reconsidered. *Stud Conservat* 2016;61:245-54.
18. Fakari FR, Simbar M. Coronavirus pandemic and worries during pregnancy; a letter to editor. *Arch Acad Emerg Med* 2020;8:21.
19. Phelan AL, Katz R, Gostin LO. The novel coronavirus originating in Wuhan, China: Challenges for global health governance. *JAMA* 2020;323:709-10.
20. Yates C. Exploring variation in the ways of experiencing health information literacy: a phenomenographic study. *Lib Inf Sci Res* 2015;37:220-7.
21. Ivanitskaya L, O'Boyle I, Casey AM. Health information literacy and competencies of information age students: Results from the interactive online research readiness self-assessment (RRSA). *J Med Internet Res* 2006;8:e6.
22. Featherstone RM. The disaster information specialist: an emerging role for health librarians. *J Libr Administ* 2012;52:731-53.
23. Featherstone RM, Lyon BJ, Ruffin AB. Library roles in disaster response: An oral history project by the national library of medicine. *J Med Libr Assoc* 2008;96:343-50.
24. Australian Library and Information Association. ALIA Guide to Disaster Planning, Response and Recovery for Libraries. Australian: Australian Library and Information Association; 2010.
25. Ashrafi-Rizi H, Amraei M, Kargar H, Ghazavi Z, Kazempour Z. Identification of strategies for collaboration of medical librarians with family physicians in advancing the goals of the family physician program based on experts' viewpoints. *J Contemp Med Sci* 2019;5:218-23.

26. Ashrafi-rizi H, Hodhodinejad N, Shahrzadi L, Soleymani M. A Study on the Novel Services of Medical Librarians in Health Information Services: A Narrative Review; 2017.
27. Davidoff F, Haynes B, Sackett D, Smith R. Evidence based medicine. *BMJ* 1995;310:1085-6.
28. Smith R. What clinical information do doctors need? *BMJ* 1996;313:1062-8.
29. Sahapong S, Manmart L, Ayuvat D, Potisat S. A Systematic Review of the Roles and Competencies of Medical Information Professionals (Mips) in Evidence-Based Medicine In Thailand; 2006.
30. Movahedi F, Ashrafirizi H, Sharifmoghadam H. Physicians' perception about the role of clinical librarianship at Alzahra Medical Center. *J Health Administ* 2013;16:71-81.
31. Sheikhshoei F, Zolfaghari M, Mansourzadeh MJ, Ghazi Mirsaeid SJ. Designing a proposed educational program for clinical librarian. *J Health Administ* 2019;22:22-34.
32. Ashrafi-Rizi H, Najafi NS, Kazempour Z, Taheri B. Research self-efficacy among students of isfahan university of medical sciences. *J Educ Health Promot* 2015;4:26.
33. Demas JM, Ludwig LT. Clinical medical librarian: The last unicorn? *Bull Med Libr Assoc* 1991;79:17-27.
34. Anwar MA, Ullah M. Developing an instrument for the validation of competencies: The case of medical librarians. *Libr Philosophy Pract* 2017; 1533: 1-24.
35. Gavvani VZ. The research and education of evidence based library and information practice; a narrative review. *Depict Health* 2019;8:193-202.
36. Yaeger LH, Kelly B. Evidence-based medicine: Medical librarians providing evidence at the point of care. *Mo Med* 2014;111:413-5.
37. Uzohue CE, Yaya JA. Provision of current awareness services and selective dissemination of information by medical librarians in technological era. *Am J Inf Sci Comp Eng* 2016;2:8-14.
38. Omona W, Ikoja-Odongo R. Application of information and communication technology (ICT) in health information access and dissemination in Uganda. *J Libr Inf Sci* 2006;38:45-55.
39. Roderer NK. Dissemination of Medical Information: Organizational and Technological Issues in Health Sciences Libraries; 1993.
40. Mahmood K, Richardson JV. Impact of Web 2.0 Technologies on Academic Libraries: A Survey of ARL Libraries. *The Electronic Library*; 2013.
41. Beales DL. Before disaster strikes: essentials of formulating a library emergency management plan. *J Hosp Libr* 2003;3:11-24.
42. Donahue AE, Featherstone RM. New roles for hospital librarians: A benchmarking survey of disaster management activities. *J Med Libr Assoc* 2013;101:315-8.
43. Biglu MH, Abotalebi P, Ghavami M. Job-burnout among medical librarians. *J Anal Res Clin Med* 2016;4:215-20.
44. Lamptey R, Boateng M, Antwi I. Motivation and performance of librarians in public universities in Ghana. *Libr Philosophy Practice* 2013; 911 1-25.
45. McKnight M. Health sciences librarians' reference services during a disaster: More than collection protection. *Med Ref Serv Q* 2006;25:1-2.
46. Matthews G, Eden P. Disaster Management Training in Libraries. *Library Review*; 1996.
47. Takian A, Raofi A, Kazempour-Ardebili S. COVID-19 battle during the toughest sanctions against iran. *Lancet* 2020;395:1035-6.
48. Gorji A. Sanctions against iran: The impact on health services. *Iran J Public Health* 2014;43:381-2.
49. Ashrafi-rizi H, Kazempour Z. Information typology incoronavirus (COVID-19): A commentary. *Arch Acad Emerg Med* 2020;8:19.
50. Ashrafi-Rizi H, Kazempour Z. Information diet in Covid-19 crisis; a commentary. *Arch Acad Emerg Med* 2020;8:e30.