Original Research

Factors affecting health information resources in central libraries at Iranian universities of medical sciences

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Abstract

Background: Academic libraries play a crucial and constructive role in managing information resources. Because medical universities have an essential role in promoting public health, the position of libraries at these universities is both important and influential. Therefore, this study investigated factors that affect the provision of health information resources in central libraries at Iranian universities of medical sciences.

Methods: This applied-descriptive study reviewed factors affecting the provision of health information resources based on document study and the Delphi method. A total of 62 managers of these central libraries were asked to participate. The sample was based on the fuzzy Delphi technique, which provides a solution in two phases. The data were obtained from a qualitative analysis of interviews and results from a researcher-created questionnaire.

Results: Six factors were found to be vital to providing health information resources, including support, maintenance costs, country policies, economics, cooperation with high-tech companies, and political challenges. Some suggestions are given to address the challenges of providing resources; the most important was to create visual and audio media with a high diffusion coefficient.

Conclusion: Numerous factors can affect the provision of health information resources at Iranian universities of medical sciences. The foundations of these factors are varied, some stemming from economic fluctuations and others from technological developments.

Introduction

Nowadays, information resource management has increasingly become a vital tool for both integrating the purpose of organizational resources and supporting organizational strategies.[1] In the meantime, in addition to producing information, health care organizations use information sources such as textbooks, references, magazines, and digital resources as sources of health information,[2] including textbooks, journals, indexes, abstracts, n, magazines, reports, CD-ROM, databases, tapes, diskettes, encyclopedias, and microform.

Effective management of health information resources has a positive effect on improving the performance of health care organizations as well as on community health indicators.[3] Optimal management of such resources provides improved access to quality information for health care providers and, in addition to improving the cost-effectiveness of such services, enhances the decision-making process.[4] Therefore, managing health information resources leads to obtaining correct information, changing

values and attitudes related to health, and creating positive new behaviors consistent with improving health in society.[5] Therefore, health information should meet the needs of different groups, including health professionals, health decision-makers and policymakers, and patients and consumers.[6]

Since libraries have always been a place to access information and are tied to education and research, providing educational resources is considered part of a library's mission in the course of learning.[7]

Libraries play a vital role in expanding knowledge to the entire society.[8] Libraries at universities of medical sciences provide learning environments for individuals while enabling them to develop the knowledge and skills needed to better understand health information and health policies to make decisions about their personal and social health.[9] University libraries help retain knowledge and ideas by collecting and organizing books, publications, and other materials, as well as by expanding university programs, which can contribute to the expansion of the university.[10]

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The mission of modern university libraries is to act as a dynamic educational tool through which they play a vital role in achieving the goals of higher education.[11]

Given the responsibilities of university centers in producing, transferring, and disseminating knowledge, it is reasonable to assume that the need for fulfilling these responsibilities will justify the provision of appropriate and adequate facilities and equipment as well as staff and that the failure to provide these will result in undesirable inefficiencies.[12] Therefore, libraries at universities of medical sciences play a crucial role in managing information resources. Based on seeking and releasing the situation of public library librarians regarding health information, Ghaffari and Pour Habibi[13] acknowledged that the management of information resources in these libraries has its own ups and downs, such as supplier delays. Kuang and colleagues' study of the evaluation of print materials in public libraries also found that the quality of librarians' work, commitment, and performance affect the effectiveness of information resource management.[14]

Providing resources in central libraries at universities of medical sciences can effectively improve the status and quality of services provided by specialists and professionals. Providing information about health barriers can increase the use of information as a strategic resource for educating users. Therefore, in this study, the researcher aimed to identify factors affecting the provision of health information resources in the central libraries at Iranian universities of medical sciences and suggest solutions to the challenges ahead.

The current study helps fill information gaps and integrate administrators' needs and, on the other hand, provides possible solutions to the major challenges in entering the required metadata information in the libraries of Iranian universities of medical sciences as well as drawing their managers' attention to the required information in descriptive, structural, and managerial situations as well as protective fields.

Materials and Methods

This 2022 study was conducted in two phases using a mixed methods approach. For the first phase, a survey and a semi-structured interview were used to identify factors affecting the provision of health information resources in central libraries at Iranian universities of medical sciences. For the second phase, the Delphi technique was used to provide solutions.

Ten experts and faculty members of health sciences were included in the convenience sample.

Samples were collected using an objective-based sampling method. The data were collected using a questionnaire, document analysis, and the Delphi method, along with a semi-structured interview. Ten researchers in the fields of information management, faculty members, and skilled in the related field were asked to participate. The data were obtained and refined using the fuzzy

Delphi method. The questionnaire was based on a 5-point Likert scale based on the conceptual model using a verbal mode (strongly disagree, disagree, neutral, agree, and strongly agree). Due to the use of the implementation steps of the fuzzy Delphi method, it is better to display data with fuzzy numbers instead of definite numbers. The implementation steps of the fuzzy Delphi method are, in fact, a combination of performing the Delphi method and information analyses using the definitions of fuzzy set theory. The most important differences between the fuzzy Delphi method and the Delphi method are that in the fuzzy Delphi method, experts usually express their opinions in the form of verbal variables. A calculation was made of the means of the experts (numbers presented) and the amount of disagreement among the experts. Furthermore, this information was sent to experts so that they could review and adapt it.

Phase 1

This phase encompassed semi-structured interviews. The sampling method was purposeful and continued up to the obtaining of information. The interview included ten participants. Inclusion criteria were based on academic education with at least 15 years of work experience in the related field. The researcher conducted a semi-structured interview by telephone due to the coronavirus pandemic.

Before the interview: This consisted of coordinating with the interviewees, explaining the objectives, and scheduling the interviews. Interviews were conducted in a relaxed atmosphere. The interview conditions were set so that the responses were given without the least possible amount of bias and directing or commenting on whether the answers were correct or incorrect

During the interview: Participants' consent was obtained before the interview by reiterating the study objectives. The interviews were recorded after informing the interviewees to avoid potential problems. Interviews lasted between 30 and 53 minutes.

After the interview: Recorded interviews were immediately transcribed on the same day. Notes and critical points were summarized in a separate paper. In addition to the interviewees' basic details, the sheet included their position, the date, time, and other necessary information. Following each interview, a specific code and audio file were provided for each completed form to facilitate follow-ups. After the interview, interviewees were asked if they were interested in future participation. Following transcription of the interview text, the interviewees were re-contacted for additional information in case of any ambiguities.

Analysis

Transcripts of semi-structured interviews were carefully examined, and after entering them into the tables, various concepts were extracted by separating their meaningful sentences into different lines. These concepts were coded

according to apparent content into conceptual categories that represent an independent concept.

By reviewing data collected through interviews several times, different angles were examined during this phase. By reviewing the collected data set, the concepts concealed in the collected data were retrieved. Concept naming was performed at this stage without any restrictions. The main axes of the data set were identified after coding, and the next step involved coding around these axes. Credibility strategies were used to enhance the reliability of the qualitative approach.

Phase 2

In the second phase, the Delphi technique was used to suggest solutions. At this stage, five experts with a managerial background in the library, in addition to related education, participated in a virtual panel. After discussion and using the technique of brainstorming, ten statements were selected as solutions to eliminating the challenges of providing information resources. These ten items became the basis of the researcher-created questionnaire. The validity of this questionnaire was confirmed based on the opinions of three faculty members in the librarians' field. The reliability of this questionnaire was calculated based on Cronbach's alpha test at 83%.

At this stage, the purposive method was used for sampling; 25 individuals participated in this study phase. In the first stage, participants were provided with some questions collecting demographic information [was other information collected? When were the interviews held? How were the factors below identified – was it using this first survey?] via e-mail. After collecting the demographic questions using the fuzzy method, their mean was calculated, and the results of this Delphi stage were recorded in the second researcher-created questionnaire and sent back to the participants, where the mean of their answers was calculated by the fuzzy method.

In this study, the formula of mean $= (\frac{ma1+ma2+...+man}{n}, \frac{mm1+mm2+...+mmm}{n}, \frac{m\beta1+m\beta2+...+m\beta n}{n})$ was used to calculate the mean of each component (fuzzy mean). Based on the experts' points of view, a critical point of 50 was considered definitive; in other words, items that scored less than 50 points were removed at the end of the study.

Results

In the first phase of the study, of 10 participating experts, 8 were men, and 2 were women. Sixty percent of the experts in this study held a master's degree in librarianship and library management, and 40% held a doctorate and were faculty members. In general, as is shown in Table 1, six effective factors in providing health information resources were identified. From the experts' perspectives, maintenance costs were one of the most critical factors in providing health information resources in central libraries at universities of medical sciences.

The second part of this study addressed some solutions to likely challenges in central libraries at universities of medical sciences in providing health information resources. At this stage, ten solutions were identified by experts surveyed in two Delphi phases. Creating highly influential audio-visual media was the most crucial solution offered by the experts. A strategy of exchanging information resources was eliminated since it did not obtain the requisite score (Table 2).

Discussion

This study attempted to identify factors affecting the provision of information resources in the central libraries of Iranian universities of medical sciences and to provide suggested solutions. This qualitative study was conducted in two phases. Six main factors, including support factors, maintenance costs, policies, economics, cooperation with new technology companies, and political challenges, were highlighted as crucial factors impacting the provision of information resources.

Supportive factors were one of the most important factors influencing the provision of health information resources in the central libraries of the universities of medical sciences. Those factors can be divided into two categories: soft factors, such as the support of senior managers and professional staff, and hard factors, such as storage space.

One of the problems in libraries is the lack of medical knowledge of resources, which has led to both inefficient digital outputs from the library and the inadequacy of the human resources specialized in this field. Iran is focused on aligning libraries with the advancement of its goals at

Table 1. Interview data code: Factors influencing the provision of information resources in the management of health information resources

Open code	Verbal proposition	Interviewee code
Supportive agents	Information resource support agents are effective for managing the health information resources of the library	I_4, I_8, I_{10}
Maintenance costs	Resource maintenance costs, such as hiring experts to manage health information resources, are influential in providing health information resources	I_3, I_5, I_6, I_7
Country policies	The macro-policies of the central libraries of the country have an effective role in managing the health information resources of libraries	I_1, I_2
Economics	The macroeconomic situation of the country can affect the management of the health information resources in libraries	I_3, I_6
Cooperation with new technology companies	Libraries' collaboration with high-tech companies can play an essential role in managing the health information resources of libraries	I_2, I_9
Political challenges	The cause of political challenges can affect the management of libraries' health information resources	I_3, I_5

Table 2. Mean score of the solutions provided to meet the potential challenges

No.	Suggested criteria	Fuzzy mean	Post fuzzy mean	Fuzzy mean	post fuzzy mean	The difference between the 1st and 2nd phases
1	Management of annual book elimination according to financial status	(0.53,0.75,0.90)	0.74	0.79	(0.53,0.75,0.90)	0.05
2	Adequate attention to annual (elimination) of the books	(0.53,0.75,0.90)	0.74	0.79	(0.53,0.75,0.90)	0.05
3	Management of members 'and clients' requests for finances	(0.50,0.75,0.88)	0.73	0.77	(0.50,0.75,0.88)	0.04
4	Strengthen cooperation with other libraries (interlibrary loan)	(0.46,0.71,0.88)	0.70	0.70	(0.46,0.71,0.88)	0
5	Development of public contributions of clients to provide financial support	(0.46,0.71,0.88)	0.70	0.70	(0.46,0.71,0.88)	0
6	Development of structure and infrastructure for production and distribution of information resources	(0.37,0.62,0.83)	0.61	0.65	(0.37,0.62,0.83)	0.04
7	Organizing the computer system of the reference resources section of libraries	(0.37,0.62,0.79)	0.59	0.58	(0.37,0.62,0.79)	0.01
8	Creating high penetration audio and video media	(0.52,0.77,0.92)	0.75	0.81	(0.52,0.77,0.92)	0.06
9	Medical sciences interlibrary exchange of information resources	(0.31,0.56,0.73)	0.55	0.37	(0.31,0.56,0.73)	0.018
10	Facilitating the process of donating up-to-date information resources to medical science libraries	(0.46,0.71,0.88)	0.70	0.76	(0.46,0.71,0.88)	0.06

the lowest cost, while it can also control the macro-policies of the country in these matters. Obviously, financial problems in any organization can lead to technological, political, and economic challenges.

In 2009, information support and maintenance settings of educational libraries were examined in a study. In 60% of these libraries, the support condition of information resources was not standard.[15] The support condition of library information resources may increase due to an increase in the number of students and the development of disciplines in the coming years. Support for library information resources, in addition to the impact on supply, can also affect the productivity of those resources, as shown in Mohammadi's study that supports electronic resources purchased by universities of medical sciences. It can affect how users access such resources.[16]

The findings of this study showed that the cost of maintaining health information resources could play an essential role in providing them. Ansari believes university libraries encounter poor management of information resources and daily accumulation of a large number of resources.[17] This increases the maintenance cost and contributes to the inefficiency of library resources and, thus, the reluctance of officials to provide new resources. Pashootanizadeh and Akbari believe that secondary to the cost of building educational libraries is the highest cost of libraries related to the provision and maintenance of valuable and reliable information resources to meet the needs of users.[18] It seems that managing and maintaining library information resources has hidden costs that scientific management can partially reduce.

Another factor influencing health information resources is policy and macro decision-making in culture and literature. These policies are adopted by ministries or high councils of the country, directly affecting the provision of

information resources for the libraries of the universities of medical sciences. These policies include supporting universities from publishers or allocating subsidies to well-known university information resources. In some cases, policymakers make their decisions regardless of constituents' views, which leads to disruptions in the provision of information resources. Due to the increase in the number of students and the establishment of new and complementary disciplines, the country's macro-policies should support the development of educational libraries and the support of their information resources.

Farajpahlou and Moradi Moghaddam believe that libraries and information centers spend considerably on providing information resources.[19] In another study with faculty members, it was found that over 21% of the participants agreed that their libraries' information resources were inappropriate.[20]

Moreover, it is important to tailor these policies to meet constituents' needs to provide information resources and utilize new technologies such as the internet to access these resources.

Since cultural activities and libraries are among the lower priorities of a country's program and budget, a country's economic situation can be a vital factor in providing resources for the libraries of the country's universities of medical sciences. In connection with economic problems associated with the development of libraries, it has long been known that Barablah, 1995, attributed the underdevelopment of Nigerian educational libraries to the global recession of the 1930s.[21] Zorica et al also confirmed a relationship between economics and the provision of information resources and recommended the joint purchase of books and their use in specific economic conditions.[22] In connection with the economic situation, Chapman acknowledges that: "Libraries need

cooperation; it is indispensable to emphasize the type of cooperation that reflects the true meaning of collection development".[23]

Establishing a connection with technology companies can facilitate the provision of information resources in educational libraries. Dhiman considers how to save today's libraries to access and provide information resources through affiliation with companies and institutions outside the organization.[24] In this regard, Yoon argues that using technology to overcome time and space constraints makes access to library resources smarter and faster.[25] Rafique et al argue that since libraries are considered an ocean of knowledge and a key source of information, learning, and research, they need to rely on technologies and provide their services through this same channel due to advances in information and communication technology, especially wireless and mobile technologies.[26] Political challenges such as changes in ruling parties, establishing foreign relations, or imposing sanctions can affect the provision of information resources. Ameen also considers national macro-decisions as the main challenge of Paxan libraries.[27] In this regard, Xia believes that political challenges can be effective not only in the management of libraries but also in the internet marketing of bookstores, which are the leading suppliers of library resources.[28]

Political challenges are considered one of the most important factors influencing the funding of educational libraries since they may affect the allocation of funds and how resources are provided. For instance, copyright rules in Iran are considered a challenging issue. Currently, foreign works are not protected in Iran. However, upon joining the Berne Convention and other international agreements, the translation of foreign texts will infringe the exclusive adaptation right of a copyright owner. In addition to 'free' permissible uses of copyright works, translation of published works in certain situations is permitted subject to remunerating the original work's author.

Conclusion

This study examined the factors affecting the provision of health information resources in central libraries at universities of medical sciences. A total of six factors, including support factors, maintenance costs, country policies, economics, cooperation with high-tech companies, and political challenges affecting information resources, are identified. The following suggestions were made based on the consideration that these factors might be challenging. These suggestions include designing and implementing necessary resources and optimal management of resources as well as required standards. They also include the importance of resource-based management and decision-making in these libraries for educational programs and continuous attention to future studies and its components in the agenda of managers to advance the libraries' goals to help the central libraries

maintain standard supplies of libraries when encountering such challenges.

The primary limitation of the current study is its generalizability since it was conducted among central libraries of universities of medical sciences in Iran, and the context and economic trends of these universities may differ from other educational and non-educational universities. Care should be taken to generalize this study to other libraries in other countries. The second limitation of this study is that policymakers and senior managers in the Ministry of Health and Medical Education and other constituents, such as the Ministry of Culture officials, did not participate in the study.

Our findings suggest that considering the importance of health information resources and the role of central libraries at universities of medical sciences in their management, it is indispensable to develop a strategic and long-term plan to provide these resources. Furthermore, different scenarios according to changing conditions of effective factors in providing information resources can facilitate decision-making conditions for library managers. On the other hand, prioritization to provide resources is one of the most crucial solutions to providing information resources.

Therefore, it is recommended that necessary resources and optimal management of these resources and required standards be designed and implemented. The importance of resource-based management and decision-making in the libraries at universities of medical sciences is included in educational programs. In addition, it is indispensable for the managers to include future research and attention to its components in their agenda to advance the goals of these libraries.

Authors' contributions
TK contributed to the study design, data collection, and manuscript drafting. ARI contributed to the study design, data analysis and interpretation, and study revision, BB contributed to study revision and manuscript drafting, and FD consulted the overall outline of the study.

Competing interests
The authors declare no competing interests.

Ethical approval
The authors would like to point out that there was no requirement for the approval of ethical procedures as indicated under the committee of Azad University as part of the research thesis since no classified data were required for the current study. We hope our efforts to draw your attention have been fruitful. In addition, participants were assured that the collected data would be used exclusively for research purposes and that their names would remain confidential.

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