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Competences of academic librarians in providing health research services: A qualitative study

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Abstract:

BACKGROUND: One of the most important responsibilities of today's university libraries is supporting research activities. The present research is aimed at explaining the librarians' competencies in providing research services for researchers of Isfahan University of Medical Sciences.

MATERIALS AND METHODS: This study was performed in 2018 with a qualitative approach and conventional content analysis. The participants were 18 faculty members, students, and librarians selected by purposive sampling. Data collection was done by 18 semi-structured interviews. Continuous data analysis was performed by conventional content analysis.

RESULTS: According to the participants' experiences, two major categories were recognized, including "general competencies" and "specialized competencies." The general competencies category included three subcategories of communication skill, professional ethics, and basic abilities. The specialized competencies category included six subcategories of information resource retrieval and evaluation, using research software, research assistance, intellectual property literacy, scientific publication literacy, scientometrics, and altmetrics.

CONCLUSION: According to the participants' experiences, university librarians need specialized competencies in addition to basic and transdisciplinary abilities. It is suggested for research managers and policymakers to plan for empowering librarians regarding the results of the present study.

Keywords:

Isfahan University of Medical Sciences, librarians, research competencies, research services, researchers

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Introduction

There is a deeply rooted bond between balanced and purposive development of scientific organizations and institutes and their research growth; hence that, without research growth, they are likely of losing their scientific credit and position.^[1] Research is considered as a mission of university, and library is a research tool. University libraries that are efficient either from the aspect of human force or service providing aspects, and also application of new technologies are considered as support leverage in providing higher education, technological,

and research programs.^[2] Librarians and information providers can play a dual role in the research procedure. On one hand, they can promote the knowledge of librarianship, and on the other hand, they can help the development of human knowledge by guiding researchers in the process of research.^[3]

Medical Library Association (MLA) has mentioned the librarians' professional competencies as observable, measurable, and acquirable necessary skills and abilities.^[4] One of the main competencies for librarians is research competency; MLA has defined research competency as the knowledge and ability to use qualitative

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and quantitative research principles, findings, research literature, and realistic and potential research evaluation methods.^[5]

University librarians have always played a major role in providing research services and developing these services in universities. However, their role is transforming; for instance, Canadian university librarians have a major share in conducting research projects as the major researcher and also cooperating with faculty members.^[6] Nevertheless, there are many obstacles in the Iranian university libraries; these obstacles include the librarians' poor research skills and knowledge, and the managers' carelessness about these deficiencies.^[7-10]

White and King investigated the skills and specialties needed by university librarians to provide research advice. They have mentioned publication right, free access, plagiarism, resource management tools, and data analysis software as the necessary skills to be considered in the evaluation of professional librarians.^[11] Moonasar and Underwood^[12] and Enakrire and Ocholla^[13] investigated the university librarians' information communication technology (ICT) skills for professional development and knowledge management support. Regarding the fundamental ICT transformations, it is an important issue to investigate university librarians' new competencies and their changed role; this issue has been investigated by Bawack.^[14]

According to the study of 4000 university libraries in the US and investigation of the effect of university librarians on students' learning (2016), librarians work in different areas such as research relationship, digital archive, data categorization, visualization, creation of digital objects, bibliometrics, altmetrics, electronic learning, research data management, etc. The librarians' roles, responsibilities, and salary have been specified for each area.^[15] Although several studies have investigated the issue of librarians' research competencies and their new roles in digital spaces in Iran, no comprehensive qualitative study has investigated all the aspects of this issue. Regarding the fact that the investigation of different aspects of university librarians' research competencies promotes the quality and speed of research works, the present study is aimed at recognizing and explaining these competencies.

Materials and Methods

The present research is a qualitative study performed by conventional content analysis in the period of June–November 2018. Qualitative content analysis can be considered as a method for mental analysis of the content of text data by systematic categorization processes,

coding, theme development, and modeling.^[16] In the conventional approach, categories are resulted from the data by induction.

The participants were faculty members, higher education students, and librarians working in libraries of Isfahan University of Medical Sciences. The population members were considered as research service providers and receivers, and they were selected by purposive sampling and also snowball sampling [Table 1]. The inclusion criteria included the willingness to participate in the research for all the participants, and dissertation proposal defense for higher education students. The exclusion criterion was withdrawing from participating in the research. After selecting the participants, the researcher described the research goal for them and after getting their consent to participate in the study, the time and place of interviews were arranged.

Data collection was done by semi-structured interviews. The interview guide was designed by the research team, and the researcher who was trained in this area performed the interviews. Furthermore, before starting the formal interviews, two pilot interviews were performed in the presence of the supervisor. To encourage the participants to trust the interviewer, the interview was started by open-ended questions. For example, one of the questions was raised as the following: "Please describe the abilities and competencies that are necessary for librarians to aid you as a researcher?" Moreover, to clarify the participants' answers, they were asked to give objective examples for every mentioned ability and competency. The interviews continued until reaching data saturation. Finally, the research data were collected by 18 interviews with 18 participants with the maximum variety of characteristics. The interviews were recorded by a voice recorder. Depending on the participants' condition, willingness, and information about the research subject, the interviews duration ranged from 20 to 70 min with an average duration of 40 min.

The data collected by interviews were analyzed by thematic analysis. Data analysis was performed in a continuous manner, simultaneous with collecting the data in accordance with the stages proposed by Graneheim and Lundman. For this purpose, first, the recorded interviews were written and typed. Then, to get an overall understanding of the interviews content and for the researcher to be immersed in the data, the text of the interviews was read several times. Then, the sentences and paragraphs containing concepts related to the research subject were selected as semantic units, and the first level codes were extracted by converting the semantic units into brief expressions. After reviewing the first-level codes and integrating

Table 1: Demographic characteristics of participants

Participants	Job	Workplace
1	Librarian	Faculty of Medical Management and Informatics
2	Librarian	Noor and Hazrat-e-Ali Asghar Hospital
3	Librarian	Faculty of Medical Management and Informatics
4	Librarian	Faculty of Nursing and Midwifery
5	Librarian	Faculty of Nursing and Midwifery
6	Librarian	Faculty of Medicine
7	Faculty member	Faculty of Medical Management and Informatics
8	Faculty member	Faculty of Medicine
9	Faculty member	Faculty of Health
10	Faculty member	Faculty of Nursing and Midwifery
11	Faculty member	Faculty of Nursing and Midwifery
12	Faculty member	Faculty of Nursing and Midwifery
13	Faculty member	Faculty of Medicine
14	Student	Faculty of Medical Management and Informatics
15	Student	Faculty of Nursing and Midwifery
16	Student	Faculty of Medical Management and Informatics
17	Student	Faculty of Medical Management and Informatics
18	Student	Faculty of Nursing and Midwifery

the similar codes, the relevant codes were categorized in the same group. Finally, after reviewing the codes and categories, the underlying concept of the data was extracted as the main theme. In the following, the codes were categorized based on the themes by emphasizing the data patterns and their relationship. Then, each of the major and minor categories and codes was assigned a definition.

Data soundness was checked based on the criteria of confirmability, reliability, and transferability proposed by Guba and Lincoln. The researcher's long-term involvement in the research subject and continuous interaction with the participants facilitated attracting the participants' trust and getting more understanding of their experiences. Furthermore, re-interviewing some of the interviewees about the collected data was effective in evaluating the data validity. To promote reliability, some of the participants were informed of the findings and asked about their opinions. Moreover, to increase the transferability of the findings, it was tried to select diverse samples in terms of their research experience, working background, and education program. Finally, the extracted codes and categories were observed by three experts to check the accuracy of the procedure. To observe ethical considerations, the research was approved by the Ethics Committee of Isfahan University of Medical Sciences (Ethics code: IR.MUI.REC.1396.3.950). Meanwhile, the participants were informed about the research goals, data privacy, recording the interviews, and the authority to join and leave the study, and the researcher got an informed consent form from the participants for attending the study and recording the interviews. To keep the interviewees' privacy, every individual was assigned

a code and the data were reported in an anonymous manner.

Results

Eighteen people participated in the study. According to Table 1, the participants included six librarians, seven faculty members, and five students of higher education programs selected from different faculties of the university.

According to data analysis, the librarians' necessary competencies to support research activities included two major categories of general competencies [Table 2] and specialized competencies [Table 3].

General competencies

According to the participants' experiences, the major category of general competencies consists of three subcategories, including communication skills, professional ethics, and contextual abilities.

Communication skills

Communication skill is one of the most important competencies needed by librarians to be able to communicate with the referring people in a proper manner. "The main factor is public relations. A librarian should have the skill of personal and social communication, verbal, and nonverbal skills." (Participant 2).

Professional ethics

"The participants mentioned professional ethics as an important competency for librarians. They should be able to inspire referring people to achieve success. Librarians should be humble, patient, reliable, polite, and respect the referring people." (Participant 6).

Basic abilities

The participants mentioned basic abilities as a necessary competency for librarians. These abilities include being interested in their profession, English mastery, ICT skills, having thematic knowledge, the ability of reasoning,

Table 2: The librarians' general competencies to support research activities

Category	Subcategories	Concepts	
General competencies	Communication skills	Verbal communication	
		Nonverbal communication	
		The skill of using electronic communication tools	
	Professional ethics	Creating a sense of security in the referring people	
		Reliability, humility, patience	
		Feeling worthy	
	Basic abilities	Strong motivation	
		Discipline at work	
		Being interested in this profession	
		English mastery	
		ICT skills	
		Subject mastery	
			The ability of reasoning, analysis, and critical thinking
			Being updated

ICT=Information and communication technology

analysis, and critical thinking, and having updated knowledge. "They should be good at English to be able to edit papers." (Participant 8) "Librarians should be familiar with information technology in searching, using internet tools, social medial, etc." (Participant 7) "A librarian should be interested in this profession, have the ability of critical thinking to study papers, and have the mastery in holding workshops." (Participant 4).

Specialized competencies

According to the findings, the participants have mentioned six competencies of information resource retrieval and evaluation, using research software, research assistance, intellectual property literacy, scientific publication literacy, scientometrics, and altmetrics in the area of specialized competencies.

Retrieval and evaluation of information resource

According to the participants' viewpoints, one of the most fundamental skills needed by librarians is familiarity with clinical and nonclinical databases, the ability to search them by controlled keywords and evaluate the retrieved resources. One of the areas, in which medical librarians should be mastered, is familiarity with databases, in which new resources and themes can be accessed (Participant 6). In addition to knowing

Table 3: The librarians' specialized competencies to support research activities

Category	Subcategories	Concepts
Specialized competencies	Information resource retrieval and evaluation	Familiarity with electronic and printed information resources
		The ability of using databases
		The ability of using thesaurus and subject headings
		The ability to develop search strategies
		The ability of critical evaluation of information resources
	Using research software	The ability to use reference management software
		Familiarity with data analysis software
		Research designing
	Research assistance	The ability to perform secondary studies
		Having article writing skills
		The ability of scientific writing
		The ability of abstracting
	Intellectual property literacy	Familiarity with knowledge translation
		The ability of health knowledge publicization
		Familiarity with citation styles
		Familiarity with plagiarism cases
	Scientific publication literacy	Familiarity with research ethics
		The ability to use plagiarism software
		The ability to choose appropriate journals for publishing papers
		Validation of journal impact
	Scientometrics and altmetrics	The ability paper submission
The methods of increasing citation		
Familiarity with citation databases		
Familiarity with research profiles		
Familiarity with scientometrics indicators		
Familiarity with altmetrics		
Familiarity with scientometrics software		
Familiarity with research-based social networks		

databases, librarians should be aware of the advantages of PubMed over Embase and the advantages of M3 over Mesh. Librarians should be aware of the techniques of searching databases, search types, operators, searching strategies, etc., (Participant 14).

Using research software

Since different technologies and software facilitate the research process, one of the necessary competencies for librarians is familiarity with and the ability to use research software. A librarian should be able to use reference manager software such as Endnote, Mendeley, SPSS (IBM Company, Armonk, NY, USA), Excel, etc., (Participant 4).

Research assistance

The participants mentioned familiarity with research procedure, especially designing proposal, performing replication studies, and writing different types of scientific articles as necessary competencies for librarians. Librarians can help researchers to recognize research approaches, research methods, data collection tools, publicization of health knowledge, and knowledge translation (Participant 7). Librarians having the experience of conducting systematic review and meta-analysis as an expert of searching resources can help students in writing such papers (Participant 6).

Intellectual property literacy

According to the participants' experiences, intellectual property literacy is one of the important competencies for research librarians. Librarians should be familiar with different referencing styles and able to guide students to use Endnote (Participant 4). Librarians should have specialty in areas such as plagiarism and copyright; also, they should be able to use plagiarism detection software such as iThenticate (Participant 14).

Scientific publication literacy

The participants mentioned scientific publication literacy as one of the important competencies for librarians to be able to guide researchers in publishing the results of their studies in credited journals. "Librarians can guide researchers who want to submit a paper to find an appropriate journal, get information about the journal index and its access conditions, i.e., free and subscription-based access, the journal theme, etc.," (Participant 4).

Scientometrics and altmetrics

According to the participants' experiences, scientometrics and altmetrics are considered as the researchers' needs that can be easily met by librarians. A librarian should be master in citation databases, scientometrics indexes, and the way in which researchers can promote their own indexes (Participant 7). It is necessary for librarians to become familiar with social networks such

as ResearchGate, Academia, LinkedIn, and Mendeley that can be effective in observation and citation of papers (Participant 4).

Discussion

According to the participants' experiences, to provide research service and advice for the researchers, university librarians need to have general competencies (communication skills, professional ethics, and basic abilities), and specialized competencies (information resource retrieval and evaluation, using research software, research assistance, intellectual property literacy, scientific publication literacy, scientometrics, and altmetrics).

According to the interviewees' viewpoints, communication ability is one of the most important competencies for a librarian to provide library services for referring people. Despite the great importance of communication skills for librarians,^[17,18] the results of several studies suggest the librarians' poor skill in communicating with the referring people.^[8] Undoubtedly, without the ability of effective communication, librarians will not be successful in providing different services, including research services.

The majority of participants reported professional ethics as one of the important competencies. They believed that being interested in librarianship, feeling to be responsible for interacting with the library users, and observing discipline at work enable the librarians to provide high-quality services. In the area of individual skills, nonthacumjane has mentioned the librarians' key capabilities as flexibility, the ability to communicate with different classes of users, adaptability, responding to other people's needs, enthusiasm, and self-motivation.^[17]

As emphasized by the interviewees, one of the important competencies for librarians is to have basic and general capabilities such as familiarity with modern information and communication technologies, English mastery, and Subject mastery. Studying the librarians' necessary competencies, Robati and Singh emphasized the ability of English reading, writing, and speaking, and IT skills such as searching the internet and International Computer Drivers Licence skills.^[9] Wong showed that problem-solving, decision-making, and critical thinking are considered as the most important metacognitive abilities favorable to librarians.^[18] Undoubtedly, without these abilities, it will not be possible to retrieve, store, and evaluate information, provide in-person and online services for the users, and providing them with information.

One of the specialized competencies for librarians emphasized by the participants was mastery in search

strategies and evaluation of information resources. Lawton and Burns mentioned systematic data collection and evaluation of the literature related to the research question as the important tasks of university librarians.^[19] Najafgholinezhad and Sadeghzadeh found that librarians are the main references for the researchers to ask for information.^[20] Due to the researchers need to review the research literature, it seems that librarians who know different information resources and the way of searching them can more effectively lead the researchers to conduct their study.

The participants emphasized the necessity of the librarians' familiarity with the software used in research process such as reference management and data analysis software. Auckland suggested the importance of librarians' skill in using citation management tools.^[21] Stern has mentioned the librarians' ability to use statistical software as an important competency.^[22] Nowadays, the large volume of information resources on the one hand, and different citation styles of different journals, on the other hand, have increased the necessity of using reference management software for researchers.

According to the participants, one of the important competencies for librarians to provide research service is familiarity with research design and different types of scientific papers. The results of studies performed by Saleh and Ziaee and Spencer and Eldredge showed that some of the important tasks of university librarians include the education of performing systematic studies, advanced searching, and submitting the papers.^[23-25] Being aware of the way of designing research, writing proposal, and performing secondary studies, university librarians can help researchers and higher education students in different research stages, including proposal development, literature review, and reporting the scientific papers.

The other competency emphasized by the participants was the librarians' knowledge and awareness of plagiarism cases and the ability to use plagiarism detection software. Jaguszewski and Williams and Ginther *et al.* reported that librarians can support the researchers' works by the education of digital and print release rights.^[26,27] Nevertheless, Ghafouri *et al.* suggested that only a small group of librarians are familiar with plagiarism cases.^[28] Since plagiarism and research violations mainly originate from the researchers' unawareness of their cases, information literacy helps university librarians to be able to easily provide researchers with education about plagiarism; so, they can help decrease of research violations and observation of intellectual property.

According to the findings, one of the main reasons for which researchers refer to librarians is to receive advice

about choosing an appropriate journal for publishing their paper. Ginther *et al.*, Bower *et al.*, and Sewell and Danny suggested the positive role of university librarians in providing advice about publishing the research results.^[27,29,30] One of the important steps in every research work is publishing the findings. Regarding the variety of scientific journals in different areas and the increasing emergence of invalid journals, it is necessary for researchers to have the skill of choosing an appropriate journal for publishing the paper. Having the literacy of scientific publications, university librarians can help researchers to publish their findings in an appropriate journal by providing them with advice and education services.

The participants also emphasized the necessity of the librarians' familiarity with scientometrics and altmetrics indicators and their attendance in research-based social networks. Mehraban and Mansourian reported that being aware of different scientific areas; librarians can develop special criteria for the evaluation of information resources. For this purpose, they can promote these criteria regarding science and technology advances.^[31] White suggested the librarians' role in creating a research-developing and knowledge sharing atmosphere.^[32] Regarding the importance of scientometrics and altmetrics indicators in the evaluation and comparison of researches, most of them are willing to learn techniques for promoting these indicators. Furthermore, nowadays, the use of new indicators for evaluating the research effectiveness has made it unavoidable for researchers to attend research-based social networks. Hence, librarians can support researchers in different ways, such as helping them to create and update their profile in social networks and education of citation promotion strategies.

Conclusion

According to the participants' experiences, university librarians can play their research role and support research activities in universities by acquiring the general and specialized competencies addressed in this study. Furthermore, based on the findings of the present research, university managers and policymakers can plan for empowering university librarians besides introducing the role of university libraries in the promotion of research activities. However, it is expected to observe the research constraints besides the findings. As one of the research constraints, the research function of libraries was unknown for faculty members and students; because few faculty members and students were familiar with these services and able to explain the necessary competencies of librarians to provide research advice and service. Regarding the findings and the important role of university libraries in supporting

academic research activities, it is suggested for other researchers to perform need assessment of providing empowering courses for librarians and investigate the effectiveness of research services provided by university libraries.

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Conflicts of interest

There are no conflicts of interest.

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